OVERSIGHT OF THE YEAR 2000 PROBLEM: LESSONS TO BE LEARNED FROM STATE AND LOCAL EXPERIENCES

HEARINGS

BEFORE THE

SUBCOMMITTEE ON GOVERNMENT MANAGEMENT, INFORMATION, AND TECHNOLOGY

OF THE

COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT HOUSE OF REPRESENTATIVES

ONE HUNDRED FIFTH CONGRESS

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OVERSIGHT OF THE YEAR 2000 PROBLEM: LESSONS TO BE LEARNED FROM STATE AND LOCAL EXPERIENCES

THURSDAY, AUGUST 13, 1998

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON GOVERNMENT MANAGEMENT,
INFORMATION, AND TECHNOLOGY,
COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT,
New York, NY.

The subcommittee met, pursuant to notice, at 9:30 a.m., at the Alexander Hamilton Customs House, One Bowling Green, New York, NY, Hon. Stephen Horn (chairman of the subcommittee) presiding.

Present: Representatives Horn and Maloney.

Staff present: J. Russell George, staff director and chief counsel; Mark Brasher, senior policy director; Matthew Ebert, clerk; and Brian Cohen, minority professional staff member.

Mr. HORN. The Subcommittee on Government Management, Information, and Technology will come to order.

We have reached the point where it is no longer a requirement at the beginning of the speech or a hearing to explain the mechanics of the year 2000 problem, commonly known as Y2K. We know that the year 2000 computing problem affects just about every aspect of Federal, State, and local governmental operations. It also affects the way private sector organizations conduct business, and could affect the lives of most individuals.

Over 2 years ago, in April 1996, this subcommittee held the first congressional hearing on the year 2000 problem. Since that time, we have held numerous hearings to assess the status of the Federal Government's Y2K fixes.

Today's hearing marks the first in a series of field hearings that will number about 10 to 15 on the year 2000 problem and that will focus on non-Federal entities, be it State and local government as well as the private sector.

This is being done in context of the recent action of the Speaker of the House, Newt Gingrich. He named the Government Management Subcommittee and its Chair as chairman to work with the Subcommittee on Technology of the House Science Committee, which is chaired by Mrs. Morella of Maryland, the co-chair of this special House Task Force on the Year 2000. The chief objective of this task force is to inspire action.

No one organization, city, State, or even country can solve the year 2000 problem alone. Data exchanges and interdependencies

exist at all levels of the government and throughout the private sector. A single failure in the chain could have severe repercussions.

For example, State disability determination systems provide data on whether an individual qualifies for disability benefits, how long he or she should receive those benefits, and how much the beneficiary should receive. The Social Security Administration uses this data to approve the disbursement of the disability payment. The Department of the Treasury cuts the checks, and sends them to the local bank. The local bank deposits the check into the individual's account. The bottom line is, if any one of these entities fails, from State office through the local bank, a deserving individual will not receive payment.

Now multiply this situation by millions of people that receive Federal benefits or State benefits, and you can appreciate the magnitude of just one small aspect of the Y2K issue.

Accordingly, the testimony we receive today will help our understanding of the extent of the problem at the State and the local levels and in the private sector. We have two excellent panels of witnesses.

[The prepared statement of Hon. Stephen Horn follows:]

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INDEPENDENT

"Oversight of the Year 2000 Problem: Lessons to Be Learned from State and Local Experiences"

Opening Statement of Chairman Stephen Horn
Subcommittee on Government Management, Information and Technology
August 13, 1998

A quorum being present, the Subcommittee on Government Management, Information, and Technology will come to order. We have reached the point where it is no longer a requirement at the beginning of a speech or a hearing to explain the mechanics of the Year 2000 problem, commonly known as "Y2K". We know that the Year 2000 computing problem affects just about every aspect of Federal, State, and local governmental operations. It also affects the way private sector organizations conduct business, and could affect the lives of most individuals.

Over two years ago, this subcommittee held the first Congressional hearing on the Year 2000 problem, and since that time, we have held numerous hearings to assess the status of the Federal Government's Y2K fixes. Today's hearing marks the first in a series of field hearings on the Year 2000 problem that will focus on non-Federal entities. This is being done in the context of the recent action of the Speaker of the House, Newt Gingrich.

He named the Government Management subcommittee along with the Subcommittee on Technology as the House Task Force on the Year 2000.

The chief objective of this task force is to inspire action. No one organization, city, State or even country can solve the Year 2000 problem alone. Data exchanges and interdependencies exist at all levels of government and throughout the private sector. A single failure in the chain could have severe repercussions. For example, State disability determination systems provide data on whether an individual qualifies for disability benefits, how long he or she should receive benefits and how much the beneficiary should receive. The Social Security Administration uses this data to approve the disbursement of the disability payment. The Department of the Treasury cuts the check and sends it to the local bank. The local bank deposits the check into this individual's account. The bottom line is: If any one of these entities fails, from the State office through to the local bank, a deserving individual will not receive the payment. Now multiply this situation by the millions of people that receive benefits and you can appreciate the magnitude of just one aspect of the Y2K issue.

Accordingly, the testimony we receive today will help our understanding of the extent of the problem at the State and local levels, and in the private sector. We welcome our witnesses.

Mr. HORN. We are delighted to have with us the former ranking Democrat on the subcommittee, Mrs. Maloney, and whose District I believe we are in. And she has been a great asset over the years, but the minority leader said that she had to work on the sampling issue of the census, so we are loaning her to that subcommittee. We are delighted she is with us here.

So does the ranking member have an opening statement?

Mrs. MALONEY. I certainly do. Mr. Chairman, thank you for being here. And it's 9:30, when we were scheduled, and we are on time. I thank you for coming to the great State of New York and the city of New York to review the Y2K computer issue.

Today we will hear testimony from experts around the tri-state region. Evidence to date strongly suggests that our city will face a serious disruption if we do not fix the millennium bug by the year 2000.

I applaud Chairman Horn's efforts in bringing this issue into the national spotlight. Our subcommittee has held hearing after hearing and issued report after report focusing on what our country needs to do before the time is up.

Our job is no small task. We not only need to ensure that Federal agencies' computer systems operate properly in the year 2000, but we also must assure that State and local governments, businesses of all sizes, and even computer systems in other nations survive this so-called millennium bug.

This unique bug requires a unified solution. The interdependence of computer systems requires that nearly all computer systems be year 2000 compliant. For example, if a fixed Federal Government system interfaces with a noncompliant State computer, both computers will fail.

Plain and simple, if we do not begin to fix this problem now, New Yorkers and all Americans stand to lose billions of dollars in important services because our computers will think we have rolled back to the year 1900. Think for a moment about the chaos caused by computers that figure Social Security, Medicare, skyscraper elevators, airports, subway systems, utility grids, and other New York City, State, and Federal Government programs suddenly reading the year as 1900.

Systems that deliver services to individuals will not work, and those services will not be delivered. Checks will not arrive on time. Planes will be grounded, and ports will be closed.

Fortunately, we have a cure. The technology to fix the bug exists. Our task now is to ensure that computer systems worldwide are fixed. That includes examining, correcting, and then testing nearly every line of code and embedded system in every mainframe, network, and PC computer system. In some organizations that may involve over a quarter of a billion lines of code.

I am also pleased that the administration is taking a very strong stand. The Speaker has sent to Congress a proposed bill, the Year 2000 Information Disclosure Act, which I support and the chairman does also. This bill will promote much-needed information sharing between public and private organizations about Y2K solutions. That is part of what this hearing is about today, to gain information to be shared.

When the ball drops in Times Square on New Year's Eve in 1999, we must assure that the government has not dropped the ball on this bug fix.

So, again, I compliment the chairman for coming here and all the witnesses for being here; and for his really dogged work and oversight, which is one of the purposes of our committee, to make sure that this problem is fixed. Welcome.

Mr. HORN. I thank the gentlewoman from New York. As I said, she has been a great help to this subcommittee in many areas, debt collection among others. We are always glad to have her as a member of the committee.

If the first panel will come forward to the seats here: Mr. Joel Willemssen, Director, Accounting and Information Management Division, U.S. General Accounting Office, which is part of the legislative branch to both audit programs and funding in terms of the executive branch. Mr. Joseph Lhota, the deputy mayor of the city of New York. Mr. Gary Davis, the project director, Office of Technology of the State of New York. Mr. Peter Sullivan is not here yet, year 2000 program director, State of Connecticut. Mr. Charles Adrion, the director of Year 2000 Project Office, Westchester County, NY. And Mr. Douglas Wipperman, the director of Data Processing for Nassau County, NY. Let me explain, there will be another panel following this, that deals with the private sector.

Basically how we work is this, that all of you have submitted written statements. We appreciate it if you could summarize it within 5 to 8 minutes. Mr. Willemssen is particularly the oversight view, and we are willing to give our friend Joel Willemssen 10 minutes. But we would like to lay the case out on the table.

In addition, we do swear all witnesses. It is an investigating committee. We are interested in the truth on how far along are we in this case on the conversions and on the validation and the testing, the operational aspects.

There is a lot of very serious questions that we are asking in this first of about 10 field hearings. We are particularly interested, as Mrs. Maloney suggested, in the grid and the energy supply and what might happen if we have got embedded chips and everything else that nobody has taken care of. We know what happened the last time New York had a blackout. One thing we can predict for sure is the population went up 9 months later. And I don't know if the Y2K will help to do that, but it might, and we are interested in what might happen on that.

So, gentleman, if you would stand, raise your right hand, I will swear you in.

[Witnesses sworn.]

Mr. HORN. The clerk will note that the five have accepted the oath, and we will begin with Mr. Willemssen of the U.S. General Accounting Office to give us the overview.

STATEMENTS OF JOEL WILLEMSSEN, DIRECTOR, ACCOUNTING AND INFORMATION MANAGEMENT DIVISION, U.S. GENERAL ACCOUNTING OFFICE; JOSEPH LHOTA, DEPUTY MAYOR, CITY OF NEW YORK; GARY DAVIS, PROJECT DIRECTOR, OFFICE OF TECHNOLOGY, STATE OF NEW YORK; PETER SULLIVAN, YEAR 2000 PROGRAM DIRECTOR, STATE OF CONNECTICUT; CHARLES ADRION, DIRECTOR, YEAR 2000 PROJECT OFFICE, WESTCHESTER COUNTY, NY; AND DOUGLAS E. WIPPERMAN, DIRECTOR OF DATA PROCESSING, NASSAU COUNTY, NY

Mr. WILLEMSSEN. Thank you, Mr. Chairman, Congresswoman Maloney. Thank you for inviting us here today to testify on the year 2000 computer crisis, or Y2K. We also commend you for holding this first in a series of field hearings, and I think such hearings can go a long ways toward further getting the word out on Y2K across the country, not just in Washington, DC.

As requested, I will briefly summarize our statement and cover where we believe the Federal Government is currently at, the issues confronting State and local governments, and then discuss data exchanges and the recent report that we have put out on those data exchanges, not only between Federal, State, and local organizations, but also private sector organizations and other countries.

Regarding first the Federal Government overall, the 24 major agencies are still making slow progress in fixing their systems. As we testified before you 2 months ago in June, Federal agencies would need to dramatically increase their pace if they are to make it in time to deal with the Y2K challenge. And with the daunting testing challenge still ahead, it becomes even that much more difficult to make sure that we make it in time for all mission-critical systems.

One example of an agency that is going to be facing that challenge is the Federal Aviation Administration, or FAA. Since testifying before you 6 months ago in February, FAA has made progress in managing its year 2000 program, and they have completed some critical steps in defining which systems need to be fixed and how they are going to be fixed. However, with less than 17 months to go, FAA must still correct, test, and implement many of its mission-critical systems.

It's doubtful that, in the time remaining, FAA can adequately do all of this for even its mission-critical systems. Therefore, one of the things that's imperative right now for FAA to do is put together business continuity and contingency plans.

Beyond the Federal Government, State and local governments also face a major risk of year 2000 induced failures to many vital services, such as benefit payments, transportation, and public safety.

Recent surveys of the State year 2000 efforts have indicated that much remains to be completed. For example, a July 1998 survey of State year 2000 readiness conducted by the National Association of State Information Resource Executives found that only about a third of the States were reporting that 50 percent or more of their critical systems had been completely assessed, remediated, and tested.

In another survey recently done by the Department of Agriculture, its Food and Nutrition Service, it found that only three States in the country were reporting that the software, hardware, and telecommunications that support individual food stamp programs that they administer were year 2000 compliant.

To fully address these kind of risks in the States and in the Federal Government, data exchanges must be addressed. Our recent report on actions that have been taken to address the data exchange issue show that Federal agencies and the States use thousands of such exchanges to communicate with each other and other entities. For example, Federal agencies reported that their mission-critical systems had almost half a million data exchanges with other Federal agencies, States, local governments, and the private sector.

To successfully remediate those data exchanges is a very complex, time-consuming process. Among the steps included, beyond simply getting an inventory of those exchanges, you have to assess each of these exchanges to understand if they are currently considered compliant or not.

Second, you have to contact each of your data exchange partners to understand what the status and format is of the data that they will be transmitting to you. Then you have to reach agreement with those partners. If they are going to continue to two digits for example, and you are going to expand to four digits, someone will have to build an electronic bridge to adequately handle that.

In addition, you have to test new formats and exchange agreements, on top of the fact that in the event that even the best-laid tests don't pan out to be a good result, you have to have contingency plans in place. All of this takes a tremendous amount of effort and should not be minimized.

At the time that we completed our review, we found there is much work remaining on both the Federal level and the State level just to get a handle on the inventory of data exchanges. About half of the Federal agencies, when we were doing our review, were reporting that they had not yet finished assessing their data exchanges.

To strengthen the efforts in this area, in our report we have made several recommendations to OMB, and OMB is starting to take some steps to further improve the situation. They started along with the General Services Administration, to put in a data base tracking each of the exchanges. Of course it's not fully populated yet. With little over 16 months to go, we've got to move quickly on that.

There are other steps that we think could be taken in this area. For example, similar to what you will hear today with the second panel, we need to consider national test days for Federal, State, and local governments, and use these for the most critical areas to make sure that we indeed are going to be able to deliver some of the most important services in January 2000.

But I want to reiterate and emphasize, in conclusion, that this is a very resource-intensive, time-consuming process to deal with. One example is with the Social Security Administration, which started its Y2K efforts almost 10 years ago now and did a tremendous amount of work. They found once they got into the data ex-

change area, though, that they had underestimated what they were in for; that it took a tremendous amount of time and effort to inventory, assess, and reach agreements with their partners, let alone test those agreements.

So given the magnitude of the task at hand for Federal, State, and local agencies, and getting a handle on data exchanges, it remains to be seen whether we can really get it all done in time. I assume, in looking at the data, I think it's doubtful we can. That goes back to one of our overriding points that we have made in several hearings. We have got to set priorities, and make sure that the most critical services are adequately delivered and that those data exchanges are dealt with.

That concludes a summary of my statement. After the panel is done, obviously I would be pleased to address any questions that you may have.

[The prepared statement of Mr. Willemssen follows:]

Mr. Chairman and Members of the Subcommittee:

Thank you for inviting us to participate in today's hearing on the Year 2000 problem. According to the report of the President's Commission on Critical Infrastructure Protection, the United States--with close to half of all computer capacity and 60 percent of Internet assets--is the world's most advanced and most dependent user of information technology.[1] Should these systems--which perform functions and services critical to our nation--suffer disruption, it could create a widespread crisis. Accordingly, the upcoming change of century is a sweeping and urgent challenge for public- and private-sector organizations alike.

Because of its urgent nature and the potentially devastating impact it could have on critical government operations, in February 1997 we designated the Year 2000 problem as a high-risk area for the federal government.[2] Since that time, we have issued over 50 reports and testimony statements detailing specific findings and recommendations related to the Year 2000 readiness of a wide range of federal agencies.[3] We have also

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[1]Critical Foundations: Protecting America's Infrastructures (President's Commission on Critical Infrastructure Protection, October 1997).

[2]High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997).

[3]A list of these publications is included as an attachment to this statement.

issued guidance to help organizations successfully address the issue.[4]

Today I will briefly discuss the Year 2000 risks facing the nation; highlight our major concerns with the federal government's progress in correcting its systems; identify state and local government Year 2000 issues; and discuss critical Year 2000 data exchange issues.

RISK OF YEAR 2000 DISRUPTION TO THE PUBLIC IS HIGH

The public faces a high risk that critical services provided by the government and the private sector could be severely disrupted by the Year 2000 computing crisis. Financial transactions could be delayed, flights grounded, power lost, and national defense affected. Moreover, America's infrastructures are a complex array of public and private enterprises with many interdependencies at all levels. These many interdependencies among governments and within key economic sectors could cause a single failure to have adverse repercussions. Key economic sectors that could be seriously affected if their systems are not Year 2000 compliant include information and telecommunications;

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[4]Year 2000 Computing Crisis: An Assessment Guide (GAO/AIMD-10.1.14, September 1997), which addresses the key tasks needed to complete each phase of a Year 2000 program (awareness, assessment, renovation, validation, and implementation); Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, August 1998), which describes the tasks needed to ensure the continuity of agency operations; and Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, Exposure Draft, June 1998), which discusses the need to plan and conduct Year 2000 tests in a structured and disciplined fashion.

banking and finance; health, safety, and emergency services; transportation; power and water; and manufacturing and small business.

The information and telecommunications sector is especially important. In testimony in June, we reported that the Year 2000 readiness of the telecommunications sector is one of the most crucial concerns to our nation because telecommunications are critical to the operations of nearly every public- and private-sector organization.[5] For example, the information and telecommunications sector (1) enables the electronic transfer of funds, the distribution of electrical power, and the control of gas and oil pipeline systems; (2) is essential to the service economy, manufacturing, and efficient delivery of raw materials and finished goods; and (3) is basic to responsive emergency services. Reliable telecommunications services are made possible by a complex web of highly interconnected networks supported by national and local carriers and service providers, equipment manufacturers and suppliers, and customers.

In addition to the risks associated with the nation's key economic sectors, one of the largest, and largely unknown, risks relates to the global nature of the problem. With the advent of electronic communication and international commerce, the United States and the rest of the world have become critically dependent on computers. However, there are indications of Year 2000 readiness problems in the international arena. For example,

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[5]Year 2000 Computing Crisis: Telecommunications Readiness Critical, Yet Overall Status Largely Unknown (GAO/T-AIMD-98-212, June 16, 1998).

in a June 1998 informal World Bank survey of foreign readiness, only 18 of 127 countries (14 percent) had a national Year 2000 program; 28 countries (22 percent) reported working on the problem; and 16 countries (13 percent) reported only awareness of the problem. No conclusive data were received from the remaining 65 countries surveyed (51 percent).

The following are examples of some of the major disruptions the public and private sectors could experience if the Year 2000 problem is not corrected.

- Unless the Federal Aviation Administration (FAA) takes much more decisive action, there could be grounded or delayed flights, degraded safety, customer inconvenience, and increased airline costs.[6]

- Aircraft and other military equipment could be grounded because the computer systems used to schedule maintenance and track supplies may not work. Further, the Department of Defense could incur shortages of vital items needed to sustain military operations and readiness.[7]

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[6]FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998).

[7]Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998).

- Medical devices and scientific laboratory equipment may experience problems beginning January 1, 2000, if the computer systems, software applications, or embedded chips used in these devices contain two-digit fields for year representation.

- According to the Basle Committee on Banking Supervision--an international committee of banking supervisory authorities--failure to address the Year 2000 issue would cause banking institutions to experience operational problems or even bankruptcy.

Recognizing the seriousness of the Year 2000 problem, on February 4th, the President signed an executive order that established the President's Council on Year 2000 Conversion led by an Assistant to the President and comprising of one representative from each of the executive departments and from other federal agencies as may be determined by the Chair. The Chair of the Council was tasked with the following Year 2000 roles: (1) overseeing the activities of agencies; (2) acting as chief spokesperson in national and international forums; (3) providing policy coordination of executive branch activities with state, local, and tribal governments; and (4) promoting appropriate federal roles with respect to private-sector activities.

MUCH WORK REMAINS TO CORRECT THE FEDERAL GOVERNMENT'S YEAR 2000 PROBLEM

Addressing the Year 2000 problem in time will be a tremendous challenge for the federal government. Many of the federal government's computer systems were originally designed and developed 20 to 25 years ago, are poorly documented, and use a wide variety of computer languages, many of which are obsolete. Some applications include thousands, tens of thousands, or even millions of lines of code, each of which must be examined for date-format problems.

The federal government also depends on the telecommunications infrastructure to deliver a wide range of services. For example, the route of an electronic Medicare payment may traverse several networks--those operated by the Department of Health and Human Services, the Department of the Treasury's computer systems and networks, and the Federal Reserve's Fedwire electronic funds transfer system. In addition, the year 2000 could cause problems for the many facilities used by the federal government that were built or renovated within the last 20 years and contain embedded computer systems to control, monitor, or assist in operations. For example, building security systems, elevators, and air conditioning and heating equipment could malfunction or cease to operate.

Agencies cannot afford to neglect any of these issues. If they do, the impact of Year 2000 failures could be widespread, costly, and potentially disruptive to vital government

operations worldwide. Nevertheless, overall, the government's 24 major departments and agencies are making slow progress in fixing their systems. In May 1997, the Office of Management and Budget (OMB) reported that about 21 percent of the mission-critical systems (1,598 of 7,649) for these departments and agencies were Year 2000 compliant.[8] A year later, in May 1998, these departments and agencies reported that 2,914 of the 7,336 mission-critical systems in their current inventories, or about 40 percent, were compliant. Unless progress improves dramatically, a substantial number of mission-critical systems will not be compliant in time.

In addition to slow governmentwide progress in fixing systems, our reviews of federal agency Year 2000 programs have found uneven progress. Some agencies are significantly behind schedule and are at high risk that they will not fix their systems in time. Other agencies have made progress, although risks continue and a great deal of work remains. The following are examples of the results of some of our recent reviews.

- Earlier this month, we testified[9] about the Federal Aviation Administration's (FAA) progress in implementing a series of recommendations we had made earlier this year

[8]The Social Security Administration's (SSA) mission-critical systems were not included in these totals because SSA did not report in May 1997 on a system basis. Rather, SSA reported at that time, and again in August 1997, on portions of systems that were compliant. For example, SSA reported on the status of 20,000-plus modules rather than 200-plus systems.

[9]GAO/T-AIMD-98-251, August 6, 1998.

to assist FAA in completing overdue awareness and assessment activities.[10] These recommendations included assessing how the major FAA components and the aviation industry would be affected if Year 2000 problems were not corrected in time and completing inventories of all information systems, including data interfaces. Officials at both FAA and the Department of Transportation agreed with these recommendations, and the agency has made progress in implementing them. In our August testimony, we reported[11] that FAA had made progress in managing its Year 2000 problem and had completed critical steps in defining which systems needed to be corrected and how to accomplish this. However, with less than 17 months to go, FAA must still correct, test, and implement many of its mission-critical systems. It is doubtful that FAA can adequately do all of this in the time remaining. Accordingly, FAA must determine how to ensure continuity of critical operations in the likely event of some systems' failures.

- In October 1997, we reported that while SSA had made significant progress in assessing and renovating mission-critical mainframe software, certain areas of risk in its Year 2000 program remained.[12] Accordingly, we made several recommendations to address these risk areas, which included the Year 2000 compliance of the systems

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[10]Year 2000 Computing Crisis: FAA Must Act Quickly to Prevent Systems Failures (GAO/T-AIMD-98-63, February 4, 1998) and FAA Computer Systems: Limited Progress on Year 2000 Issue Increases Risk Dramatically (GAO/AIMD-98-45, January 30, 1998).

[11]GAO/T-AIMD-98-251, August 6, 1998.

[12]Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997).

used by the 54 state Disability Determination Services[13] that help administer the disability programs. SSA agreed with these recommendations and, in July 1998, we reported that actions to implement these recommendations had either been taken or were underway.[14] Further, we found that SSA has maintained its place as a federal leader in addressing Year 2000 issues and has made significant progress in achieving systems compliance. However, essential tasks remain. For example, many of the states' Disability Determination Service systems still had to be renovated, tested, and deemed Year 2000 compliant.

- Our work has shown that much likewise remains to be done in the Department of Defense and the military services.[15] For example, our recent report on the Navy found that while positive actions have been taken, remediation progress had been slow and the Navy was behind schedule in completing the early phases of its Year 2000 program.[16] Further, the Navy had not been effectively overseeing and managing its Year 2000 efforts and lacked complete and reliable information on its systems and

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[13]These include the systems in all 50 states, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

[14]Social Security Administration: Subcommittee Questions Concerning Information Technology Challenges Facing the Commissioner (GAO/AIMD-98-235R, July 10, 1998).

[15]Defense Computers: Year 2000 Computer Problems Put Navy Operations At Risk (GAO/AIMD-98-150, June 30, 1998), Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program GAO/AIMD-98-53, May 29, 1998), GAO/AIMD-98-72, April 30, 1998, and Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998).

[16]GAO/AIMD-98-150, June 30, 1998.

on the status and cost of its remediation activities. We have recommended improvements to the Department of Defense and the military services' Year 2000 programs with which they have concurred.

In addition to these examples, our reviews have shown that many agencies had not adequately acted to establish priorities, solidify data exchange agreements, or develop contingency plans. Likewise, more attention needs to be devoted to (1) ensuring that the government has a complete and accurate picture of Year 2000 progress, (2) setting governmentwide priorities, (3) ensuring that the government's critical core business processes are adequately tested, (4) recruiting and retaining information technology personnel with the appropriate skills for Year 2000-related work, and (5) assessing the nation's Year 2000 risks, including those posed by key economic sectors. I would like to highlight some of these vulnerabilities, and our recommendations made in April 1998 for addressing them.[17]

- First, governmentwide priorities in fixing systems have not yet been established. These governmentwide priorities need to be based on such criteria as the potential for adverse health and safety effects, adverse financial effects on American citizens, detrimental effects on national security, and adverse economic consequences. Further, while individual agencies have been identifying mission-critical systems, this

[17]Year 2000 Computing Crisis: Potential for Widespread Disruption Calls for Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998).

has not always been done on the basis of a determination of the agency's most critical operations. If priorities are not clearly set, the government may well end up wasting limited time and resources in fixing systems that have little bearing on the most vital government operations. Other entities have recognized the need to set priorities. For example, the State of New York has identified its "Top 40" priority systems that must be made compliant. These systems include those that have a direct impact on public health, safety, and welfare, such as child welfare and criminal history systems.

- Second, business continuity and contingency planning across the government has been inadequate. In their May 1998 quarterly reports to OMB, only four agencies reported that they had drafted contingency plans for their core business processes. Without such plans, when unpredicted failures occur, agencies will not have well-defined responses and may not have enough time to develop and test alternatives. Federal agencies depend on data provided by their business partners as well as services provided by the public infrastructure (e.g., power, water, transportation, and voice and data telecommunications). One weak link anywhere in the chain of critical dependencies can cause major disruptions to business operations. Given these interdependencies, it is imperative that contingency plans be developed for all critical core business processes and supporting systems, regardless of whether these systems are owned by the agency. Our recently issued guidance aims to help agencies ensure such continuity of operations through contingency planning.[18]

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[18]GAO/AIMD-10.1.19, August 1998.

- Third, OMB's assessment of the current status of federal Year 2000 progress is predominantly based on agency reports that have not been consistently reviewed or verified. Without independent reviews, OMB and the President's Council on Year 2000 Conversion have little assurance that they are receiving accurate information. In fact, we have found cases in which agencies' systems compliance status as reported to OMB has been inaccurate. For example, the DOD Inspector General estimated that almost three quarters of DOD's mission-critical systems reported as compliant in November 1997 had not been certified as compliant by DOD components.[19] In May 1998, the Department of Agriculture reported 15 systems as compliant, even though these were replacement systems that were still under development or were planned for development.[20] (The department plans to remove these systems from compliant status in its next quarterly report.)

- Fourth, end-to-end testing responsibilities have not yet been defined. To ensure that their mission-critical systems can reliably exchange data with other systems and that they are protected from errors that can be introduced by external systems, agencies must perform end-to-end testing for their critical core business processes. The purpose of end-to-end testing is to verify that a defined set of interrelated systems, which collectively support an organizational core business area or function, will work

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[19]Year 2000 Certification of Mission-Critical DOD Information Technology Systems (DOD Office of the Inspector General, Report No. 98-147, June 5, 1998).

[20]Year 2000 Computing Crisis: USDA Faces Tremendous Challenges in Ensuring That Vital Public Services Are Not Disrupted (GAO/T-AIMD-98-167, May 14, 1998).

as intended in an operational environment. In the case of the year 2000, many systems in the end-to-end chain will have been modified or replaced. As a result, the scope and complexity of testing--and its importance--is dramatically increased, as is the difficulty of isolating, identifying, and correcting problems. Consequently, agencies must work early and continually with their data exchange partners to plan and execute effective end-to-end tests. So far, lead agencies have not been designated to take responsibility for ensuring that end-to-end testing of processes and supporting systems is performed across boundaries, and that independent verification and validation of such testing is ensured. We have set forth a structured approach to testing in our Year 2000 testing guide exposure draft.[21]

In our April 1998 report on governmentwide Year 2000 progress, we made a number of recommendations to the Chair of the President's Council on Year 2000 Conversion aimed at addressing these problems. These included

- establishing governmentwide priorities and ensuring that agencies set agencywide priorities,

- developing a comprehensive picture of the nation's Year 2000 readiness,

[21]GAO/AIMD-10.1.21, Exposure Draft, June 1998.

- requiring agencies to develop contingency plans for all critical core business processes,

- requiring agencies to develop an independent verification strategy to involve inspectors general or other independent organizations in reviewing Year 2000 progress, and

- designating lead agencies responsible for ensuring that end-to-end operational testing of processes and supporting systems is performed.

We are encouraged by actions the Council is taking in response to some of our recommendations. For example, OMB and the Chief Information Officers Council adopted our guide providing information on business continuity and contingency planning issues common to most large enterprises as a model for federal agencies.[22] However, as we recently testified before this Subcommittee, some actions have not been initiated--principally with respect to setting national priorities and end-to-end testing.[23]

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[22]GAO/AIMD-10.1.19, August 1998.

[23]Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO/T-AIMD-98-205, June 10, 1998).

STATE AND LOCAL GOVERNMENTS FACE SIGNIFICANT YEAR 2000 RISKS

State and local governments also face a major risk of Year 2000-induced failures to the many vital services--such as benefits payments, transportation, and public safety--that they provide. For example,

- food stamps and other types of payments may not be made or could be made for an incorrect amount,

- date-dependent signal timing patterns could be incorrectly implemented at highway intersections, and safety severely compromised, if traffic signal systems run by state and local governments do not process four-digit years correctly, and

- criminal records (i.e., prisoner release or parole eligibility determinations) may be adversely affected by the Year 2000 problem.

Recent surveys of state Year 2000 efforts have indicated that much remains to be completed. For example, a July 1998 survey of state Year 2000 readiness conducted by the National Association of State Information Resource Executives, Inc., found that only

about one third of the states reported that 50 percent or more of their critical systems[24] had been completely assessed, remediated, and tested.

In a June 1998 survey conducted by the Department of Agriculture's Food and Nutrition Service, only 3 and 14 states,[25] respectively, reported that the software, hardware, and telecommunications that support the Food Stamp Program, and the Women, Infants, and Children program, were Year 2000 compliant. Although all but one of the states reported that they would be Year 2000 compliant by January 1, 2000, many of the states reported that their systems are not due to be compliant until after March 1999 (the federal government's Year 2000 implementation goal). Indeed, 4 and 5 states, respectively, reported that the software, hardware, and telecommunications supporting the Food Stamp Program, and the Women, Infants, and Children program would not be Year 2000 compliant until the last quarter of calendar year 1999, which puts them at high risk of failure due to the need for extensive testing.

State audit organizations have also identified significant Year 2000 concerns. For example, (1) Illinois' Office of the Auditor General reported that significant future efforts were needed to ensure that the year 2000 would not adversely affect state government

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[24]Critical systems were defined as "systems that effect public safety, public health, and financial and personnel aspects of government services."

[25]The Food and Nutrition Service included the District of Columbia, Guam, Puerto Rico, and the Virgin Islands in its survey. The Food and Nutrition Service did not verify the information provided by the states.

operations,[26] (2) Vermont's Office of Auditor of Accounts reported that the state faces the risk that critical portions of its Year 2000 compliance efforts could fail,[27] (3) New York's Office of the State Comptroller found a real risk that services provided to the public will be disrupted unless much more effort and resources are devoted to address the Year 2000 problem,[28] and (4) Florida's Auditor General has issued several reports detailing the need for additional Year 2000 planning at various district school boards and community colleges.[29] State audit offices have also made recommendations, including the need for increased oversight, Year 2000 project plans, contingency plans, and personnel recruitment and retention strategies.

FEDERAL/STATE DATA EXCHANGES CRITICAL TO DELIVERY OF SERVICES

To fully address the Year 2000 risks that states and the federal government face, data exchanges must also be confronted--a monumental issue. As computers play an ever-

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[26]Bureau of Communications and Computer Services Third Party Review (July 1, 1998).

[27]State Auditor's Report On Vermont's Year 2000 Preparedness For The Period Ending April 1, 1998 (May 5, 1998).

[28]New York's Preparation For The Year 2000: Governor's Task Force on Information Resource Management and Selected State Agencies and Public Authorities (Report 96-S-84, October 14, 1997).

[29]Examples of these report include, Report on Audit of the Alachua County District School Board For The Fiscal Year Ended June 30, 1997 (Report No. 13219, April 21, 1998) and Operational Audit of the District Board of Trustees Broward Community College For The Period July 1, 1996 through June 30, 1997 (Report No. 13222, April 30, 1998). The Year 2000 work for these reports was performed in early 1998.

increasing role in our society, exchanging data electronically has become a common method of transferring information among federal, state, and local governments. For example, the Social Security Administration exchanges data files with the states to determine the eligibility of disabled persons for disability benefits. In another example, the National Highway Traffic Safety Administration provides states with information needed for driver registrations. As computer systems are converted to process Year 2000 dates, the associated data exchanges must also be made Year 2000 compliant. If the data exchanges are not Year 2000 compliant, data will not be exchanged or invalid data could cause the receiving computer systems to malfunction or produce inaccurate computations.

Our recent report[30] on actions that have been taken to address Year 2000 issues for electronic data exchanges[31] revealed that federal agencies and the states use thousands of such exchanges to communicate with each other and other entities. For example, federal agencies reported that their mission-critical systems have almost 500,000 data exchanges with other federal agencies, states, local governments, and the private sector.

To successfully remediate their data exchanges, federal agencies and the states must (1) assess information systems to identify data exchanges that are not Year 2000 compliant;

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[30]Year 2000 Computing Crisis: Actions Needed on Electronic Data Exchanges (GAO/AIMD-98-124, July 1, 1998).

[31]To perform this review, we developed and sent a data collection instrument to survey 42 federal departments, all states, the District of Columbia, and Puerto Rico.

(2) contact exchange partners and reach agreement on the date format to be used in the exchange; (3) determine if data bridges and filters are needed and, if so, reach agreement on their development; (4) develop and test such bridges and filters,[32] (5) test and implement new exchange formats; and (6) develop contingency plans and procedures for data exchanges.

At the time of our review, much work remained to ensure that federal and state data exchanges will be Year 2000 compliant. About half of the federal agencies reported during the first quarter of 1998 that they had not yet finished assessing their data exchanges. Moreover, almost half of the federal agencies reported that they had reached agreements on 10 percent or fewer of their exchanges,[33] few federal agencies reported having installed bridges or filters, and only 38 percent of the agencies reported that they had developed contingency plans for data exchanges.

Further, the status of the data exchange efforts of 15 of the 39 state-level organizations that responded to our survey was not discernable because they were not able to provide us with information on their total number of exchanges and the number assessed. Of the 24 state-level organizations that provided actual or estimated data, they reported, on

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[32]A bridge is used to convert incoming 2-digit years to 4-digit years or to convert outgoing 4-digit years to 2-digit years. A filter is used to screen and identify incoming noncompliant data to prevent it from corrupting data in the receiving system.

[33]This does not include the status of agreements reported by the Federal Reserve. The Federal Reserve controls the data exchange software used by its partners and does not need to reach agreement with exchange partners on formats.

average, that 47 percent of the exchanges had not been assessed. In addition, similar to the federal agencies, state-level organizations reported having made limited progress in reaching agreements with exchange partners; installing bridges and filters, and developing contingency plans. However, we could draw only limited conclusions on the status of the states actions because data were provided on only a small portion of states' data exchanges.

To strengthen efforts to address data exchanges, we made several recommendations to OMB. In response, OMB agreed that it needed to increase its efforts in this area. For example, OMB noted that federal agencies had provided the General Services Administration with a list of their data exchanges with the states. In addition, as a result of an agreement reached at an April 1998 federal/state data exchange meeting,[34] the states were supposed to verify the accuracy of these initial lists by June 1, 1998.[35] OMB also noted that the General Services Administration is planning to collect and post information on its Internet World Wide Web site on the progress of federal agencies and states in implementing Year 2000 compliant data exchanges.

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[34]Initial agreements between the federal government and the states on steps to address Year 2000 data exchange issues were reached at a October 1997 state/federal summit, sponsored by the federal Chief Information Officer Council and National Association of State Information Resource Executives, Inc., and hosted by the Commonwealth of Pennsylvania.

[35]According to the National Association of State Information Resource Executives, Inc., as of early August 1998, 16 states had completed the verification of their federal/state data exchanges and an additional 9 states had completed 80 percent of the verification.

In summary, federal, state, and local efforts must increase substantially to ensure that major service disruptions do not occur. Greater leadership and partnerships are essential if government programs are to meet the needs of the public at the turn of the century.

Mr. Chairman, this concludes my statement. I would be happy to respond to any questions that you or other members of the Subcommittee may have at this time.

GAO REPORTS AND TESTIMONY ADDRESSING THE YEAR 2000 CRISIS

FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998)

Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, August 1998)

Internal Revenue Service: Impact of the IRS Restructuring and Reform Act on Year 2000 Efforts (GAO/GGD-98-158R, August 4, 1998)

Social Security Administration: Subcommittee Questions Concerning Information Technology Challenges Facing the Commissioner (GAO/AIMD-98-235R, July 10, 1998)

Year 2000 Computing Crisis: Actions Needed on Electronic Data Exchanges (GAO/AIMD-98-124, July 1, 1998)

Defense Computers: Year 2000 Computer Problems Put Navy Operations At Risk (GAO/AIMD-98-150, June 30, 1998)

Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, Exposure Draft, June 1998)

Year 2000 Computing Crisis: Testing and Other Challenges Confronting Federal Agencies (GAO/T-AIMD-98-218, June 22, 1998)

Year 2000 Computing Crisis: Telecommunications Readiness Critical, Yet Overall Status Largely Unknown (GAO/T-AIMD-98-212, June 16, 1998)

GAO Views on Year 2000 Testing Metrics (GAO/AIMD-98-217R, June 16, 1998)

IRS' Year 2000 Efforts: Business Continuity Planning Needed for Potential Year 2000 System Failures (GAO/GGD-98-138, June 15, 1998)

Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO/T-AIMD-98-205, June 10, 1998)

Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program (GAO/AIMD-98-53, May 29, 1998)

Year 2000 Computing Crisis: USDA Faces Tremendous Challenges in Ensuring That Vital Public Services Are Not Disrupted (GAO/T-AIMD-98-167, May 14, 1998)

Securities Pricing: Actions Needed for Conversion to Decimals (GAO/T-GGD-98-121, May 8, 1998)

Year 2000 Computing Crisis: Continuing Risks of Disruption to Social Security, Medicare, and Treasury Programs (GAO/T-AIMD-98-161, May 7, 1998)

IRS' Year 2000 Efforts: Status and Risks (GAO/T-GGD-98-123, May 7, 1998)

Air Traffic Control: FAA Plans to Replace Its Host Computer System Because Future Availability Cannot Be Assured (GAO/AIMD-98-138R, May 1, 1998)

Year 2000 Computing Crisis: Potential For Widespread Disruption Calls For Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998)

Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998)

Department of the Interior: Year 2000 Computing Crisis Presents Risk of Disruption to Key Operations (GAO/T-AIMD-98-149, April 22, 1998)

Tax Administration: IRS' Fiscal Year 1999 Budget Request and Fiscal Year 1998 Filing Season (GAO/T-GGD/AIMD-98-114, March 31, 1998)

Year 2000 Computing Crisis: Strong Leadership Needed to Avoid Disruption of Essential Services (GAO/T-AIMD-98-117, March 24, 1998)

Year 2000 Computing Crisis: Federal Regulatory Efforts to Ensure Financial Institution Systems Are Year 2000 Compliant (GAO/T-AIMD-98-116, March 24, 1998)

Year 2000 Computing Crisis: Office of Thrift Supervision's Efforts to Ensure Thrift Systems Are Year 2000 Compliant (GAO/T-AIMD-98-102, March 18, 1998)

Year 2000 Computing Crisis: Strong Leadership and Effective Public/Private Cooperation Needed to Avoid Major Disruptions (GAO/T-AIMD-98-101, March 18, 1998)

Post-Hearing Questions on the Federal Deposit Insurance Corporation's Year 2000 (Y2K) Preparedness (AIMD-98-108R, March 18, 1998)

SEC Year 2000 Report: Future Reports Could Provide More Detailed Information (GAO/GGD/AIMD-98-51, March 6, 1998)

Year 2000 Readiness: NRC's Proposed Approach Regarding Nuclear Powerplants (GAO/AIMD-98-90R, March 6, 1998)

Year 2000 Computing Crisis: Federal Deposit Insurance Corporation's Efforts to Ensure Bank Systems Are Year 2000 Compliant (GAO/T-AIMD-98-73, February 10, 1998)

Year 2000 Computing Crisis: FAA Must Act Quickly to Prevent Systems Failures (GAO/T-AIMD-98-63, February 4, 1998)

FAA Computer Systems: Limited Progress on Year 2000 Issue Increases Risk Dramatically (GAO/AIMD-98-45, January 30, 1998)

Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998)

Year 2000 Computing Crisis: Actions Needed to Address Credit Union Systems' Year 2000 Problem (GAO/AIMD-98-48, January 7, 1998)

Veterans Health Administration Facility Systems: Some Progress Made In Ensuring Year 2000 Compliance, But Challenges Remain (GAO/AIMD-98-31R, November 7, 1997)

Year 2000 Computing Crisis: National Credit Union Administration's Efforts to Ensure Credit Union Systems Are Year 2000 Compliant (GAO/T-AIMD-98-20, October 22, 1997)

Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997)

Defense Computers: Technical Support Is Key to Naval Supply Year 2000 Success (GAO/AIMD-98-7R, October 21, 1997)

Defense Computers: LSSC Needs to Confront Significant Year 2000 Issues (GAO/AIMD-97-149, September 26, 1997)

Veterans Affairs Computer Systems: Action Underway Yet Much Work Remains To Resolve Year 2000 Crisis (GAO/T-AIMD-97-174, September 25, 1997)

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(511472)

Related GAO Documents

Year 2000 Computing Crisis: Business Continuity and Contingency Planning
August 1998
GAO/AIMD-10.1.19

Year 2000 Computing Crisis: A Testing Guide
Exposure Draft
June 1998
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Year 2000 Computing Crisis: An Assessment Guide
September 1997
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Mr. HORN. Well, I thank you very much for coming and presenting the usual very fine testimony that the General Accounting Office does.

Our next panelist is the deputy mayor of New York City, Mr. Lhota. We are glad to have you here. Obviously this major city in our country has a tremendous impact on the American economy as well as the global economy, as we will get into. We have both of those to deal with.

Mr. LHOTA. Thank you. Good morning. Chairman Horn, Congresswoman Maloney, it is a pleasure to be here this morning. My name is Joseph Lhota. I am the deputy mayor for Operations for the city of New York, and I am here today on behalf of Mayor Guiliani.

As deputy mayor for Operations, I am responsible for the city's year 2000 efforts, and I personally oversee the unique efforts that are associated with making the city's——

Mr. HORN. Has there ever been a meeting in New York or anywhere else where the microphones didn't work?

Mr. LHOTA. It's me.

Mr. HORN. We have the Queen Mary.

Mr. LHOTA. I'll talk loud.

Let me begin by saying that the Guiliani administration is committed to meeting the challenge in front of us in trying to get the technologies to operate into the new millennium. We have already achieved numerous Y2K milestones. And over the next only 505 days left, we are committed to getting the job done with the same level of commitment and motivation and determination that we have going forward.

I would like to add, and it's not in my testimony, that prior to being named deputy mayor, I was the director of Office of Management and Budget for the city of New York, so I would like to say, while it's not in my testimony, it's very important, our commitment doesn't go beyond words, it doesn't go beyond the assessment and the implementation phase.

The city of New York has already spent and has appropriated $319 million toward the Y2K problem in the city of New York, and we're constantly assessing that. And I could say this, when I was budget director, unfortunately that number will only go up. It will never go down as we go forward.

The city's information technology planning over the last several years has greatly reduced the scope and size of the Y2K problem. Let me highlight some of the decisions that have been made already. We have, from a standpoint of reducing the number of the data centers that the city operates by combining them together for efficiency and effectiveness, we're consolidating the application systems where we are making it easier for people to work with the city of New York. Each one of our agencies is a separate and distinct operating system, so that if you wanted to get a permit, you had to go to five or six different agencies. We're now combining all of that into one-stop shopping.

By virtue of doing that and consolidating application systems, we are also making sure that, as we have been developing these systems over the last 3 or 4 years, that they are all Y2K compliant.

We are doing the same in the data base management systems area, as well as replacing all of our older systems as we go forward.

Let me tell you specifically what we have done regarding our Y2K problem. In November 1996 the mayor convened a working group with representatives of his office. We also created a new department called the Department of Information Technology for Telecommunications, which comes into an acronym known as DOITT. In addition to the mayor's office and DOITT was also the Office of Management and Budget. The Financial Information Services Agency was convened to put together a plan and a strategy to deal with the Y2K problem.

From that meeting, the city established the Y2K Project Office as part of the mayor's Office of Operations. In late 1996, early 1997, during a competitive procurement process, we selected a Y2K consultant to help us inventory, assess, and actually develop the planning stage of our project.

Phase one started in early 1997 and was completed in mid-1997. Basically, it was a compilation of all of the programs, and it was actually the first inventory of all computer programs within the city of New York.

Following that compilation of all of our programs, we went immediately into phase two, which required us to complete a detailed assessment of the entire inventories of the program. And agencies were also required to develop strategic as well as tactical plans for each of their noncompliant computer application systems.

These plans were reviewed and, with our working group still in place with the office, we were under a process of triage, what worked, what would be compliant, what would simply be, through some simple fixing, would be compliant, and what major renovations were necessary.

We have made tremendous progress going forward. We have now determined that there are 706 separate and distinct computer systems in the city of New York; 287 of them are currently compliant, Y2K compliant. The remaining 419 computer applications are obviously the primary focus of our Y2K efforts.

The city's goal is to ensure that the transition from 1999 into 2000 is seamless and that there will be no interruption or disruption of services that we provide on a daily basis. To further ensure that this goal is met, our agencies are in the process of developing and implementing detailed contingency plans for their priority systems.

I would like to talk a little bit now about the contingency plans, as was mentioned in prior testimony and in Congresswoman Maloney's statement earlier. It's very important that we are prepared in the event of what happens on January 1st, 2000. We are making every effort to ensure that, while all of our systems are compliant, we want to make sure that there are contingency plans.

So simultaneously what is going on with the Y2K office, the mayor's Office of Emergency Management is working with all the agencies as well as the private sector in the city of New York, working with utilities, gas, electric, telephone, as well as the hospitals that are both part of the New York City and not part of the New York City system. Because, while we're equally as concerned about what the city does in its role, we are also concerned about what happens

outside; and not just what with the private sector, but New York City has, unique to this area, many agencies that are quasi-governmental agencies, shared with the State and the city and in fact other States at the same time, to make sure that we are all on the same page.

Generically, anything that goes wrong in New York is always blamed on the mayor, so it's important that he make sure that we know what's going on and that we know the whole process. Mr. Chairman, that's a part of being in New York, that the mayor is responsible for everything that goes wrong. And the coordination, as I mentioned to you before, is going to be with the mayor's Office of Emergency Management.

We have made great strides and great accomplishments in going forward. There's a commitment on the part of the mayor to make sure this project and the Y2K problem is dealt with properly and up front. And as I said before, he's made that commitment from a monetary commitment, and we're in a wonderful position to be able to do that.

And while we have made progress toward the Y2K remediation and we are well-positioned to deal with the problems, both right before and right after January 1, 2000, it's important to understand the role that the city has with the State, as well as the city and State having with the Federal Government.

While you mentioned the legislation that is before the Congress right now on sharing the information, I think it's also important that the Federal Government understand the role from the financial commitment point of view as well. We need to be in this together. We have made our commitment. We would like the Federal Government to come together, not only in sharing the information but also making the financial commitment to all of the States and local governments that are dealing currently with their Y2K problem.

With that, that ends the summary of my statement which is considerably longer, and I look forward to questions. Thank you.

[The prepared statement of Mr. Lhota follows:]

Testimony of Joseph J. Lhota

Deputy Mayor for Operations, City of New York

Presented to the House Government Reform and Oversight Subcommittee

on Government Management, Information, and Technology

August 13, 1998

State and Local Preparedness for the Year 2000

Good afternoon Chairman Horn and members of this house Subcommittee, my name is Joseph Lhota and I am the Deputy Mayor for Operations for the City of New York. I am here today on behalf of Mayor Rudolph W. Giuliani who is unable to be here today to testify before you. As the Deputy Mayor for Operations, I am responsible for the City of New York's Year 2000 efforts and personally oversee the unique effort associated with making the City's systems Year 2000 (Y2K) Compliant. Let me begin by saying that the Giuliani Administration is committed to meeting the challenge of preparing the City's technologies to operate into the new millennium. We have already achieved a number of Y2K milestones and will continue to do for the next 17 months with the same commitment, motivation, and determination. I am

confident that the work required to prepare the City's priority systems will be completed.

I would like to briefly describe the problem that the Y2K date presents to computer systems and other technologies. The method used to store and process dates in computers and data files is the primary reason why there is a worldwide Y2K effort. Computer applications and technologies designed prior to the early 1990s needed to address the high cost of data storage and slow processing speed. As a result, computer manufacturers and programmers designed systems to store the year as a two-digit number with no reference to its corresponding century. For example, 1998 was stored as "98" with no means of distinguishing 1898 from 1998 or 2098. This method of storage primarily creates problems in calculating and sorting date related data.

The City's information technology planning in the past several years greatly reduced the scope of New York City's Y2K problem. Highlights of some of these decisions include:

- **Reducing the number of City operated data centers.** By reducing the number of City operated data centers and mainframe computers the Giuliani Administration has vastly reduced the extent of its Y2K problems. Not so long ago, the Departments of Sanitation, Housing Preservation and Development, and Transportation operated their own mainframe computers that would have inevitably experienced operating problems in the Y2K. By consolidating these data centers, the City has reduced the cost of the day to day operations and the work needed to upgrade these data centers to operate beyond the Y2K. Continuing in this direction, our technology and telecommunications agency, the Department of Information Technology and Telecommunications (DoITT), is in the process of consolidating the Human Resource Administration's data center, leaving the city with a far more streamlined and manageable infrastructure with data centers and mainframe computers residing only at DoITT, the Financial Information Services Agency, and the New York Police Department.

- **Consolidation of application systems.** Our consolidation efforts have not only been limited to data centers. Notably, the Department of Consumer Affair's CAMIS system will absorbed the licensing and

permitting functions at the Departments of Health, Transportation, and Taxi and Limousine Commission. Again reducing the number of systems that need to be Y2K compliant.

- **Database management systems.** Additionally we have been moving forward on the development of database management systems, using industry accepted products that are inherently Y2K compliant. Many of the City's computer systems such as the Department of Environmental protection's water billing system, the Department of Consumer Affairs' CAMIS system, the Department of Finances' Fairtax system, and the Department of Transportation's MOSAIC's systems are utilizing database management systems which already manage Y2K dates in a compliant manner.

- **Replacement of old legacy systems.** Through planned replacement projects that were planned before the onset of the City's Y2K project, we were already addressing Y2K problems for some of our citywide applications. Managers of these systems have conducted Y2K impact analysis, performed cost benefit analysis, and where appropriate, taken steps to replace or repair our legacy systems which would have certainly

presented Y2K problems. These systems, such as the new fleet management system, the new juvenile justice information system, and the financial management system will replace aging systems, all of which would have been Y2K non-compliant.

Now I would like to brief you on the steps the City has taken in regard to the Worldwide Y2K problem. In November 1996, a comprehensive program to address the potential impact of the Y2K in all our City Agencies was commenced. A technical working group comprised of representatives from the Mayor's Office, the Department of Information Technology and Telecommunications, the Office of Management and Budget, and the Financial Information Services Agency was convened to develop a plan and strategy to address the Y2K.

In December 1996 the City's established its Y2K Project Office as part of the Mayor's Office of Operations to develop a Y2K Project methodology and coordinate the Y2K efforts of 42 of our City Agencies.

In January 1997 the City, through a competitive procurement, selected a Y2K consultant to provide us with a Y2K methodology and to assist us in

the inventory, assessment, and planning phases of this project. We immediately adopted and modified an existing Y2K methodology to effectively address the urgency, size, scope, and complexity of the City's Y2K effort. In addition to a Y2K inventory and assessment, our adopted methodology addresses the need to control activities associated with non-conversion solutions, such as, system replacements or consolidations.

During the first phase of the project:

- we conducted a Y2K awareness program with our agency's senior staff and technicians;

- we developed standard survey and assessment tools that were distributed and completed by each Agency;

- we established an inventory of applications, facilities, telecommunications, and embedded technologies within the Agencies; and

- we conducted a Y2K assessment by analyzing the survey results and performing code analysis where necessary to establish cost estimates and timelines. This assessment assisted our Agencies to identify remediation, conversion, consolidations, new development, and "sunset" options. As a result of Y2K work already begun more than a year and a half ago by DoITT, the assessment stage for agencies with applications running at the City's data center started much earlier. This planning had given us a considerable head start in identifying Y2K problems.

Phase one of the City's Y2K project, was started in February 1997 and completed in July 1997, This Phase included the development and collection of standard system assessment surveys. The "survey process" included the collection of information for the traditional application systems and for other technologies, such as, but not limited to telephone systems, and facility based systems including timeclocks, process control systems, alarm systems, heating, ventilation, air conditioning, and elevator control systems, and pre-printed forms. Agency data was incorporated into a central database that represents the first inventory of virtually all City systems. Information captured on each system includes Y2K compliance status, Y2K impact dates, programming languages, operating platforms,

platform compliance, interface information, the importance of the system to the agency and the City, and the anticipated impact of any Y2K problems.

Phase two of our project began in July 1997 and was completed in December 1997. In this Phase, Agency and Y2K Project Office staff worked together to complete detailed assessments of the inventory, validating and determining the potential Y2K impact on each of the City's priority application systems. Agencies also developed strategic plans for each of their non-compliant priority application systems. These plans, developed on a system-by-system basis, set forth the Agency's strategy to rewrite, replace, remediate, retire, or consolidate its non-compliant application systems. The City has defined remediated systems as applications that will have their program code changed for the purpose of correcting Y2K problems; rewritten systems as applications that will undergo material code changes; replaced systems as applications that will be replaced by an off-the-shelf or vendor-developed solution; consolidated systems as applications that will be merged into other existing City applications; and retired/sunset systems as applications that are no longer needed or used and will therefore be removed from production prior to the Y2K. These plans were reviewed and approved by the Y2K Project Office,

the Office of Management and Budget, and by a technical committee comprised of City information technology professionals and an executive committee comprised of senior level City managers.

I am pleased to report that the City of New York has made great progress in addressing the Y2K problem. In just about one year's time our agencies had inventoried, assessed, planned, and started the work necessary to address the Y2K impact on our priority systems. Based on data reported to the Y2K project office (as of August 4th), there are 706 priority systems in the City; of which 287 are in the process of being tested and certified as Y2K compliant. The remaining 419 applications are the primary focus of the City's Y2K efforts. In summary, all of the City's priority systems have been reviewed and action has already been taken to insure they will continue to function into and beyond the Y2K. It is the City goal to ensure that the transition from 1999 to 2000 is seamless and that there is no disruption in the services we provide on a daily basis. To further ensure that this goal is met, our agencies are now in the process of developing detailed contingency plans for all their priority systems. I will explain more about our contingency planning process in just a moment.

Our Y2K project management methodology not only addressed the inventory, assessment, and planning activities for Y2K work, but also included:

- The centralized development and distribution of Y2K testing and certification criteria that could be applied to each of the systems reported or modified to be Y2K compliant. Beginning in Phase two, Agencies were instructed to begin testing and certifying these applications.

- The identification of key senior level persons within each agency that have Y2K responsibilities. Y2K liaisons for policy decisions, applications systems, and facility and telecommunications systems were identified. Our Y2K Project Office's participation in this effort ensured that the right resources and skills set were assigned to the project.

- The distribution of remediation project plan templates that identified detailed tasks for in-house and factory based conversion methodologies ensured that all the work associated with a Y2K remediation plan was evaluated and accounted for. These sample plans ensure that all critical steps are accounted for in the Agency's project plan.

- We recognized early on that Y2K projects involve coordinating a large number of tasks with complex inter-dependencies and applying proven project management techniques is key to the success of our Y2K initiatives. We have, therefore, adapted a consistent project management methodology for all Y2K projects, and implemented a training and mentoring program in all of our Agencies. As of today, we have trained over 300 people in our Agencies at all levels in the Y2K project management.

- To further refine cost, time estimates, and the unique skills needed for remediation projects, the Y2K Project Office has partnered with our Department of Finance (DOF), Department of Buildings (DOB), New York Police Department (NYPD), and the Office of Labor Relations (OLR) to remediate four priority application systems. Each system is being remediated using a factory-based conversion methodology and will be tested by Agency staff once the remediation is complete. Base line testing, remediation, regression testing, and Year 2000 testing on 3 of these systems has been completed. The other system's remediation will be completed in September and then regression, and Y2K testing

will begin. Each system will also go though a series of certification testing before it is moved into production.

Additionally, our Law Department, Office of Contracts, and Department of Information Technology and Telecommunications and Y2K Project Office have:

- Developed and distributed standard Y2K terms and conditions that each agency's chief contracting officer must incorporate into all future information technology procurements. This ensures that every information technology product or service that the City acquires will be Y2K compliant;

- developed and distributed standard third party vendor letters which were sent to City vendors and landlords to validate and certify Y2K assessment results;

- Instituted a number of information technology procurement reforms to simplify and expedite the procurement of Y2K and technology-based services. Among these approved changes were the addition of

information technology to the list of services and products that can be acquired through negotiated acquisitions and accelerated procurements, and an increase to the small purchase threshold for information technology goods and services.

- Established policy to increase the use of New York State contracts for goods and consulting services. City information technology and contracting staff were briefed and trained on the various procurement options available for Y2K related projects.

- Compiled a list of Y2K related-tools that can assist City agencies with their remediation and testing projects. The Department of Citywide Administrative Services and the Department of Information Technology and Telecommunications have been establishing contracts that allow agencies to acquire the tools that best meet their Y2K needs.

- Conducted training sessions on remediation techniques, testing methodologies, and cost estimating.

Now I would like to take a few minutes to briefly describe the City's Contingency Planning process. While the City is making every effort to ensure that all of our priority systems are Y2K compliant, we are also developing contingency plans at both the agency and citywide levels. Each of our Agencies has been directed to develop detailed contingency plans for all of their mission critical systems and embedded technologies, regardless of compliance status. The objective of our contingency planning is to ensure that the City's critical activities and business processes will continue to function into the new millennium and that key services, such as public safety, will not be disrupted. The success of any contingency planning process depends on executive direction on contingency planning to insure business continuity, detailed plans based on risk level and impact on operations, ownership and accountability at the executive and management levels, realistic plans that are tested rather than simply expected to function, monitoring and refining risk and plans based on changing environments and circumstances, and the implementation of a standardized format and methodology to develop and monitor contingency plans. The City of New York has taken into consideration each of these important factors when it adopted its contingency planning model. Each Agency contingency plan identifies technology, suppliers, and interfaces or

other areas outside the control of the City, such as state and federal government and utilities. Each plan will address the probability of failure and the time needed to correct or repair the problem.

The coordination and oversight of the contingency planning process has been assigned to the City's Y2K Project Office and the Mayor's Office of Emergency Management. As each Agency develops their strategic plans, a team of emergency planners will review them before the plans are tested and adopted. Agency plans collectively will form the building blocks for the City's overall Y2K contingency plan. For those areas or services that may impact critical sectors such as the banking and financial markets, transportation infrastructure, and public utilities, contingency plans will developed centrally. Contingency planning activities is a major deliverable in phase three of our Y2K Project.

Also in phase three of the project, our Agencies will be monitored on their overall progress. Each Agency Commissioner has been directed to give the Y2K work in their agencies the highest priority. Senior executives, including myself will be meeting with Commissioners on a regular basis to review their Agency's status. We are in the process of hiring an independent Quality Assurance consultant who will be asked to review Agency progress, identify

critical areas of exposure, and conduct independent testing on some of our priority systems.

Since the start of the City's Y2K project we have had some great accomplishments. We believe we are in the vanguard of state and local governments in alleviating the Y2K problem and have been contacted by other municipal and national governments who were seeking our advice on how to conduct their own Y2K projects. In the past 6 months of our project we completed the first information technology inventory in the history of the City and are confident that we have a strong Y2K strategic plan and methodology in place. Our Y2K Project Office has established a strong working relationship with each of the Agencies and oversight offices to insure that a dedicated team of City professionals is focused on addressing the City's Y2K challenge. The City's timeline for Y2K is consistent with Y2K remediation efforts in both the public and private sectors and remediation will continue to occur in 1998 with system testing occurring in 1998 and 1999. The City has approached the Y2K effort with the view that this is as an opportunity to upgrade, consolidate, and replace our older technology and systems with new and advanced technology that will ultimately place the City in a better strategic position well beyond the Year 2000.

New York City has made great progress towards Y2K remediation and we are well positioned to successfully meet the Y2K challenge. States and municipalities such as New York City that have made a strong commitment to this effort and taken responsible action to minimize the impacts of the Y2K problem should not have to face the prospect of costly litigation seeking damages allegedly caused by Y2K failures. Quite simply, Y2K litigation should not be allowed to become our next growth industry. The City therefore supports legislative efforts to impose reasonable limits on Y2K legal liability, including in particular a ban on the recovery of any form of punitive damages.

Critical government services depends on the daily interaction between the federal, state, and local governments. It is important that there is a coordination and open communication of Y2K activities and contingencies between all levels of government, especially in the areas of emergency management and air traffic control.

The High Cost of Assessment, Remediation and Contingency Planning will continue to rise as we approach the Year 2000. Federal aid to the state and local governments to help pay for the cost of Y2K work will allow us this

continue to provide current, new, or expanded services. Federal Aid to local governments now will reduce the funding need that state and local governments will make to the federal government after the Year 2000.

Finally, small and medium sized business account for a large portion of government vendors. Industry statistics state these size companies are not fully aware or unprepared to deal with their own Y2K problems. A national Year 2000 awareness and assessment campaign to small and medium size companies will help minimize the economic impact the Y2K problem may have on these service providers.

Thank you for the opportunity to present this testimony.

Mr. HORN. Well, we thank you for that very helpful statement. And I certainly agree with you about the mayor. Thirty-three years ago when I had a seminar at Harvard, I had Mayor Lindsey up to it. And he said, "Well, why don't you guys come down and spend a few days with me and see what things are really like in the big city?"

We did come down, 10 of us, as Kennedy fellows, and he was a gracious host. We had to go through four or five picket lines, as I recall, before we could get into City Hall that day. And then he joined us with a meeting with Governor Rockefeller.

I'll never forget, Governor Rockefeller said, "You know, John's got the toughest job. They can't find me." This is when he had his headquarters on 54th Street or in Albany or somewhere else. He said, "They can get at John, but they can't get at me." So he well respected what happens with the mayor of the city of New York, with the grassroots problems right there.

So we thank you for your taking the hour out of your day there to figure maybe something else is going wrong, that you're not at your desk.

Mr. LHOTA. The best case studies that I have ever seen at the Kennedy School of Government talked about a snowstorm that happened in Mayor Lindsey's term.

Mr. HORN. Well, that happened in Chicago, and there was a new mayor after that snowstorm in Chicago.

We now have Mr. Davis, and we are delighted to have you here, so please proceed.

Mr. DAVIS. Good morning. I would like to thank the Subcommittee on Government Management, Information, and Technology for this opportunity to discuss New York State's year 2000 compliant efforts. My name is Gary Davis, and I am the year 2000 project manager with the Office of Technology.

I will not attempt to chronicle the past 2 years of effort in the next few minutes, but rather try to provide some insight as to how New York City is addressing the year 2000 and to answer some fundamental questions. I have also provided the committee with copies of our written testimony.

What is New York State doing? Governor Pataki has identified year 2000 compliance as New York State's No. 1 technology priority. He's one of a handful of Governors to recognize the significance of this issue early, make it a priority, and provide real executive leadership.

In April 1996, the year 2000 date change initiative was established to facilitate New York State's millennium compliance efforts. The Office for Technology is responsible for coordinating a State-led effort to address the year 2000 problem.

How are we organized? We have implemented a statewide organization structure to support the project. An interagency steering committee is responsible for project planning and developing strategies to address the year 2000.

Each agency has designated a year 2000 project manager and an embedded systems coordinator who serve as the primary contacts. In addition, work groups have been established so that agencies with similar computer technologies can share common approaches and solutions.

What systems are at risk? In August 1996, agencies completed standardized risk assessments and identified over 700 systems that may be at risk. Systems are categorized at high, medium, and low priority based on their impact on an agency's ability to fulfill their mission to deliver services.

New York State has sought to minimize its risk by identifying mission-critical systems and focusing our efforts to bring these into compliance. As a result, we have identified the State's top 40 priority systems that have a direct impact on public health, safety, and welfare.

Examples of these systems include child welfare, State aid to schools, criminal history, inmate population, and tax processing systems. The Governor's office has delivered a clear and consistent message to agencies: The top 40 systems must be compliant, no matter what. In addition, agencies have identified over 300 high priority systems and over 240 priority embedded systems.

What will it cost? New York State's year 2000 cost estimate is $250 million. While earlier estimates were based on number of lines of code, agencies have provided detailed cost estimates broken down into four categories: application systems, computer infrastructure, PCs, and embedded systems. This total does not include major system replacement projects funded outside of the year 2000, such as welfare management and Medicaid management systems.

What is our compliance status? The Office for Technology is tracking compliance progress on a quarterly basis. Compliance progress is measured by the number of person years required to be completed each quarter.

The top 40 systems will require a total of 583 person years in order to bring them into compliance. As of June 1998, we completed 73 percent of the overall work effort required to bring the top 40 systems into compliance. They are on schedule to be compliant by January 1999.

In addition, it will require a total of 522 person years of effort to bring the 300 high priority systems into compliance. As of June 1998, we have completed 48 percent of the overall work effort and are on schedule to be compliant by April 1999.

What resources are needed? The Office for Technology is working with agencies to ensure that they have the resources that they need. New York State has allocated over $100 million in centralized year 2000 funding to support priority projects. Agencies have also been directed to reallocate existing resources to priority projects.

We have implemented numerous strategies to recruit, retain, and compensate staff. In addition, we have established over 40 centralized State contracts for the year 2000 projects and services for use by both State and local government.

What have we done with Federal, local, and other State governments? New York State has participated in all Federal/State year 2000 coordination meetings to date, including the October 1997 Federal/State summit held in Pennsylvania and the recent year 2000 summit in Washington, DC, hosted by the National Governors' Association. We have established contacts for all data exchanges between State and Federal agencies in conjunction with NASIRE and our scheduled tests.

New York State has participated in multistate conference calls since August 1997. Over 20 States and some Federal agencies are now participating. The conference calls have provided a forum to share information and approaches. New York State has benefited from Pennsylvania's focus on data exchanges, Oregon's compliance tracking, Michigan's quality assurance process, Florida's contingency planning, and Texas' staffing strategies.

Our office established a local government work group to raise awareness, promote action, and provide assistance. We have presented many statewide conferences, and have developed a "Guide to Solving the Year 2000 Problems in the State Government" which has been distributed to over 10,000 local government officials, school districts, police, and fire departments, health facilities, local social services providers, and others.

How are we managing risk? Managing risk of failures is a critical component of our year 2000 project. OFT, or our Office of Technology, has been working with our attorney general's office regarding the State's liability and legal issues. We have developed standard New York State warranty language implementing procurement guidelines, and are reviewing sovereign immunity legislation to limit the State's liability.

New York State has identified nearly 900 data exchanges associated with our top and high priority systems. Agencies report compliance status for each one of these data exchanges as part of our quarterly reporting process. Currently, 19 percent of all data exchanges are confirmed to be compliant. Each data exchange partner is being contacted through our State agencies and will be tested throughout 1999 to ensure compliance.

New York State has also assembled a multiagency team of internal auditors to conduct risk assessment reviews of agencies with mission-critical systems. The team identifies risks associated with ongoing compliance efforts, operating environments, data exchanges, and also to validate agencies' progress reporting.

The office is requiring contingency plans for those systems that will not be compliant by our failure dates. Agencies have already recorded the systems that may be at risk and are completing high-level contingency assessments. We will require detailed contingency plans by January 1999 for those systems that have not met work effort goals for two consecutive quarters or are at risk of failure.

The office has also worked with our General Services Office and our Systems Steering Committee to develop guidelines for agencies that lease and manage buildings, as well as identify what we call high-risk occupancies or space, containing facilities like correctional facilities, mental health facilities, and day care facilities.

Finally, with utility preparedness, we have been working with our Department of Public Service to address utility preparedness, including electricity, gas, water, and telecommunications. The department has completed a general assessment and met with the State's major utilities. The utilities have reported that they understand the scope of the problem, have implemented a compliance plan, allocated resources, and are on schedule to be compliant. The Department will be reporting on utility preparedness in our Sep-

tember meeting and will present plans to continue monitoring preparedness and utility readiness.

We have been working with the State Emergency Management Office, SEMO, to address emergency response planning. Each county emergency manager has received a copy of our "Guide to Solving the Year 2000 Problem." SEMO has also incorporated year 2000 readiness as a component of their standardized local risk/hazard assessment. We will continue to work with SEMO and enhance State emergency management plans based on potential risk associated with mission-critical systems, utility preparedness, and government readiness.

While New York State has accomplished a great deal, there is still a substantial amount of work to be done over the next 16 months. We need to remain focused, dedicate the necessary resources, and continue to work together.

Ultimately, no one can solve this problem alone or solve it for you. The private sector cannot solve it for the government. The Federal Government cannot solve it for States. The States cannot solve it for local governments. Only through a concerted and coordinated effort across all these entities can we hope to address critical systems, services, and infrastructure that we are all dependent on. Our greatest resource is our collective knowledge and experience. Thank you.

[The prepared statement of Mr. Davis follows:]

Subcommittee on Government Management, Information and Technology
House Task Force on the Year 2000 Hearings
Thursday, August 13, 1998

Introduction

Good morning. I would like to thank the Subcommittee on Government Management, Information and Technology for this opportunity to discuss New York State's Year millennium compliance efforts. My name is Gary Davis and I am the Year 2000 project manager with the Office for Technology (OFT). With me is Julie Leeper, our Year 2000 project coordinator. I will not attempt to chronicle the past two years of effort in the next few minutes but rather try to provide insight into how New York State is addressing the Year 2000 and to answer some fundamental questions. I have provided the Committee with copies of our complete written testimony.

What is the Year 2000 Problem?

The Year 2000 is a worldwide problem that impacts every organization that is dependent on computer technology. Since its inception, the computer industry has used a two-digit date number. The two-digit date convention was used as a means to conserve storage space when costs were at a premium. While these computing costs have dropped dramatically, the two-digit date convention has remained in widespread use for over 30 years. As a result, in the Year 2000, many computer systems may fail, if not corrected.

New York State faces a serious challenge because of the diversity of technology that we employ and the sheer volume of computer transactions we process. The problem is not limited to just programs but the hardware, software and the networks they operate on. In addition, any equipment that contains embedded chips such as building security, telecommunications systems, vehicles and medical equipment may also be at risk.

What is New York State doing?

Governor Pataki has identified Year 2000 compliance as New York State's "number one technology priority". He is one of a handful of Governors to recognize the significance of the issue early, make it a priority and provide real executive leadership. In April 1996, the Year 2000 Date Change Initiative was established to facilitate New York State's millennium compliance efforts. Under the direction of James Natoli, the Governor's Director of State Operations, the Office for Technology is responsible for coordinating a statewide effort to address the Year 2000 problem. While we are responsible for facilitating solutions, each agency is responsible for bringing their own systems into compliance.

How are we organized?

We have implemented a statewide organization structure to support the project. The Office for Technology is responsible for central project management. An inter-

agency steering committee assists with project planning and develops strategies to address the Year 2000. Each agency has designated a Year 2000 project manager and embedded systems coordinator who serve as the primary contact for all Year 2000 activities. In addition, platform based workgroups have been established so that agencies with similar computing technologies can share common approaches and solutions. The Office for Technology hosts statewide meetings every other month to provide training, share information and report compliance progress for all project managers.

What systems are at risk?

Agencies have completed a standardized risk assessment and identified over 700 systems that may be at risk. The systems are categorized as high, medium and low priority based on their impact on an agency's ability to fulfill their mission or deliver services.

On a national level, experts agree that there are neither enough time nor resources available to fix every system. New York State has sought to minimize its risk by identifying our mission critical systems and focusing our efforts to bring these systems into compliance.

As a result, we have identified the State's "Top 40" Priority Systems that have a direct impact on public health, safety and welfare. Examples of these systems include child welfare, State aid to schools, criminal history, inmate population management and tax processing systems. A complete list of the State's "Top 40" Priority Systems is available on our WEB site: **www.irm.state.ny.us**. State Operation's has delivered a clear and consistent message to agencies: "The Top 40 systems must be compliant, no matter what."

In addition, agencies have identified over 300 high priority systems. These include systems for grants and scholarships, licensing, court administration and patient care. Agencies have prioritized these systems and are working hard to bring them into compliance.

Agencies have also identified over 240 priority embedded systems. Some agencies are still finalizing cost estimates for embedded systems and detailed inventories.

The remaining medium and low priority systems are being addressed based on available time and resources.

What will it cost?

New York State's Year 2000 cost is estimated at $250 million dollars. While earlier estimates were based on the number of lines of code, agencies have provided

detailed cost estimates broken down into four categories; application systems, computer infrastructure, personal computers and embedded systems. This total does not include major system replacement projects funded outside of Year 2000 such as Welfare Management and Medicaid Management systems.

What is our compliance status?

The Office for Technology is tracking compliance progress on a quarterly basis. Compliance progress is being measured by the number of person years required to bring systems into compliance.

The "Top 40" systems will require a total of 583 person years of effort to bring them into compliance. We have completed 425 years of effort and six systems are done; child abuse registry, prison release dates, business tax systems, corporation system, state license system and bridge maintenance system. As of June 1998, we have completed 73% of the overall work effort required to bring the "Top 40" systems into compliance. They are on schedule to be compliant by January 1999. It will require approximately 6 person years of effort each week to stay on schedule.

In addition, it will require a total of 522 person years of effort to bring over 300 high priority systems into compliance. We have completed 253 years of effort and 99 of these systems are done. As of June 1998, we have completed 48% of the overall work effort required and are on schedule to be compliant by April 1999. It will require approximately 7 years of effort each week to stay on schedule.

The Office for Technology is reporting compliance progress to the Governor's Office on a quarterly basis. In January 1998, the Director of State Operations established Quarterly Status Meetings to meet with agency executives that maintain top priority systems to monitor progress, identify obstacles to accelerating compliance efforts and keep NYS focused on Year 2000 compliance.

What resources are needed?

The Office for Technology has been working together with our Division of the Budget, the Department of Civil Service, the Governor's Office of Employee Relations and the Office of General Services to assist agencies with the resources they need to address the Year 2000. These resources include funding, staffing and Year 2000 products and services.

Funding

New York State has allocated over $100 million dollars in centralized Year 2000 funding to support priority projects. The centralized funding is a combination of general

fund appropriations and Certificate of Participation proceeds. The Office for Technology is responsible for developing a statewide plan and the administration of those funds. Agencies have also been directed to reallocate existing resources to priority projects. We continue to work with agencies to ensure that they have the funding and flexibility they need to accelerate compliance efforts.

Staffing

We have implemented numerous strategies to recruit, retain and compensate staff for the Year 2000. These strategies include unrestricted compensatory overtime, extra service, establishing project management positions and temporary employment of retirees. A staffing "SWAT team" comprised of the administrative agencies was established to assist agencies with their staffing requirements and to expedite requests.

Product and Service Procurement

The Office of General Services has established over 40 Centralized State Contracts for Year 2000 consulting, tools and "code factory" services. State and local government can procure these products and services using an expedited mini-bid process. We have also hosted vendor days to showcase these products and services to agencies and provided procurement training.

What have we done with Federal, Local and Other State Governments?

We have been working closely with federal, state and local government to share information and coordinate our efforts.

Federal Government

New York State has participated in all Federal/State Year 2000 coordination meetings to-date, including the October 1997 Federal/State Year 2000 Summit Meeting hosted by the State of Pennsylvania and the recent Year 2000 Summit in Washington D.C. hosted by the National Governor's Association. We have established state and federal contacts for all data exchanges between the state and federal agencies through the help of NASIRE. Many of our state agencies have had numerous communications with their federal counterparts and are working together to test and ensure compliant data exchanges.

Subcommittee on Government Management, Information and Technology
House Task Force on the Year 2000 Hearings
Thursday, August 13, 1998

State Government

New York State has participated in monthly multi-state conference calls since August 1997. Over 20 States and some federal agencies are now participating. The conference calls have provided a forum to share information and approaches. New York State has benefited from Washington State's leadership on executive awareness, Pennsylvania's focus on data exchange dependencies, Oregon's compliance tracking, Michigan's quality assurance process, Florida's contingency planning and Texas' staffing strategies. Others have benefited from NYS' work on risk-based prioritization, embedded systems and local government assistance.

Local Government

OFT established a local government workgroup comprised of representatives from various municipalities, statewide associations and state agencies. This workgroup has raised awareness, promoted action and provided assistance through presentations, mailings and newsletter articles. We also developed a "Guide to Solving the Year 2000 Problems in NYS Government" which has been distributed to over 10,000 local government officials, school districts, police and fire departments, health facilities, local social service providers and others. There is a statewide teleconference for local government scheduled for September 10th to continue our outreach and provide information and training.

How are we managing risk?

Managing the risk of failures and potential liability is a critical component of our Year 2000 project.

Legal Liability

OFT has been working with our Attorney General's Office regarding the State's liability and legal issues. We have developed standard New York State Warranty Language and procurement guidelines, in conjunction with the Office of General Services. We are also reviewing existing law for provision relating to sovereign immunity and legislation that has been passed by other states to limit liability.

Data Exchange Dependencies

New York State has identified nearly 900 data exchanges associated with our top and high priority systems. Agencies report compliance status for each of these data exchanges as part of the quarterly reporting process. Currently 19% of the data

exchanges are confirmed to be compliant. Each data exchange partner is being contacted by our state agencies and data exchanges will be tested throughout 1999 to ensure compliance.

Risk Assessment Team

New York State has assembled a multi-agency risk assessment team of internal auditors to conduct risk assessment reviews of some of the "Top 40" Priority Systems. This team is reviewing systems' compliance efforts and identifying factors which pose the most risk of a system not becoming compliant in four areas; 1) on-going compliance efforts such as approach, solution strategy, inventory, commitment, test plans and documentation 2) operating environment including vendor platform, operating system, and other purchased software 3) data exchanges and 4) a validation of agencies' progress estimates and the monitoring process.

Contingency Planning

The Office for Technology is requiring contingency plans for those systems that will not be compliant prior to failure dates. Agencies have already reported the systems that may be at risk and will be completing high level contingency assessments by September 1998. Our office will require detailed contingency plans by January 1999 for those systems that have not meet work effort goals for two consecutive quarters or are at risk of failure.

Building/Facility Preparedness

OFT, the Office of General Services and our Year 2000 Embedded Systems Steering Committee have developed guidelines that are being used by state agencies for leased and managed buildings. Additionally, a process for agencies to define "high risk occupancy" buildings or space is being developed. High risk occupancy is defined as: Y2K failure of a building/facility system would have a direct and severe effect on the health and safety of the employees, clients, or public that may visit or use the building/facility. Some examples include: refrigeration in a food storage facility that serves correctional or mental health patients; heat and safe water in a daycare facility housed within a state building; temperature control/monitoring in lab housing disease samples that could be destroyed or spread. Additional steps to ensure compliance of these buildings are under development.

Utility Preparedness

We have been working with our Department of Public Service to address utility preparedness including electric, gas, water and telecommunications. The Department

has been working on this issue since 1997, has completed a general assessment and met with the State's major utilities. The larger utilities have report that they understand the scope of the problem, implemented a compliance plan, allocated resources and are on schedule to be compliant. The Department will be reporting on utility preparedness at our September 1998 project manager's meeting and will present plans to continue monitoring compliance progress and utility readiness.

State Emergency Management Planning

We have been working with the State Emergency Management Office (SEMO) to address emergency response planning for the Year 2000. Each county has an emergency manager has received a copy of our "Guide to Solving the Year 2000 Problem in NYS Local Government". SEMO has incorporated Year 2000 readiness as a component of their standardized local risk/hazard assessment. We will continue to work with SEMO and enhance State emergency management plans based on potential risk associated with mission critical systems, utility preparedness and local government readiness.

Conclusion

While New York State has accomplished a great deal, there is still a substantial amount of work to be done over the next sixteen months. We need to remain focused, dedicate the necessary resources and continue to work together.

Ultimately, no one can solve this problem alone or solve it for you: the private sector can not solve it for government; the Federal government can not solve it for states; states can not solve it for local government. Only through a concerted and coordinated effort across all these entities can we hope to address the critical systems, services and infrastructure, which we are all dependent on. Our greatest resource is our collective knowledge and experience. We need to find better ways to leverage this resource so that we can all benefit.

Mr. HORN. Those are very helpful comments. And when we get into the problem of liability, I would certainly like the advice of all. And I will read you a document here that one of our top constitutional scholars of the Congressional Research Services provided us. I think that's something we all share in common.

Mr. Sullivan, I forget if I gave you the oath or not.

Mr. SULLIVAN. Yes, you did.

Mr. HORN. Mr. Peter Sullivan is the year 2000 program director for the State of Connecticut. We appreciate you coming over the border.

Mr. SULLIVAN. Thank you and good morning, Representative Maloney, Chairman Horn. My name is Peter Sullivan, and I am pleased to be here today to provide testimony about how the State of Connecticut is responding to the year 2000 problem.

Connecticut has been working aggressively to understand the dimensions of this problem and has a program in place to assist State agencies, regulated entities, local governments, and small businesses. I would like to give you a quick overview of the areas where Connecticut has made some progress and briefly mention the areas where we are investing more resources to get on top of this ever-expanding challenge.

I am the director of the Year 2000 Program Office within the Connecticut Department of Information Technology, DOIT. I report to the chief information officer for the State, Rock Regan, who reports directly to Governor John Rowland.

In late 1996, Y2K efforts were initiated through a statewide inventory of information systems and the development of a Y2K coordinator network among the 70 Connecticut State agencies. In July 1997, important momentum was gained on Y2K through the legislative creation of the Department of Information Technology. It was specifically charged to do the following with respect to Y2K: Prepare a plan for managing the century date change as it will affect the various information systems of the State; prioritize a list of projects to complete modifications, repairs, system or application replacements; establish a certification process to ensure that the century date change has been adequately managed for critical State information systems; and contract on behalf of any State agency to ensure that any software program used by any such entity successfully manages the century date change effect.

DOIT has largely completed the groundwork on all of these points. We have adopted the year 2000 compliance policy and date representation standard. We have developed a prioritization policy that clearly ensures that year 2000 is the No. 1 systems priority across the State. We have adopted the Federal target date of March 31, 1999 for completion of conversion and testing activity on mission-critical systems.

We did use the services of an outside firm to complete an assessment of our systems last December, and we now know we have 800 application systems reported by agencies as mission-critical. We have further gone on since that time to develop four priority groups to ensure that those systems having the greatest economic or social impact are remediated and tested first.

DOIT has created Y2K guidelines and reporting requirements to assist and monitor agency efforts at a lower level. We have defined

a certification process for agencies to follow in addressing their information systems problems and will conduct quality assurance reviews to validate and assist in their progress.

We have prequalified 19 vendors that provide Y2K assessment, remediation, testing and validation services, and instituted a simplified process for agencies to procure their services. We have also provided project management training, and will be providing basic "Y2K Testing 101" courses for agency personnel.

In January 1998 DOIT requested $135 million in State funding for Y2K. We received approval of $95 million in April. Since that time, we have been distributing funds to agencies according to their plans. We are currently prioritizing use of these funds for application remediation, operating platform upgrades, and documented embedded systems needs. We have a bit further to go in the PC and embedded systems areas, and are conducting statewide assessments of these needs in order to submit a revised funding request in January 1999.

Connecticut agencies report that 69 percent of their mission-critical systems require remediation, upgrade, or replacement. An additional 27 percent of these systems require only testing to prove that they are compliant. For 4 percent of our systems, agencies will either eliminate the present system or develop a work around to avoid minor year 2000 problems.

Our current reporting reveals that agencies have completed 35 percent of their conversion efforts and 20 percent of their testing efforts overall. That testing is on the systems that have to be remediated or systems that were already thought to be compliant. We have instituted a reporting process lately with red-yellow-green performance indicators to provide further visibility to their efforts, and this is shared with commissioners monthly, starting this month.

The DOIT Y2K Program Office has recently inaugurated efforts to reach out beyond State agency boundaries. We are beginning to work more closely with agencies with regulatory responsibilities like public utilities, environmental protection, transportation, and economic and community development to ensure that their clients or agencies that they oversee are aware of and actively moving to mitigate their Y2K risk. This is a major communication challenge for DOIT. We have appointed a senior manager to head up this initiative.

Currently, we plan to reprint and distribute the Pennsylvania brochure "Executive Survival Guide for the Year 2000" because we think it will be an important tool to reach entities that are—that we regulate, small businesses, local towns, and school districts. Also, we anticipate modifying our Y2K web site to provide Y2K status information by sector, following the lead of the Federal Government Y2K.gov site.

Connecticut has and will continue to invest its resources to ensure that the millennium bug does not interrupt vital services and benefits. We have been the beneficiaries of State-Federal cooperation initiatives such as the sharing of interface contact compliance information. We look forward to more joint activity. And I would cite in particular that we have received help by following the lead

of States such as Oregon, Pennsylvania, New York, and Florida. So there has been good sharing, and that has helped our efforts.

One area of inconvenience I might cite, since you are here, is Federal reimbursements. We understand the rationale behind the current reimbursement model where the Federal Government reimburses expenditures on deliverables specified in a previously approved plan. This is good practice and, frankly, we do the same thing in the State.

However, applied to Y2K, with the short window and timeframe that we have, reimbursements arrive too late and cost too much, sometimes, in terms of sacrificed time to comply with planning and reimbursement requirements. Because these reimbursements go directly to our general fund in Connecticut, we require reappropriation by our legislature. So, therefore, there's no quick way to recycle those moneys, even though in some cases there can be a 60-day reimbursement promise involved.

The net impact is that our State-appropriated Y2K dollars—remember, we got appropriated less than we requested—go faster than we intended to fix federally mandated systems. So our suggestion is that the Federal Government provide more direct Y2K funding in the first instance in lieu of reimbursements after the fact.

This concludes my testimony. I have submitted copies of several reference items directly to the committee members for review and to your staff. This includes our two-page Y2K overview and current status, our year 2000 contract warranty language, our year 2000 certification process and forms, and year 2000 data and testing.

I would be happy to answer any questions regarding the State of Connecticut.

[The prepared statement of Mr. Sullivan follows:]

Testimony of Peter Sullivan
Year 2000 Program Director
State of Connecticut

to the Subcommittee on Government Management, Information, and Technology on August 13, 1998

Good morning. Representative Davis, Representative Maloney, Chairman Horn, my name is Peter Sullivan and I am pleased to provide testimony today regarding how the State of Connecticut is responding to the Year 2000 problem. Connecticut has been working aggressively to understand the dimensions of this problem and has a program in place to assist state agencies, regulated entities, local governments and small businesses. I would like to give you a quick overview of the areas where Connecticut has made significant progress, and briefly mention the areas where we are investing more resources to get on top of this ever-expanding challenge.

I am the Director of the Year 2000 Program Office, within the Connecticut Department of Information Technology. I report to the Chief Information Officer for the state, Rock Regan, who reports directly to Governor John Rowland. In late 1996, Y2K efforts were initiated through a statewide inventory of information systems and the development of a Y2K Coordinator network among the 70 Connecticut State agencies. In July 1997, important momentum was gained through the legislative creation of the Department of Information Technology (DOIT). Specifically, DOIT was charged to do the following:

prepare a plan for managing the century date change as it will affect the various information systems of the state prioritize a list of projects to complete modifications, repairs or system or application replacements establish a certification process to assure that the century date change has been adequately managed for critical state information systems contract on behalf of any state agency ... to ensure that any software program used by any such entity successfully manages the century date change effect...

DOIT has largely completed the groundwork on all of these points. We have adopted a Year 2000 Compliance Policy and Date Representation Standard. We have developed a Prioritization Policy that ensures that Year 2000 is the number one systems priority across the state. Connecticut has adopted the federal target date of March 31, 1999 for completion of conversion and testing activity on mission critical systems. For the 800 application systems reported by agencies as "mission critical", DOIT has developed four priority groups to ensure that those systems having the greatest economic or social impacts are remediated and tested first.

DOIT has created Y2K guidelines and reporting requirements to assist and monitor agency efforts at a lower level. We have defined a Certification Process for agencies to follow in addressing their information systems problems and will conduct quality assurance reviews to validate and assist in their progress. We have pre-qualified 19 vendors that provide Y2K assessment, remediation, testing and validation services and instituted a simplified process for agencies to procure their services. We have provided

project management training, and will be providing "Y2K Testing 101" courses for agency personnel.

In January 1998, DOIT requested $135 Million in state funding for Y2k, receiving approval of $95 Million in April. We are currently prioritizing use of these funds for application remediation, operating platform upgrades, and documented embedded systems needs. DOIT is conducting statewide assessment of PC replacement and embedded systems needs in order to submit a revised funding request in January, 1999.

Connecticut agencies report that 69% of their mission critical systems require remediation, upgrade or replacement. An additional 27% of their systems require only testing to prove they are compliant. For 4% of systems, agencies will either eliminate a present system or develop a work around to avoid minor Year 2000 problems. Currently, agencies have completed 35% of their conversion efforts and 20% of their testing efforts. DOIT has instituted a reporting process with Red-Yellow-Green performance indicators that is shared with Commissioners monthly.

The DOIT Y2K Program Office has recently inaugurated efforts to reach out beyond state agency boundaries. We are beginning to work more closely with agencies with regulatory responsibilities like Public Utilities, Environmental Protection, and Economic and Community Development to ensure that their clients are aware of and actively moving to mitigate their Y2k risks. This is a major communication challenge for DOIT. We have appointed a senior manager to head up this initiative. Currently, we plan to reprint and distribute the Pennsylvania brochure "Executive Survival Guide for the Year 2000" to regulated entities, small businesses and local towns and school districts. Also, we anticipate modifying our Y2K website to provide Y2K status information by sector, following the lead of the Federal Y2k.Gov website.

Mr. HORN. That's very helpful, and we will appreciate having those guides and memorandums, which we can put in our hearing record, which could become very popular.

When we see—is that red document, Mr. Davis, the one to which you referred?

Mr. DAVIS. That is actually our local guide. I would be glad to give you a copy.

Mr. HORN. Without objection, I say we include this in the record. It will be a pretty full record when we are done, but I think it will be helpful to a lot of other people because you all have an interest in this. We thank you for it.

[The information referred to follows:]

Guide to Solving YEAR 2000

Problems in NYS Local Government

George E. Pataki, Governor

James G. Natoli, Director- State Operations

This is a Year 2000 Readiness Disclosure

STATE OF NEW YORK
OFFICE FOR TECHNOLOGY
STATE CAPITOL
ALBANY, NY 12224
518-473-5622
518-473-3388 FAX

GEORGE E. PATAKI
GOVERNOR

JAMES G. NATOLI
CHAIRPERSON

CAMARON J. THOMAS
DIRECTOR

March 30, 1998

Dear Local Official:

As we approach the new century, every organization that is dependent on computer technology faces a major challenge. The "Year 2000" problem should not be unfamiliar to you. New York State established our Year 2000 Date Change Initiative in April 1996, under the direction of the Office for State Operations, to work with State and local government to address this critical issue.

The "Guide to Solving Year 2000 Problems in NYS Local Government" is part of our continuing commitment to sure that local government understands the potential impact of the Year 2000 and has the information you need to respond to it. The Office for Technology is responsible for facilitating New York State's Year 2000 compliance efforts and is available to provide guidance and assistance.

On behalf of Governor Pataki, I am calling on all local officials across New York State to make Year 2000 Compliance a "number one priority" as the Governor has done with State government. The Year 2000 problem can potentially impact all government services and business if not addressed. Therefore, it is imperative that we safeguard our computer resources from failure and ensure that essential public services will not be impacted when the clock strikes midnight on December 31, 1999.

I look forward to working together to meet this challenge.

Sincerely,

James G. Natoli

James G. Natoli

Year 2000 Readiness Disclosure

STATE OF NEW YORK
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GEORGE E. PATAKI
GOVERNOR

JAMES G. NATOLI
CHAIRPERSON

CAMARON J. THOMAS
DIRECTOR

March 30, 1998

Dear Local Official:

Whether your municipality is large or small, you need to determine how the Year 2000 will affect your government business and services. Our Office is committed to helping New York State government solve the Year 2000 problems before system failures occur.

We have prepared the attached guide to assist you in assessing your risk and taking appropriate action to avoid Year 2000 problems. In addition to this guide, our Office maintains a web page (www.irm.state.ny.us) with a wealth of information regarding the Year 2000 problem and solving it. I encourage you to get on the Internet and use this resource.

Each NYS agency has designated a Year 2000 Project Manager who are the main point of contact for disseminating new information regarding the Year 2000 issues for our Office. We also hold bimonthly meetings in Albany. If your municipality designates a Year 2000 Project Manager, we will include that person in our distributions and they are welcome to attend any of the bimonthly meetings. Many of our information distributions are through Internet e-mail, so we prefer that the person has an Internet e-mail address. To designate your Year 2000 Project Manager, please call (518-473-5622) or e-mail (leeperj@emi.com) us with: municipality name, person's name, mailing address, phone number, fax number and e-mail address. We encourage all of you to designate a Year 2000 Project Manager now, if you have not already.

It is important that you make Year 2000 compliance a "number one priority" as Governor Pataki has for State Government and commit the necessary resource to address this critical challenge. Please feel free to call our office at 518-473-5622 if you have any questions.

Sincerely,

Camaron J. Thomas

Year 2000 Readiness Disclosure

Guide to Solving Year 2000 Problems in NYS Local Government

This is A Year 2000 Readiness Disclosure

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"/hat Can It Affect?

There are three areas of computer technology that the Year 2000 may affect. The following outlines each area. Details of how to address each of these areas can be found in Section IV, the Year 2000 Checklist.

- **Computer Hardware (and operating systems)**
  PCs. Mainframes, operating systems, networks

  What could happen?
  PCs pass incorrect date to all programs they run
  Computers fail. Networks unusable
  Data not backed up. backed up data erased

- **Computer Application Systems**
  These are the functions which you use your computers (mainframe or PC) for. which may have been written in-house or purchased from a vendor. These may include: Financial, Pay roll, Licensing, Phone systems, Voter registration systems. Purchased town clerk systems. Standard PC software packages such as spreadsheets, databases and financial records.

  What could happen?
  Incorrect payroll, tax bills
  Non-renewal of licenses
  Incorrect results from spreadsheet date calculations
  Loss of date information in databases
  Vendor payments will be late and inaccurate
  Erroneous certifications/permits
  Improper maintenance schedules for roads, bridges, vehicles.

- **Embedded Chip Technologies**

  There are billions of computer chips embedded inside of devices, equipment and systems. It is estimated that only about 3% of chips will fail on January 1,2000, but there is no easy way to tell which ones these will be. Bad chips may be in security systems, elevators, vehicles, communication systems, monitoring devices, medical equipment, traffic signals... etc. Articles on the Year 2000 issue as it relates to embedded chip technology can be found in Appendix L.

  What could happen'?
  Building and jail security systems don't work
  Elevators go to the basement and stay there
  Fire trucks, ambulances won't start
  "911" communication systems mix up message streams
  Traffic lights on wrong schedules
  Emergency medical equipment inoperable
  Non-renewal of licenses

  Attachment B provides further explanation of the problem in embedded chips.

Project Management Tips for a Successful Year 2000 Project

A. Project Methodology/Steps

There are various approaches to the Year 2000 problem. Many of these approaches consist of good. solid theoretical steps. but there is no tried and true method for a project of this size and complexity. Because there is no practical cookbook available,
the NYS Year 2000 Steering Committee has developed a Year 2000 Project Framework as a guide. This framework is modeled after Gartner Group's approach. It is based on industry research. It divides the Year 2000 project into the following seven steps:

- **Awareness**

This step represents about 2% of the overall project work. This is the first and most critical step toward addressing the Year 2000 problem. It involves making senior management aware of the severity of the Year 2000 problem, of its breadth and complexity, of its global nature, of its hard timeline and of its potential to cause businesses to fail if it is not addressed adequately.

This phase includes not only being aware of the problem in general, but also being aware of the specific effects the Year 2000 will have if critical processes are not be brought into Year 2000 compliance. A Year 2000 Risk Assessment should be done during this step. The Year 2000 Risk Assessment form used by NYS agencies can be
ind in Attachment
A. It provides an analysis of the most critical business processes, the deadline date that the process must be brought into Year 2000 compliance, and a description of what will happen if the process isn't brought into compliance on time. Business processes which exchange data with external organizations need to be included in this analysis to identify processes which will require interorganizational coordination and prioritization. Attachment L provides further information on prioritizing and determining risk.

It is also important at this stage to ensure that the Year 2000 problem and its solutions become a priority. Organizations must start scheduling projects in deference to the Year 2000. To assist in this prioritization and scheduling, an organization wide group needs to be established. This will reinforce the significance of the problem and provide an understanding of the resource allocation challenges that are at hand.

- **Inventory**

This step represents about 10% of the overall project work. Once the critical business processes are identified in the Risk Assessment, a detailed inventory of the automated processes that support them must be constructed. This inventory will become the roadmap for bringing the technological pieces into Year 2000 compliance. This inventory contains a list of computer hardware, operating systems, networks, application systems, subsystems, modules, programs, software, databases, automated devices, and equipment that need to be examined.

The inventory needs to be carefully constructed and mapped directly to the critical business processes it supports. One of the biggest risks with the Year 2000 is that you may construct an incomplete inventory, thus causing whole processes to fail for even the most minor of omissions.

- **Project Plan**

This step represents about 4% of the overall project work. In the Project Plan step two, workplans are devised. The first is an overall organization Year 2000 Business Plan and is a broad sweep prioritization of the business processes to be addressed within the organization. This plan ties back to the Risk Assessment and is devised by comparing business process failure dates and determining resource availability for allocation. The Year 2000 Business Plan then needs to be drilled down to a greater level of detail so that this undertaking can be appropriately managed by each business area with the organization. This detail plan includes information on how the business process will be brought into compliancy (replacement or correction),number of staff days required, staff assignments, due dates, and the failure date.

- **Assessment**

This step represents about 20% of the overall project work. This step involves: an examination of each system, computer, device, or equipment to determine if it is worth saving/correcting in its current state; an analysis of what the best solution will be to bring it into Year 2000 compliance; a plan for the actual solution.

This step is very similar to the traditional analysis and design phases for computer systems development. During the examination activity, there will be situations where the current process and/or technology falls short of user expectations and, therefore, will not only require date related modifications, but facts may direct us to consider systemic modifications or replacements. There will be tough calls to make and opportunities

for improvement may not always be feasible based on the time frame allotted and the costs associated with any particular solution. An analysis is required to determine the best solution to reach Year 2000 compliance. Staff assignments can now be made along with estimated completion dates that precede the failure date for the business process.

- **Remediation**

This step represents about 20% of the overall project work. For information systems. either mainframe or PC, this is the step when the actual programming changes are made or a replacement hardware/systems are purchased. For those embedded chips that have been identified to fail, this is the step when either the chip or the device/equipment/machinery/ system is replaced.

- **Testing**

This step represents about 45% of the overall project work. Testing is critical and time consuming. All systems must be tested with Year 2000 test data to ensure Year 2000 compliance. This step involves extensive testing and coordination. Appropriate test data needs to be created that will exercise the Year 2000. Each program module must be individually tested as well as the program to program interaction to ensure that data and program communications remains correct and in tact. Once systems are determined to be in working order by the developers, user acceptance testing needs to be carried out, followed by full parallel system tests.

Interorganizational testing requirements for data exchange will need to be carefully coordinated and validated. This testing is the responsibility of each organization involved in the data exchange, which may include other government entities, banks, labor unions, credit unions, legal systems. etc.

- **Implementation**

This step represents about 8% of the overall project work. This involves moving changed and new systems/devices/equipment/machinery into the production environment. The number of changed or new technology pieces will be significant and the implementation time table should be phased. Some will start now an others will run into the Year 2000.

B. Project Management General Tips

1. Appoint an overall Year 2000 Project Manager.
2. Involve all business units in this project.
3. Prioritize through risk assessment.
4. Executive management should receive regular status reports on progress.
5. Contingency plans should be developed for all systems/equipment/devices that may not become compliant before failure.
6. Don't ignore this problem! You cannot say that you don't have any Year 2000 problems until you check.
7. Use the Internet as resource.
8. Involve your legal staff.

Year 2000 (Y2K) Checklist for Local Governments

A. Things to Check

Attachment L provides an overall categorization of things to check.

1. Computer Hardware (and Operating Systems)

Various government entities are maintaining extensive databases of vendor statements by product on the Internet. Most of these sites allow you to search for a particular product to determine its compliance status. There are no readily available printed lists. The NYS Office for Technology maintains a section of its web page which provides quick and easy access to the various databases at:
http://wxvw.irm.state.nv.us/yr2000/topiclnk.htm#vendor

For the most up-to-date information, check the noted web site or contact your vendor directly. It is still important for each product to be tested, regardless of a vendor's statement.

2. Computer Application Systems

Systems developed in-house need to reviewed to determine the impact that Year 2000 will have on them. In-house programming staff can do this or consultants may need to be hired. You should check with the vendor regarding purchased systems and software. The databases referenced above in the Hardware section also contain compliance information for COTS (commercial off the shelf) software packages.

3. Embedded Chip Technology

This is the most difficult area to determine whether you have a problem or not since all devices/equipment/systems with embedded chips are not easily apparent. Attachment C provides examples of categories and types of devices/equipment/ systems to check. You must contact your vendor regarding these. If the embedded chip will fail, you need to determine if the vendor or manufacturer can replace just the chip or the whole device/equipment/system needs to be replaced. Every device, piece of equipment and system must be checked because different chips may be installed in the same make and model of a piece of equipment and one may be compliant and the next may not.

B. Things to do

1. Letters to Vendors

You may want to start with calling the vendors who supply your hardware, software and devices/equipment/systems with embedded chips to get a general idea of the extent of your problem and gauge the responsiveness of your vendors. Eventually, you should get all Year 2000 warranties in writing. Attachment D provides some examples of letters to vendors.

2. Testing

Testing will consume more time than any other part of this project. Testing may be needed to determine if there is a Year 2000 problem. The most critical testing is after changes have been made or chips replaced. Testing of critical systems and applications should include a variety of test including: unit test, integration test, regression test. data aging, advancing the system date, and testing with data exchange partners. A list of important dates to test is included in Attachment M. A test plan should he developed and for more complex systems may take significant time to prepare, therefore, test planning (developing your test strategy) should begin while remediation is still occurring. Don't wait until your systems are ready to test. It is recommended that all of 1999 be devoted to testing, therefore remediation should be completed by the end of 1998.

3. Making Timely Replacement Decisions

The decision to replace versus fix a system may be affected by a number of variables:

- Budget cycle: Is there time left to budget for this? If not, are they any other funds available?
- Procurement Policies/Procedures: How much time is needed to procure a new system? Do you have to advertise and release an RFP? Can you buy off state contract? Is there enough time before the current system will fail?
- System requirements: If a purchased application or software product needs to be upgraded or replaced, does the new version require increased computer capacity (more memory, more disk space, a different operating system like Window 95)? If so, will you need to buy a new computer to run the new application?

- What release version of the software are running now? Does the vendor allow you to jump from your release version to the Year 2000 compliant version directly, or do you have to invest in the versions in-between? Do you have to actually install each release version?

4. Using Warranty Language

For all new purchases of computers, software and equipment/devices/ systems with embedded chips. be sure to include Year 2000 warranty language. Warranty language developed for New York State purchases and used for centralized state contracts negotiated by the State Office of General Services can be found in Attachment E and is recommended for use.

Current contracts that extend beyond January 1, 2000, may need to be revised to include warranty language.

Any type of design or purchase specifications should include Year 2000 compliant language, if embedded chip technology is involved. Specifications for building equipment and services involving devices with embedded chips should include this language.

5. Data Exchanges

If your systems receive or send electronic data involving dates to other entities, you will need to communicate and coordinate with these data exchange partners. Even if your systems become compliant on time, if your data exchange partners systems fail and you receive bad data or no data at all, how will it affect your business process?

Attachment F contains a list of all NYS agencies and their Year 2000 Project Managers. If you exchange date data with a state system and have not heard from the responsible agency, contact their Year 2000 Project Manager to determine the status.

Attachment J contains a list of the NYS' Top Priority Systems. These systems are being monitored on a quarterly basis and MUST BE DONE.

Attachment K is a statement from the NYS Office of Real Property Services regarding Year 2000 compliance of RPS.

You will also need to contact any other data exchange partners which you may have. Communication and coordinated test planning are the keys to success.

6. Legal Liability

you have systems fail, how will affect the health, welfare, safety, convenience and services that you provide? What is your legal liability if these systems fail? By involving your legal staff now, you can be better prepared to litigate potential cases.

It is also possible that because of a vendor's product failure, that your organization would pursue legal action also. In that case, the communication with and letters you send to vendors now would be needed at that time.

Attachment G contains some articles regarding potential legal liability.

7. Dealing with PCs

NYS has a PC/LAN workgroup consisting of representation from a number of the state agencies. This workgroup has developed a number of checklists to assist in checking for Year 2000 problems both on the PC itself and for some standard PC software packages. They have also documented test results. Attachment H contains seven checklist/test results which this workgroup has developed. They are:

How to Test the PC
Lotus *1-2-3* Software Checklist
Alpha4 Software Checklist
FoxPro Software Checklist
QuattroPro Software Checklist
FoxPro 2.5 for DOS Test Results
Novell 3.51 Test Results

. Resources

A. NYS Office for Technology
State Capitol
Albany, NY 12224
(518) 473-5622

1. YEAR 2000 PROJECT & STEERING COMMITTEE

The NYS Office for Technology (OFT) realized the need to facilitate and coordinate New York States effort in resolving this problem and initiated a project (in April 1996) to ensure that a collaborative approach is used within New York State government to reduce, as much as possible. any duplicative work efforts across agencies, to provide a mechanism to identify common statewide Year 2000 issues and to develop generalized solutions. One of the first steps taken was to establish Policy #96-2A which advises agencies to include language in all request for proposals and contracts to ensure new services and products are Year 2000 compliant. As a next step, the OFT established a Steering Committee to act as the OFT's coordinating group. While each agency is accountable for solving the problem within their own agency, the Steering Committee continues to promote awareness in each New York State agency to ensure the problem is getting the required attention.

The steering committee meets regularly to discuss issues, set direction and determine the status of the efforts being undertaken by New York State. The steering committee has brought agencies together for joint problem-solving and information sharing; developed the risk assessment form and template methodology to assist agencies in their project planning and implementation; provided a focus on each major technical platform in New York State by forming workgroups. one for each technical platform; IBM, Unisys, MidRange and PC/LAN. established a Web Page as a mechanism for disseminating and collecting information; and made consulting services available through the existing mini-bid process (in a joint effort working with the Office of General Services).

2. YEAR 2000 WEB PAGE RESOURCE

The NYS Office for Technology maintains a web page relating to Year 2000. It can be found at:

www.irm.state.ny.us/yr2000/yr2000.htm

Much of the information found in this guide is also available on the web page. Additional information and excellent resource links are also available on the site.

3. YEAR 2000 PROJECT COORDINATOR

'he NYS Office for Technology has a full-time dedicated Year 2000 Project Coordinator. If you have specific questions. please contact the coordinator at our office (5 18-473-5622).

4. NYS YEAR 2000 LOCAL GOVERNMENT WORKGROUP

The NYS Office for Technology has a Local Government Workgroup. It is this workgroup that compiled this guide for NYS local governments. In addition to this guide. a the Year 2000 Project Coordinator or other local government workgroup members will be making Year 2000 presentations at local government conferences throughout 1998 (if you know a conference or meeting at which a Year 2000 presentation would be useful, please contact the Office for Technology at 518-473-5622).

This local government workgroup was formed in May 1997 and consists of representatives from:

Putnam County Legislature. Yorktown Town Government. Ulster County Legislature. Public Welfare Association, NYS Government Finance Officers Association. New York Conference of Mayors. NYS Association of Counties. NYS Association of Town Clerks, Local Government IT Directors Association. Office of the State Comptroller (Division of Municipal Affairs). Office of the State Comptroller (Retirement System), Association of Towns. Suffolk County, City of Rye. City of Rochester. NYS Education Department. NYS Office of Real Property Services, and the Office for Technology

WORKGROUP GOALS ARE:

Awareness Solutions Coordination, cooperation. communication

B. NYS YEAR 2000 INTERNET E-MAIL LISTSERV

(a forum to discuss Year 2000 issues)

A listserv for all state agency, local government, and school district staff working on the Year 2000 problem is being hosted by the NYS Education Department. It is available to post questions to and discuss common issues regarding the Year 2000 problems and solutions. It is set up as a confidential discussion group (this means it is not advertised on the Internet, however, it is not password protected). It is a non-moderated discussion group, therefore, all messages sent to it will be posted without first being screened or monitored. In order to participate in the listserv you need Internet e-mail. To subscribe to the listserv, send an e-mail message to:

Listserv@unix10.nysed.gov

In the body of message, type: SUBSCRIBE SED-Y2K <your name> <Agency Name>

NOTE: insert your name for <your name> and insert your agency, school district, or municipality for <Agency Name>

C. Centralized State Contracts (NYS Office of General Services)

1. Year 2000 Consulting Services

The NYS Office of General Services has "back drop" Consulting contracts administered by OGS Services and Technology (S&T) is to provide general purpose personnel support services related to the computer systems of OGS Customers which includes State Agencies, local governments and others authorized by law. Once vendors have established contracts, they are given the opportunity to bid on projects requested by the Customers. This is known as the "mini-bid process

Services and Technology will be augmenting the number of these "backdrop" contracts on a regular basis through the process of Continuous Recruitment (CR). CR contracting opportunities are designed to serve several purposes, namely: (a) enable the State to take advantage of new vendors who emerge in the fluid, high technology marketplace and (b) add additional categories of services in response to emerging technologies. A vendor may pre-qualify to provide all or some of the broad Personal Services Categories (PSC) or Modules as described below. S&T will revise the list as needed to accurately reflect the available services and the current list of contracted vendors.

Vendors are "pre-qualified" for services which they provide. Categories of service relating to Year 2000 include: Year 2000 Consulting Services and Data Center

Conversion (Code Factory). For more information and the list of vendors in these categories, contact:

Sylvia Casper Contract Administration
Office of General Services
Services and Technology
23rd Floor Coming 2nd Tower
Albany. New York 12242
Telephone 518-473-8079

The Office of General Services has developed Year 2000 Contract templates for use in developing project specifications for use in the mini-bid process. See Attachment I for the project templates that are available. Contact Sylvia Casper for copies of the actual templates.

2. Year 2000 Tool Products

The NYS Office of General Services also has state contracts with vendors who provide tools for assessment and analysis. remediation. testing, and project control needed during

Year 2000 compliance work. For information and the list of state contract vendors with Year 2000 tools, contact:

Debra Santiago Contract Administration
Office of General Services
Services and Technology
23rd Floor Coming 2nd Tower
Albany, New York 12242
Telephone 5 18-486-6868

APPENDIX A

1. Business Process Name
   Short Business function name
   Examples: (DTF) PIT Processing
   (DSS) PA Checks
2. Brief Description
   Brief description of Business function
   Examples: (DTF) Process all Personal Income Tax returns and refunds.
   (OGS) Provide direct cash grant to eligible clients.
3. Type
   Type of business function, such as Revenue. Fiscal. Service
4. Impact
   Description of impact on Agency. other agencies. Public or other institutions. Also indicate consequences of failure (High, Medium or Low)
   Example:
   (DTF) Taxpayers will not receive refund checks timely and additional interest accruals paid by State. (High)
   (DSS) Produce an immediate inability for individual or family support for those persons dependent on assistance. (High)
5. Expect to be Compliant
   Yes or No
6. Date compliancy is Required
   May not be 1/1/2000 if future dates are used
7. Scope
   Indicate the type of entities which interact with each other by this business function:
   Self-contained within agency. State agencies. Local governments, Federal government agencies, International organizations, Private sector, or Other (specify)
8. Sends Information To
   List the organization names which receive data from this business function
   Examples: (DTF) OSC
   DSS
   Equalization & Assessment
   (DSS) Local DSS
9. Receives Information From
   List organization names which receive data from this business function
   Examples: (DTF) Fleet Bank
   DSS
   Equalization & Assessment
   (DSS) Local DSS
   Fed
10. Year 2000 Magnitude Rating
    Categorize (1,2, 3) the level of effort required for year 2000 compliancy. Use as a scale the following:
    1 - 0-5 staff years
    2 - 6-10 staff years
    3 - 11+ staff years

APPENDIX B

Statement of Hearing Testimony

Subcommittee on Technology
and
Subcommittee on Government Management, Information and Technology

Topic: Year 2000 Risks: What Are the Consequences of Technology Failure?

March 20, 1997

1:00 p.m.; Room 2318; Rayburn Building

Presented by:
Ann K. Coffou
Managing Director
Giga Year 2000 Relevance Service

617-792-2568 (phone)
617-871-8570 (fax)
Email: acoffou@gigaweb.com

URL: www.gigaweb.com

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Introduction

Most attention on addressing the problems and challenges surrounding the Year 2000 has been focused on Information Technology (IT) systems—those automated systems that are under the control of the IT department.

Another dimension to the Year 2000 challenge exists that involves automated devices that use embedded microchips and program code to perform timing or date-related functions that invariably transforms the product into a labor-saving, quality-of-life enhancing tool. These chips have become prevalent in virtually everyone's day-to-day life. As a result, there is a great potential for the average consumer to find himself or herself facing problems and mishaps that have been caused by these same products due to their inability to deal with the change in century.

Although most of these problems will not be of a catastrophic nature to the direct consumer, the overall effect on the economy—worldwide——could be monumental. The potential for problems that could lead to legal litigation are abundant.

The objective of this testimony is to raise the level of awareness to the potential problems and the associated liability ramifications—legal, insurance, and financial—from not addressing these embedded systems. Examples of products with embedded microchips from the business and government marketplace and from the consumer marketplace that could potentially cause problems are given within this testimony along with examples of potential follow-on liability issues for both market sectors.

This information was compiled by Giga Information Group, a third-generation information provider of IT advisory services that address a new level of value and relevance for IT decision makers. Giga offers users, vendors, and investors in IT a suite of integrated services that includes a broad range of IT-related content as well as a knowledge network of independent IT professionals. Utilizing innovative, Internet-based technology, Giga provides a state-of-the-art approach to finding and using information within a business model that promotes customization, usability, strong value, and high service quality to its members. Founded by Gideon Gartner in *1995*, Giga Information Group strives to be the best and most cost-effective knowledge provider in the information technology industry. Giga Information Group is headquartered in Cambridge, Massachusetts with offices in the U.K., Germany, France, Italy, Japan, Korea, and Australia.

Magnitude of the Situation

Globally, society has benefited tremendously from automation. The efficiency of automated devices has been increased through monitoring them with other automated devices. Automated devices now control processes ranging from the mundane to the most complicated. Some processes are so complex that even the most intelligent and highly trained individual could not control them manually. A good example of this is the launching of the space shuttle. It would not be possible to safely and successfully launch the shuttle using people alone to control all the launch processes. Automation and automated devices are required.

Automated devices do not malfunction unless they have a physical defect or the software, microcode, firmware, or program code driving the device malfunctions. Typically, that device encounters a situation that its software was never designed to recognize or act upon.

A situation that some automated devices may not have been designed to recognize is the change of the century. Because most systems view the year using the last two digits only, some automated devices will identify the "00" as being the year 1900, thus corrupting subsequent calculations using that date. The potential result of these erroneous calculations vary in magnitude. Some may cause nothing more than frustration, while others may wreak havoc. The only way to determine what the potential result will be-is to test the device.

This test can be accomplished easily for many automated devices, while testing of devices that contain multiple embedded systems—oftentimes acquired from multiple vendors—becomes more of a challenge. A typical fax machine contains at least one embedded system to control date and time stamping of outbound and inbound faxes. With hundreds of brands and models of fax machines on the market, the task of testing each brand and model poses a challenge.

Given the number of automated devices used in all brands and models of airplanes, cars, and ships—all of which need to be tested—and the challenge becomes a daunting and expensive task.

However, ignoring the potential for malfunctions in these automated devices could result in exponentially larger costs associated with damage control and liabilities for manufacturers of these devices.

Business and Government Marketplace

Automated devices that are prevalent in the business and government marketplace can be segmented into two categories: Critical and Non-critical Systems. Critical systems are defined as those that are necessary for a business/government to continue to function. Non-critical systems are those that are prevalent but are not absolutely necessary for continued operation of the entity.

A representative sample of potential problems with critical and non-critical systems follows. This is not intended to be an exhaustive or conclusive list of products with potential problems.

Critical Systems

Manufacturing Process Control Systems

Most manufacturing plants are highly automated. A small manufacturer of industrial liquid solutions found their production line completely stopped on January 1. 1997. It was discovered that their process control systems were not designed to account for a leap year (1996) and subsequently shut down when the changed from 1996 to 1997. Before company personnel could remedy the situation, the liquid solutions that were in the process pipelines hardened and could not be removed. The company was forced to replace the process pipelines at a cost of $1 million. They were unable to manufacture products for several days; thereby, causing late deliveries to customers. In addition to the cost to repair the pipelines, the company believes they lost three new clients because their shipments were delayed.

The legal ramifications of this example revolve around the software that ran the production manufacturing line. This software was purchased from a vendor who warranted that it would operate correctly under "normal" conditions. The battle is now on as to whether a leap year is an implicitly normal condition that should have been addressed within the software.

Software vendors have errors and omissions insurance to cover situations like this. Taken in isolation, the insurance claims that would be filed by the software vendor should it be found liable are not particularly newsworthy. However, what happens when hundreds or thousands of software vendors file claims to handle the errors created from their products?

Elevators

Most elevators have embedded systems that monitor the amount of time between maintenance checks. If these automated devices calculate that the allowable time between maintenance checks has been exceeded, most elevators will go to the bottom floor in the elevator shaft, take themselves out of service, and remain at the bottom of the shaft until maintenance is performed and the clock is reset.

What if this embedded system was not designed to identify the change from 1999 to 2000 and it interprets the "00" as 1900 making the time between maintenance checks exceed the limit and sends the elevator to the bottom floor making it inoperable? This could be annoying in one building and potentially life threatening in another. Using the stairs isn't always a viable alternative.

How will handicapped workers get to their work floors? How does this affect enforcement of the Americans with Disabilities Act? What happens when a worker suffers a heart attack while climbing the

stairs to their eighth floor office? Who is liable for the subsequent medical expenses, insurance claims. and disability payments? Or in the worst case, will the company be held responsible if the heart attack results in the employee's death? Multiply these possibilities by the number of high-rise buildings in New York City alone and the potential results are staggering.

Telephone Systems (including PBX. voicemail, and switching)

Some telephone systems may not be able to recognize the century change resulting in improper billing for calls. incorrectly time stamped voicemail messages. and incorrectly routed calls.

If the phone system that malfunctions is the 911 emergency system for a municipality, the very lives of the city's population could be at risk. There could be a multitude of legal litigation due to the damages that ensued from lack of response from emergency personnel.

Medical Equipment

In a very simplified explanation. every time a heart pacemaker detects an irregular heartbeat it sends a shock to the system and then records the time the event occurred. This information is regularly downloaded to a computer system so it can be analyzed by medical personnel. Whenever the information is downloaded, the pacemaker resets itself The downloaded information is used by cardiologists to detect patterns and irregularities in the patient's heart rhythms. If the software in the receiving system starts recording faulty times for the shock deliveries, the cardiologist could misinterpret the results and administer improper medical care.

The U.S. Veteran's Administration funded a project to interview the top five pacemaker manufacturers to see if they were aware of this potential problem. One company was aware of the problem and said they would have it corrected by the end of 1997. Two companies said that the problem would be fixed before the Year 2000. one before 1998. Finally, one company flatly refused to acknowledge the problem and when pushed declined to discuss the topic any further.

A physician in a heart clinic in Spartanburg. South Carolina, related that a new shipment of heart defribulators the clinic received recently were recalled by the manufacturer. The defribulators use an embedded device that calculates the time since last maintenance similar to elevators. Like the elevator, if the time since the last maintenance check surpasses a certain time frame, the defribulator will not operate—thereby reducing the possibility of malfunctioning on a patient. The manufacturer voluntarily recalled their products when they discovered they were not designed to handle the change in century.

The legal ramifications for these and other medical system malfunctions have the ability to become enormous, precedent-setting lawsuits, not to mention the backlash effect on physician malpractice insurance.

Stock Markets

On January 3. 1997. trading on the Brussels Stock Exchange was halted for three hours because the trading system was unable to function after the date changed from 1996 to 1997. Orders that were placed on December 30, 1996 (the last trading day in 1996) were recognized as December 1997 orders. This prevented investors and brokerages from changing their orders to reflect Wall Street's plunge on December 31. 1996, when the Dow Jones industrial average lost 101.10 points, leaving it up 26 percent for the year after a rise of *33.5* percent in 1995.

Liability issues are still being sorted out over this failure. The opportunity cost to many companies from the closing of the exchange is the basis for several legal actions.

Military Messaging Systems

Three employees of Prudential Securities wrote about the potential for disaster should military message warning systems malfunction. Their scenario:

Dateline. December 31, 1999

You are piloting an F-22 above the Pacific Rim. h is one second to midnight and the foreign craft tracking you is so close you re obliged to send a warning signal as a New Year 's greeting. The other pilot has two seconds to respond Your on-board strategic systems are now calculating the time difference between when you sent your message and when a reply will reach you.

You wait. The interval seems interminable. To your equipment, though, it is extreme/v short: 1.5 seconds to be exact! Because you sent your signal in the year "99", and received the reply in the year "00", the difference is negative, and your weapons system is arming!

Who takes the responsibility for the potential loss of life associated with this scenario? The liability issues could potentially span the globe.

Radioactive Materials Waste Trend Analysis

Radioactive material waste tanks are monitored and some are controlled by automated sensors and other devices. They all work on date-sensitive trend analysis. What will happen to trend analysis when there is perceived to be a 99-year span between two measurements? Who is responsible?

Atomic/Nuclear Sites (example from the U.K.)

Software on nuclear sites is subject to stringent quality controls. However, experienced software industry professionals already grappling with the Year 2000 have expressed doubts about how reliable these design-based reassurances are. Hard and fast test data to back up these assurances has not been provided.

The first area of concern is the radiation exposure system.

The program for the control of radiation exposure is called ALARA (As Low As Reasonably Achievable). Nuclear facility personnel wear dosimetry devices that measure the amount of whole body exposure that the employee receives while in the plant. These dosimetry devices are analyzed on a regular basis and the data (exposure amounts) are maintained on a computer system that control personnel access. To meet Nuclear Regulatory Commission (NRC) and The Institute of Nuclear Power Operations (INPO) regulations the exposure amounts are monitored on a daily, weekly, monthly, quarterly, and yearly basis.

Second, a "Training Records Tracking System" computer controls access and actual work assignments to ensure that the Reactor Operators, Second Assistant/Auxiliary Operators, Maintenance Technicians, Radiation Protection Personnel, and Plant Management employees have completed the required initial and requalification training for their work assignments.

The third area of concern related to the Year 2000 is the computer system that tracks various plant commitments for hardware and operation procedure improvements.

When considering the impact of the Year 2000, the following questions arise.

1. Will all plant personnel risk exceeding radiation exposure limits because the ALARA computer system is inoperative?
I. employees be allowed access to the plant and work assignments because the Training Tracking computer system is inoperable?
1. Will plant personnel be at risk because of expired respiratory protection qualifications?
1. How will the Department of Energy (DOE) control, track and inventory uranium 235/238, plutonium, tritium, or americium with Year 2000 problems?

1. Will plant commitments be delayed or not completed on time because the commitment tracking

computer system is inoperative?

1. Will unqualified operations personnel be operating the reactor in the control room without the required initial classroom training, on-the-job training, qualification card sign off or requalification training?
1. Will personnel be wearing respirators with expired qualifications (e.g. annual physical examination, medical screening, annual radiation protection requalification training, mask fit process)?
1. there be any clearance requirements for the computer professionals to correct the Year 2000 problems at DOE facilities? Is there enough time for the computer professionals to obtain the DOE (Top Secret "Q") security clearance and still have the time to fix the computer systems prior to January 1. 2000?
1. maintenance schedules on plant hardware be carried out properly if computer based records fail?

Other Critical Systems

There are many other critical business/government systems. A partial list of those that have been identified includes:

- Security systems for badge readers, surveillance systems, parking lot gates, and vaults.
- Time-dependent controls such as parking lot lighting, and programmable thermostats controlling HVAC. Some devices work only during certain times of the day and/or only on certain days of the week.
- Power-management functions for HVAC usage and control, UPS (uninterruptable power supply) backups and related components, off-hour power availability for lighting the building.
- Power plant process controls
- Environmental safety systems for detecting changes in humidity, temperature, C02 levels. Extreme changes are monitored. Some changes are based on duration or spike measurements.

Non-critical Systems

Fax Machines

Some fax machines may malfunction and put incorrect dates on incoming and/or outgoing faxes. Still others, when tested, ceased to work altogether.

Legal implications could be great if incorrect dates are recorded on faxes that are needed to show actual dates and times as evidence in a legal case. The incorrect dates could negate efforts at due diligence.

If the fax machine ceases to work, warranty issues could come into play, resulting in massive repair and/or replacement costs for manufacturers.

Electronic Timeclocks

Labor suits could result from malfunctioning timeclocks that did not record employee time correctly resulting in erroneous wage payments.

Landscaping Systems

If unable to accurately determine the date, sprinkler systems and/or fountains could potentially turn on January 1, 2000—the middle of winter in many locales. The potential for damage caused by the water to property could be eclipsed by the personal injury damages claimed by people who fell on the ice created by the influx of water.

Vending Machines

Some vending machines have direct interfaces with the vendor to indicate low-on-stock and stale-dated items. If the change of century is not recognized, these systems could conceivably continue to order more items that it immediat identifies as stale. The cycle could repeat several times before the problem is identified. Who is responsible for payi for the overstock? These types of date failures have already occurred.

Consumer Marketplace

Automated devices will affect the average consumer as well. Below are examples of common, everyday consumer products that could have problems handling the century date change.

Thermostats

Several companies manufacture varieties of programmable thermostats. If not designed to recognize the change in century, it is possible that consumers could awake on January 1, 2000 to a very cold house. In a test of three differer examples of programmable thermostats, two of the three stopped working when the year was changed to 2000. One recorded the date as 1900. Of the two that stopped working, one could not be restarted.

If pipes freeze and burst, the resulting damage both inside and outside could be immense. The volume of insurance claims alone could exceed those associated with Hurricane Andrew. The potential for follow-on litigation against thermostat manufacturers, building contractors, and heating contractors for building, selling and installing "faulty" thermostats could also reach large proportions.

To compound the problem, what if the telephone systems are also malfunctioning so calls to the local heating contractor cannot be completed. The results continue to snowball. How many homeowner insurance companies will able to survive the avalanche of claims?

Microwave Ovens

A brand new microwave oven in a company cafeteria was reprogrammed to December 31, 1999 and allowed to let t date rollover to January 1, 2000. As a result, the microwave ceased operating. The display went blank and could not brought back to life. The microwave was taken into the local service shop and left for repairs without telling the serv technician how the problem occurred. The service company replaced the computer circuit board in the microwave a returned it to the company.

If replacement of the circuit board to handle the century date change is required, will manufacturers recall all model that will not handle Year 2000 properly? Will they even know which models are Year 2000 compliant?

Many consumers purchase extended warranties for their appliances. Will this be covered under the warranty? Or is t warranty actually misleading? Is the manufacturer selling a product with limited function? Should the FTC be involved? Is this false marketing?

The same questions apply for digital watches, cameras with date features, televisions, VCRs, and many more appliances.

Who Will Take Responsibility?

The intent of this testimony is to raise the level of awareness to the potential problems with embedded systems and the potential consequences from those problems. The issue of embedded systems in airplanes, automobiles, ships, and weapon systems was purposely not discussed in detail. These systems represent a huge risk to the life and well-being of the global population. However, the manufacturers of these products. on the whole, are taking the Year 2000 situation very seriously and have programs underway to address their issues. It is the manufacturers of the lesser-publicized products that employ embedded systems that must be given a wake up call regarding the seriousness of Year 2000 issues. Anything with an electrical component should be suspect. The rule should be guilty until proven innocent.

The amount of legal litigation associated with Year 2000 has been estimated by Giga Information Group to be $2 to $3 for every dollar spent fixing the problems. With the estimated size of the market for Year 2000 ranging from $200 billion to $600 billion, the associated legal costs could easily near or exceed SI trillion. It is improbable to believe that these immense costs will not adversely affect the economy on a global scale. Many companies will simply not be able to continue operating when faced with these legal costs.

Be aware that no legal precedents have been set as yet. There is still time for manufacturers to step forward and take responsibility for fixing their products.

Pressure should be put on manufacturers to voluntarily take action to identify their potential problem areas and fix them. If this doesn't happen by the end of 1997, mandatory regulations imposed by governmental and regulatory bodies should be imposed. Company executives and board members must be held responsible if the company fails to protect consumers from hazards caused by their faulty products.

The true danger is in the domino effect of business failures on the global economy. Competitive advantage will definitely be gained by companies ensuring that their products are Year 2000 compliant. This message must be made loud and clear to businesses worldwide.

A copy of a Giga Planning Assumption titled: Year 2000 Issues: Executive-Level Accountability is attached.

APPENDIX C

Embedded Chip/System Inventory Examples

Categories/Systems	Organization has?	Mission Critical?
Building/Facilities:		
Lighting systems (incl.. Backup lighting)		
Backup generators		
Heating, air conditioning & ventilating systems		
Climate monitoring systems (incl. Thermostats)		
Elevators, escalators, and lifts		
Building management systems		
Lighting systems		
Refrigeration systems		
Sprinkler/fountain systems		
Switching systems		
Water and sewage systems		
Water pumps		
Vending machines		
Fire control systems (incl. alarms, sprinkler systems)		
Medical Equipment:		
Monitoring devices (incl. cardiac. etc.)		
Automatic medication dispensing equipment		
Pacemakers		
X-ray equipment		
Electrocardigraph		
eral Pump		
Electroencephalograph		
MRI Scanner		
Tympanometer		
Pulse Oximeter		
Defribillator		
Digital Thermometer. Scale. etc.		
Security:		
Security systems (incl. Burglar alarms)		
Safes and vaults		
Door locks		
Exit Alarms		
Access systems		
Transportation/Parking:		
Vehicle preventative maintenance chips		
Gate systems		
Variable message signs		
Traffic lights		
Traffic monitoring devices		
Airplanes. trains, cars, boats		
Air traffic control systems		

Categories/Systems	Organization has?	Mission Critical?
·nalline Systems		
..adar Systems		
Parking Systems and other meters		
Ticketing Svstems,machines		
Administration:		
Fax machines		
Communications systems (PBX. Voicemail. switching, answering machines. mobile telephones. satellites)		
N-1atlroom equipment (Incl. Postage meters)		
VCRs		
Timeclocks		
Copiers Still and video Cameras		
Automated teller systems		
Credit card systems		
Manufacturing/ Process Control:		
Energy control systems Power end systems		
Power plants/stations Switching systems CAD Systems Robots		
Water & sewage Systems		
Other:		

Things to Consider:

1. Everything with a date/time digital readout
2. Everything that respond differently on the weekends vs. Weekdays

Y2K

Y2K Safe Questions

Many people pursuing the solutions to the Government's Year 2000 date problems desire compliance assurances from the products used in those software systems. This assurance is generally taking the form of a legalistic statement of compliance. The trouble with this approach is two-fold: (1) what is meant by compliance varies and/or is so all encompassing that no vendor can agree to the definition, and (2) winning in the courts will not help us if and when the systems fail.

An alternative way of understanding what problems are within the components of these systems is available. The question of whether a product is "Y2K" safe or not is broken into four dimensions:

1. Does the product correctly handle leap years (all 3 rules)?
   - o If the year is divisible by 4 it is a leap year, UNLESS
   - o The year is also divisible by 100, then it's not a leap year, UNLESS
   - o The year is also divisible by 400, then it is a leap year

2. How does the product store dates internally, and for what period of time? Is it with an offset from a base year? What is the increment of time counted (seconds, minutes, hours, days, weeks, months, ...)? How big is the offset (8-bit. 16-bit, 32-bit, 64-bit, ...)?

3. Does the product support 2- and 4-digit years for input and output? How are dates used internally? How many year digits are used for internal date values?

4. Does the product contain any logic that assigns/uses "special values" of date fields (99, 98, 00, 9/9/99. 1/1/1 1, 19, 20....)?

By examining behaviors of a product along these dimensions we can determine whether a product is "safe" to use for any particular situation and then take and/or request corrections to specific behaviors, rather than a blanket statement of "make it compliant" or "make it work in all situations".

The following questionnaire is a sample set of questions we are using to discuss date issues with Commercial Off-the-Shelf (COTS) and Government Off-the-Shelf (GOTS) suppliers. So far our discussions have been well received and the information useful.

The following questions should be used to gain an understanding of the COTS and/or GOTS components of systems.

For the Product:

1. Are there any date fields used by the product?
   - o Are those date fields 2 or 4 digits?
   - o Does it accept any dates directly from the user?
   - o How does the user specify the year?
2. How does the product calculate leap years?

o Are all three rules used?

- If the year is divisible by 4, it is a leap year, UNLESS
- The year is also divisible by 100, then it's not a leap year, UNLESS
- The year is also divisible by 400, then it is a leap year

3. Are dates stored internally as a specific "date" data type?
   - o Is this done using a base year with an offset of the number of seconds!

minutes/hours/days/weeks since that base date?

- o What size is the data type that is used to store the offset?
  - Is it an 8-bit. 16-bit. 32-bit. 64-bit. ..?
- o Is there a valid date range (including restrictions due to overflows)?

4. Are two-digit years allowed/used for input, internal processing, data storage, and/or output?

o If so, how are they manipulated/used for:

- Comparisons
  - Are any date validation checks performed?
  - How are non-continuous timelines handled?
  - What happens if current time <previous time? Does it ignore data?
- Calculations
  - How are periods greater than 100 years handled?
- Sorting
- File system/tape system tags

5. Are any special values for date fields used?
   - o 00
   - o 0/00/00
   - o 1/11/11
   - o 99
   - o 98
   - o 9/9/99
   - o 19
   - o 20

6. Does the product directly import or export date data to any other application and/or system?
   - o If so. can these applications and/or systems handle:
     - Leap year. 2 digit dates, and dates after 2000?

7. Does the product rely on the date for licensing?
8. When will solutions for any identified date-related problems be made available?
   - o In what version will the changes occur?
   - o Will this update be available at no charge?
   - o How will the update be distributed?
     - Will a maintenance contract be required?
     - Will it be supplied to registered users?
     - Will the users need to purchase an upgrade?
     - Will the users need to purchase a new copy of the product?

For further information directly related to Year 2000 issues, please contact Year2000@mitre.org

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The Hidden Challenges of Managing Vendors and Their Year 2000 Compliance

By Michael Cohn, President, MDY, Inc.

Abstract:

In 1996. many companies considered the "Vendor Management" portion of their Year 2000 (century date change) Project as a simple task involving the sending of Year 2000 compliance letters and the monitoring of vendor responses. It now is evident that there are many other steps involved in a comprehensive and continuous *Vendor Management Process* (VMP).

Objective and Benefits of Vendor Management

Most organizations use literally thousands of products from vendors (third party providers). As the Year 2000 approaches. the vendor products using or comprising computer hardware or software, microprocessors. or other similar technical or electronic components must be scrutinized to determine if these products are, or can easily become, Year 2000 compliant. Year 2000 vendor management is a task that is taking (or should have taken!) place at nearly every organization world-wide.

Unfortunately, some organizations have considered vendor management as "too simple" a process creating short vendor letters requesting information on Year 2000 compliance, mailing them to vendors, and awaiting their responses. There are many other factors which need to be considered, turning the "task" of vendor management into a continuous Vendor Management "Process" (VMP).

Complexities of the VMP

Several factors make the VMP complex. The first and most obvious factor is *scope* what products and vendors should be included? Certainly information systems products, such as hardware, vendor application software, operating systems, and access methods must be included.

But then there are PC hardware and software, layered ("utility") software, compilers, schedulers, tape library management systems, scanner/barcode and similar products. In addition, items such as telephone equipment and electronic office equipment should be included, as well as devices with "embedded" logic based on microprocessors, such as lab systems, process control/shop floor devices, and the other often referenced-devices in Year 2000 articles (elevators, HVAC. etc.) which are not the responsibility of most Information Systems departments.

The challenge of scope is not only in finding all these devices, but also in finding someone in your organization willing (and interested enough!) to ensure that these devices are determined to be compliant. *But the hidden challenges of vendor management go far beyond scope.* Everyone seems aware that a vendor inventory must take place. But the VMP must take on a more visible and complex role than simply a "point in time task".. something that only has to happen once at the beginning of a Year 2000 project. After this vendor product inventory is completed, there are five additional steps which must occur. These are the five basic, but sometimes overlooked steps to a comprehensive VMP, and the acronym to help remember them is "ALRIC".

A (Addresses)

Before or during the inventory of all in-house and vendor (third party) applications, most

organizations formally or informally appoint a Vendor Management "coordinator' (VMC), someone responsible for the Vendor Management Process. One of the early roles of the VMC is to ensure that, for each vendor product. accurate and up-to-date contact names and addresses are available. Remember, some of these products and vendors may have not even been thought about for years! To accomplish this, the VMC should contact each vendor by phone. inform them of the objectives of the organization's Vendor Management Process, and then document the correct contact person and address to whom all VMP correspondence should be sent.

L (Letters)

A vendor letter should be created by the VMC, then approved by the internal legal counsel or department. Certain states or countries may have laws or guidelines regarding contractual obligations, software licensing and warranties; it is very advisable to ensure legal has reviewed the "generic" vendor letter.

Also, the vendor letter should NOT simply state, "We use your products, tell us if they are compliant". A vendor letter should include, briefly, your organization's definition of compliance, a list of specific compliance questions, and a timeframe in which you expect a response. Some of the questions which are appropriate for the vendor letter (and there are many!) are: Can you include references or evidence of your compliance status? Does you product use any "timebombs' which would prevent us from "future-testing" it with dates after the millennium? What Year 2000 solution (field expansion, windowing) do you plan to deploy? Do you correctly recognize 02/29/2000?

Remember, you probably only have time to get out one set of vendor letters during your Year 2000 assessment phase... ti-v to get as much information as quickly as possible. Therefore make your vendor letters easy t read, easy to answer, and better yet, tell your vendors what products you have! If you include statements like, *"We believe we have the following models, versions or releases of your products (but please add items from this list if you know of other product information relevant to us)...* "then you increase your chances that the vendor will put your letter on the top of the list, rather in the pile with the 500 other vendor letters he has received that week!

R (Responses)

An important element of the VMP is determining how letters will be sent, and how responses will be handled. Must you keep "hardcopy" of each letter sent? Will you send your letters certified? Return receipt? How should these receipts be tracked? Where should the receipts and responses be stored? Should they be filed, scanned, and/or copied?

Again, speak with your legal advisor. In some states or countries, it may be important to store responses in a secure area. These responses might represent legal positions or extensions of original contracts, and therefore should be treated in a confidential manner. Litigation for Year 2000 may prove to be impractical if thousands of people are all seeking similar damages. But if a vendor insists, "That's not the response I sent; someone must have tampered with it," it would be prudent if your organization could demonstrate that vendor responses were not altered nor accessible to non-authorized personnel.

Lastly, the VMC should create a "digest" or spreadsheet which tracks all vendors, their products, when letters were sent and responses received, and a short comment about the nature of these responses. If your organization is coordinating the compliance of hundreds of vendors, this spreadsheet will be of tremendous benefit.

I (Interpretation)

While "A. L and R" are relatively straightforward, the remaining two steps are more

complex. Once responses are received and stored, who should read them? Who should determine if answers are complete or missing? Who should determine if another letter needs to be sent? Someone with a good understanding of Year 2000 issues, or perhaps a team of people. should review and interpret the letters. An advisable process is to have a single person read all letters (initial interpretation by committee can slow the process to a crawl) and "pull" all letters that have non-obvious or questionable responses. These can be reviewed by a team; the most extreme cases can being sent to Legal for review.

In addition, many vendors may respond by saying, "See our Web page for product information." Or they may send a 200 page book or detailed list. Who will actually do the work (originally intended for the vendor) to read these books or web pages and extract the appropriate information? The VMC should proactively set up procedures so that when responses are received, organizations are not awash in information!

C (Communication)

Finally, how is all this vendor data to be passed on to the hundreds of people at an organization who need the information? Can it be condensed? Should it be sent every week or month? With hundreds of vendors and thousands of products, how can this be handled? And how will people be informed when information changes?

Consider the large organization with thousands of vendor products. used by people all over the world. Getting condensed and concise vendor information in their hands is challenging enough. But imagine if a vendor sends an urgent letter, explaining that the product they "thought was compliant was doing to crash and burn on January 1, 1998. How would the VMC know who to contact? And what if letters like these started coming in every other week? The timing and medium used for VMP communication are critical, and should be planned as early as possible in the process.

Some Final VMP Recommendations

First and foremost: the VMP is a continuous process. Vendor information frequently changes. Vendors believe products to be compliant, only to later discover they are not. Vendors commit to future dates for compliance.., someone must ascertain whether these dates are met. Also, a process must exist for newly acquired products (and vendors) to enter the VMP! It is therefore advisable, perhaps every six months, to write to all vendors again with a letter stating, "You xv rote us on (x) date regarding Year 2000 compliance issues; we now ask you to inform us if any of this information has changed, and to describe the nature and reason for these changes.

Second, some organizations deploy an additional step early in the VMP, called "Special Handling". There may be vendors that should be considered "critical path"... 10-20 vendors whose relationships are key to an organization, such as a major software vendor. These vendors should be processed immediately, perhaps with face-to-face meetings. Another group of vendors can be singled out as "low credibility".., vendors who historically have missed deadlines, provided defective code, or have similar "bad track records".

Finally, consider including other entities besides vendors. Outsourcers, government organizations. banks, credit/payment processors... many provide software, interfaces, and relationships that are critical to an organization's business. A letter or communication, similar in nature to the VMP letter, needs to be sent to all external entities that can affect an organization, even those with which no electronic information is shared. If you depend on a small group of suppliers, customers, shippers, brokers, or agents when they're struggling with a Year 2000 outage, you will likely be struggling as well!

It is an overworked cliche, but the VMP is not "rocket science". Many people have made similar statements about the Year 2000 problem itself. But the VMP must deal with so

many vendors, so many dependencies, so many products; *so many entities outside of your control.* All of this must be handled in a time-compressed fashion, while every other organization worldwide is attempting to accomplish the same. Take the VMP head-on, put someone in charge, and get it implemented as quickly as possible. Having information is better than needing information, and successful organizations will be able to quickly make better decisions if they simply start... and start now.

Byline: Michael Cohn is the President of MDY, Inc., a Year 2000 consulting firm in Atlanta. He was formerly a Principal in IBM's Year 2000 practice in the Southeast, and is a veteran columnist for *Computerworld* He can be reached at mdyinc~aol.com.

OMRDD -Sample Letters to Vendors

; you know, the year 2000 is approaching rapidly and with it, the well documented concerns relating to the use of dates in computer systems and embedded processess. The Office of Mental Retardation and Developmental Disabilities (OMRDD) of the Sta of New York has started a project to prepare the Agency for the century change. We are currently researching the impact that the Year 2000 and beyond will have on ou embedded processes and process control systems.

As part of the effort, we are contacting vendors and manufacturers to ascertain th awareness of the problem, their strategies for resolving any exposure within their products, and their schedules for completing the work to make their equipment year 2000 compliant. Having this information will allow us to fully monitor the progres of this critical effort and ensure that the health and safety of and provision of services to developmentally disabled citizens of New York are not jeopardized by t turn of the century.

I'm sure you can appreciate our interest in this matter. Please respond to each of the following questions in writing:

Awareness:

Have you begun testing your products for the presence of micro-controllers or othe potential date-related problems (e.g. does "00" or any other combination of characters in a date field or component cause the system to fail or the process to abort)?
Has your (device name/description) been tested for year 2000

compliance?

What specific problems, if any, have been found?

What is the failure date?

Does this equipment handle the year 2000 as a leap year properly?

Compliance Strategy and Schedule:

Can the equipment be made year 2000 compliant?

If so, what is the specific strategy being taken to make it compliant?

When will a year 2000 compliant solution be available?

Will the solution be year 2000 compliance tested before distribution?

Will the solution interface with other components of the device and, if so, how wi the integrity of the interface be tested?

We request your response within the next thirty days. Please respond. to \name, address) Any questions should be addressed to (name, address, phone) Thank you for your cooperation on this important initiative.

4ANDLORD-
((LLADDRESS))
((LLADDRESS2A
((LLCITY)), CLLSTA TED, -LLZ1PD

Dear Landlord:

Re: Year 2000
Impact on Building Systems

The Office of General Services is currently investigating the possible impact of the Year 2000 (Y2k) date change on the building systems in each of our State-owned and operated offices. Electronic building systems which are dependent upon a time or date may shut down if they are not Y21(compliant. Examples of potentially affected building systems are as follows:

- *Backup lighting and generators.*
- *Fire control systems,*
- *Heating and ventilating systems. the thermostats*
- *Elevators, escalators, and lifts*
- *Security systems,*
- *Security cameras.*
- *Safes and vaults,*
- *Door locks.*

The Office of General Services is concerned as well about the Y2K impact on State agencies in privately owned leased facilities. Although managing and operating your building is clearly your responsibility as our landlord, we want to ensure that the State operation(s) in your facility are not unexpectedly shut down due to building system failure on January 1, 2000. We are therefore requesting that all owners of buildings leased in whole or in part to the State of New York provide us with written certification that you have had your building systems examined and that they will not be adversely affected by the year 2000 date change.

You may find helpful information on Y2K issues on the following web sites and publications:

http://wwww.nist.gov/y2k/	*National Institute of Standards & Technology*
http://www. year2000. com	*Year 2000 Information Center*
http.//www.iee.org.uk/2000risk/	*Institution of Electrical Engineers*

Please complete the attached Y2K Certificate(s) of Compliance for your building(s) and return to this office by December 1, 1997. Thank you for your cooperation.

Sincerely,

John J. Ble
Lease Management Officer
OGS *Bureau of Leases*

((FIRSTNAME1'> (LASTNAME I>
((TITLE
((AGYNAME)>
((ADDRESSL 1~
((ADDRES SL2~
((CITYCONTAC»
((ZIPCODECON»

RE: Year 2000 Impact on Building Systems

Dear NI. ((LASTNAMEI)L

The Office of General Services is currently investigating the possible impact of the Year 2000 (Y2K) date change on the building systems in each of our State-owned and privately owned leased facilities.

Attached for your information is a copy of a letter and a Y2K Certification form which we have sent to all of our landlords regarding this matter. We have asked them to complete and return the Certification form to us for our files.

Very truly yours.

John J. Ble
Lease Management Officer
Bureau of Leases
(518) 474-8271

Sample vendor letter

Date

Vendor Name
Vendor Address
City, State Zip

Dear __

As the next century approaches, our organization is reviewing our entire inventory of software and assessing the impact of the year 2000 on both our internally developed and externally provided systems. By the end of this year, we will have a plan developed to analyze and begin the implementation of any changes necessary to support correct processing of date fields after the turn of the century. As a vendor currently providing software to our organization, we are asking for your cooperation in our effort to address this issue.

We anticipate that our software vendors will assume responsibility for the provision of software that correctly processes date fields and related logic to handle the year 2000.. Additionally, we expect that all logic pertaining to dates will work within the context of your software to enable a user within our organization to easily identify or use the century portion of any date fields without any special processing. We do not expect the delivery of such upgrades to cause our organization to incur any additional charges beyond our normal maintenance fees related to your software.

We are requesting that you provide us with written confirmation within 45 days of receipt of this letter, indicating the following Information regarding the software supplied by your company to our organization:

- Please confirm whether the releases of your software currently installed at our organization will properly process/utilize dates beyond December 31, 1999.
- If the current release installed at our organization does not currently handle this situation then identify the version/release of your software that will properly process/utilize dates beyond December 31, 1999.
- If a new version/release will be required, please inform us of the estimated availability date and whether you expect additional software fees to be associated with this release. This availability date must be early enough to provide our organization sufficient time to test this software and make any necessary changes due to its impact on any internally developed processing. We currently require this availability date to be no later than June, 1998.

- In addition, we are requesting that you include a description of the date formats that will be supported as input and/or output from your product. Attached please find a list of all software version/releases from your company currently installed at our organization. If you have any questions regarding the information we are requesting, please do not hesitate to contact me at (phone number).

Sincerely,

Desktop Software Survey Letter Dear Sir:

The State of Washington, Department of Information Services (DIS) is researching the impact that the Year 2000 and beyond will have on the users of installed software products. Your software products have been identified as being used by Washington State agencies.

We know that some software products will function to a date past the year 2000 and that others will not. We also know that some software is not affected by a date stamp of any kind. For State of Washington purposes, year 2000 compatibility must include, but not be limited to date and century recognition before and after 1/1/2000, calculations to accommodate same century and multi-century formulas and date values, and date data interface values that reflect the century. In addition, leap year calculations must be accommodated and must not result in erroneous results or system failures.

Please provide us with a list of your products, by name and version, that are Year 2000 Compatible as defined in the previous paragraph. In addition, please provide the answers to the following questions for each of the software products:

1. Has the software been tested for Year 2000 compliance?

2. What is the ending date?

3. How does the date appear? i.e., yymmdd or ccyymmdd, etc.

We will assume that all of the software products not included in your Year 2000 compliant list, as above provided, are non-compliant. For non-compliant products that have been manufactured by your company, please answer the following questions:

1. Which of your software products are upgradeable?

2. What is the method for upgrading the product?

3. When will the upgrade be available?

4. What version and other identification indicate the upgrade?

5. What will the ending date be?

6. How will the ending date appear? i.e., yymmdd or ccyymmdd, etc.

7. Will the upgrade be Year 2000 compliance tested before distribution?

8. Do you have recommendations or other information that will assist us in further identification of affected products? i.e., Product names and versions.

We would appreciate a written response to this letter. DIS plans to incorporate your response in a planning document that will be published to state of Washington Information Technology Managers. Because the state of Washington operates on two-year budget cycles, there is for us some urgency in determining future expense associated with this issue.

Your response will be published on the World Wide Web at http://www.wa.gov/dis/2000/y2000.htm (Year 2000 Project Information Resource Center). Should your company have the information available on the web, we will point our Homepage to your Y2K statement.

Desktop Hardware Survey Letter

Dear Sir:

The State of Washington, Department of Information Services (DIS) is researching the impact that the Year 2000 and beyond will have on computer hardware products. Your hardware products have been identified as being used by Washington State agencies. Models include portables, desk-top, LAN /WAN Servers, and Mid-Range in every conceivable configuration.

We know that the BIOS in many models will not roll over to the year 2000 and that in some instances the CMOS itself must be replaced in order to effect the change. Please provide us with a list of all hardware products manufactured by your company that contains a BIOS and is Year 2000 compliant. For hardware that is Year 2000 compliant, please answer the following questions:

1. What is the end date?

2. How does the end date appear? i.e., yymmdd or ccyymmdd, etc.

3. Have your Year 2000 compliant models been tested for compliance?

For State of Washington purposes, year 2000 compatibility must include, but not be limited to, date and century recognition before and after 1/1/2000, and date data interface values that reflect the century. In addition, leap year calculations must be accommodated and must not result in erroneous results or system failures.

We will assume that any hardware product not listed on your Year 2000 compliant list, is non-compliant. For non-compliant products that have been manufactured by your company, please answer the following questions:

1. Can the non-compliant product be upgraded?

2. By which method can the product be upgraded software (Flash BIOS) or replacement of the

BIOS chip itself?

3. When will the upgrade be available?

4. Who will manufacture the software upgrade and by what name will it be sold?

5. How will the date visually appear after the upgrade? i.e., 2001/12/31 or 01/12/31, etc.

6. Is your product tested for Year 2000 date compliance?

7. Do you have recommendations or other information that will help us further identify affected products (serial numbers, BIOS versions, model numbers, etc.)?

We would appreciate a written response to this letter. DIS plans to incorporate your response in a planning document that will be published to state of Washington Information Technology Managers. Because the state of Washington operates on two-year budget cycles, there is for us some urgency in determining future expense associated with this issue.

Your response will be published on the World Wide Web at http://www.wa.gov/dis/2000/y2000.htm (Year 2000 Project Information Resource Center). Should your company have the information available on the web, we will point our Homepage to your Y2K statement.

APPENDIX E

NYS Year 2000 Contract Language Guidelines as of 11/1/97

In an effort to strengthen the position of the agencies in negotiating Year 2000 legal protections, the NYS Office for Technology and the NYS Office of General have undertaken efforts to review both centralized and individual agency procurement programs. As a result of this review, the following statewide framework has been put in place. Additionally, guidelines to agencies for procuring Year 2000 compliant products from existing state contracts is under development.

A single NYS Year 2000 Contract Warranty has been developed, against which statewide compliance can be consistently measured. This warranty provides a threshold level of protection for agencies, and is now the standard used by OGS for centralized contract procurements. The current version of this language. dated November 1, 1997 replaces the prior OGS template language previously made available. Future revisions will be posted here allowing access by agencies and departments. as well as visibility to the vendor community.

- Future centralized contracts will incorporate the Year 2000 statewide warranty standard;
- In addition to inclusion of the warranty standard itself in all procurements. Vendors will be required to provide to agencies at the time of acquisition a statement of compliance with the statewide warranty for each Product or System furnished.
- Agencies are strongly urged to couple the warranty disclosure at the time of product quote with a demand that the Vendor simultaneously disclose their proposed Year 2000 solution by Product or Product Line (i.e. four digit year. windowing pivot point, etc.). This allows the agency to determine interoperability with existing systems and to make a determination on the desirability of the solution in view of available commercial alternatives.

APPLICABILITY OF NYS YEAR 2000 WARRANTY

This warranty language will be the minimum standard used by OGS in competitive or negotiated procurements of software, equipment, enhancements or technology initiated after November 1, 1997. Inclusion of this language in centralized, back-drop contracts protects agencies without the need to include similar protections at the mini-bid or point of acquisition.

For individual agency acquisitions made outside the scope of a post-November 1st centralized contract, agencies should include the language as part of the Request for Proposals or other acquisition document in consultation with agency legal counsel.

For acquisitions made under a pre-November 1st centralized agreement, agencies may consult the back-drop contract or OGS Services & Technology Group to determine the level of Year 2000 warranty protection prior to issuing the Purchase Order.

Additionally, guidelines will be issued by OFT shortly to insure consistent application of these Year 2000 standards across state procurements. These guidelines will address use and negotiation of the standard warranty language, required vendor disclosures at time of product quote, and required compliance documentation to substantiate compliance with the Directive.

NYS YEAR 2000 WARRANTY PRINCIPAL ELEMENTS

This warranty language offers several significant Year 2000 protections:

- Vendor is required to make a Year 2000 statement of compliance or non-compliance with the warranty at the time of product bid or quote. This provides agencies with the most current update from the vendor on the Year 2000 status of products or product lines at the time of consideration but before an acquisition is final.
- Vendor is required to obtain a statement of compliance or non-compliance with a third party Year 2000 warranty for third party products, and if compliant must pass through the warranty to agencies directly from Third Party Manufacturer.
- Agencies may require the Vendor to warrant Year 2000 compliance for a group or suite of products which are specified by the Agency to perform as a system. This requires additional action by the Agency. The "products specified to perform as a system" must be expressly defined on the Purchase Order, RFP or other procurement documents. The system can be defined to include new products added to existing architecture. or can be limited to only new products furnished from Vendor. If you do not expressly state the products which are to be treated as a "system", the warranty does not address interoperability of product solutions.
- Vendors are required to meet the warranty standard or to declare the product non-compliant. Non-compliant acquisitions will be subject to review against the prohibition contained in the Governor's Year 2000 Executive Memorandum.
- Discovery of Year 2000 breach can occur operationally in any time frame without requiring immediate testing.

REQUIRED ACTIONS TO SECURE WARRANTY PROTECTIONS

To effectively insure Year 2000 compliance under this warranty, agencies should obtain the following in every procurement transaction:

- Review the back-drop contract. if any, to determine Year 2000 protection. Agencies do not have to duplicate back-drop contract Year 2000 warranty coverage at the mini-bid level.
- For all procurements not otherwise covered by an existing Year 2000 warranty, insert warranty contract language into the procurement document, and where the Vendor's standard agreement is being affixed, the clause must state that the NYS warranty controls over anything contained in the Vendor's form.
- Define "Products Specified to perform as a system", if the warranty is to apply to interoperability.
- Specify additional damages which are covered by warranty as desired.
- Obtain agreement of Vendor to Vendor by countersignature on procurement document.
- Obtain Vendor's written statement of compliance/non-compliance with the warranty.
- In conjunction with the foregoing, Agencies are also strongly urged to obtain from Vendor a statement of the Vendor's specific Year 2000 solution (windowing/pivot point) for each Product at the time of product quote. This disclosure should be made in writing in order to determine compatibility and interoperability of the warranted product with existing architecture.

FEDERAL GOVERNMENT GSA WARRANTY Distinguished from NYS Warranty Standard

The NYS Year 2000 Warranty Standard borrows from the federal GSA standard, but in several respects represents a departure from the United States Government GSA adopted standard. Most Vendors will try to negotiate the State into giving the strictly GSAversion, which favors the Vendor in several aspects:

The GSA language only provides a guaranty *"to the extent that other information technology, used in combination with the information technology being acquired, properly exchanges date/time data with*

it." This allows the Vendor to void the warranty if the data supplied by one application does not use the same windowing solution as a second product. This particularly renders the "warranted as a system" coverage ineffective.

The GSA warranty is limited in its duration and available remedies to whatever duration and remedy the Vendor's standard license offers, *or to repair or replacement of the product ~f the defect is discovered within 90 days of acceptance.* whichever is longer. This requires the agency to go immediately to Year 2000 testing in order to determine compliance within the warranty period.

The GSA warranty limits remedies for Year 2000 breach to repair or replacement of the product. This does not permit the agency to impose additional liability on the Vendor elsewhere in the contract for associated damages (e.g. remediation of corrupted data).

Most Vendors expressly limit their liability to repair of the defective product only. This is accomplished by an express statement of liability *("Vendor is liable to repair or replace Product"),* coupled with express limitations of liability *("This shall be Vendor 's sole liability for Year 2000 breach which shall not to exceed the amount paid by purchaser for the product"),* along with express exclusions of general liability contained elsewhere in the sales agreement ("In no event shall Vendor be liable for consequential, special or indirect damages under this agreement.) This latter exclusion eliminates any chance that the buyer can obtain other types of damages from the Vendor which would otherwise be allowed by law.

It is therefore essential for the buyer to calculate in advance of the purchase which of types of damages are likely to flow from a Year 2000 breach. Where the likelihood of impact as a result of breach is great, agencies have a greater responsibility to attempt to insure that the Vendor can be held for these costs. An expansion of basic vendor liability can be negotiated individually by agencies and, in fact, have been successful in many instances if the size and importance of the procurement is leveraged against the damages of the Year 2000 breach.

<u>Agencies must expressly detail any damages that they want or they will be limited in their</u>
~ Agencies should expect Vendors to negotiate to have the limitations (repair only with damages limited to what was paid) and exclusionary language (vendor is not liable for any other damages) added somewhere in the procurement documents. If the size and value of the procurement does not provide the leverage to resist this, Agencies should next move to expressly enumerate the key types of damages which they wish to recover under the Year 2000 warranty liability. This should be coupled with a disclaimer on the exclusionary language which says, "<u>Other than as provided expressly</u>

herein, vendor is not liable for consequential, special or indirect damages." Review of agency counsel should be sought in drafting this wording.

LIMITATIONS IN THE APPLICABILITY TO REAL PROPERTY

Appropriate Year 2000 protections covering systems installed as part of real property, whether owned by the State or another third party, are not directly addressed as the rights of the parties are generally defined in existing contract documents which have been negotiated between the parties. Although the principles underlying Year 2000 compliance are applicable to building systems, operational inquiries, responsibility and remedies for breach would be made with reference to those contracts for construction, sale or lease.

QUESTIONS OR ADDITIONAL INFORMATION

Consult your agency counsel, contact OGS Legal Services at: (518) 474-5607 or contact the Office for Technology at (518)473-5622..

NEW YORK STATE YEAR 2000 WARRANTY STANDARD

1. Definitions

For purposes of this warranty, the following definitions shall apply:

a. **"Product"** shall include, without limitation: any piece or component of equipment, hardware, firmware, middleware, custom or commercial software, or internal components or subroutines therein which perform any date/time data recognition function, calculation, comparing or sequencing. Where services are being furnished, e.g. consulting, systems integration, code or data conversion or data entry, the term "Product" shall include resulting deliverables.

b. "Vendor's Product" shall include all Product delivered under this Agreement by Vendor other than Third Party Product.

c. **"Third Party Product"** shall include product manufactured or developed by a corporate entity independent from Vendor and provided by Vendor on a non-exclusive licensing or other distribution Agreement with the third party manufacturer. "Third Party Product" does not include product where Vendor is: a) a corporate subsidiary or affiliate of the third party manufacturer/developer; and/or b) the exclusive re-seller or distributor of product manufactured or developed by said corporate entity.

2. Warranty Disclosure

At the time of bid, Product order or Product quote, Vendor is required to disclose the following information in writing to Authorized User:

a) For Vendor Product and for Products (including, but not limited to, Vendor and/or Third Party Products and/or Authorized User's Installed Product) which have been specified to perform as a system: Compliance or non-compliance of the Products individually or as a system with the Warranty Statement set forth below; and

b) For Third Party Product Not Specified as Part of a System: Third Party Manufacturer's statement of compliance or non-compliance of any Third Party Product being delivered with Third Party Manufacturer/Developer's Year 2000 warranty. If such Third Party Product is represented by Third Party Manufacturer/Developer as compliant with Third Party Manufacturer/Developer's Year 2000 Warranty, Vendor shall pass through said Third Party Warranty from the Third Party Manufacturer to the Authorized User but shall not be liable for the testing or verification of Third Party's compliance statement.

An absence or failure to furnish the required written warranty disclosure shall be deemed a statement of compliance of the product(s) or system(s) in question with the year 2000 warranty statement set forth below.

3. Warranty Statement

Year 2000 warranty 'compliance' shall be defined in accordance with the following warranty statement:

Vendor warrants that Product (s) furnished pursuant to this Agreement shall, when used in accordance with the Product documentation, be able to accurately process date/time data (including, but not limited to, calculating, comparing, and sequencing)from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000, including leap year calculations. Where a purchase requires that specific Products must perform as a package or system, this warranty shall apply to the Products as a system.

In the event of any breach of this warranty, Vendor shall restore the Product to the same level of performance as warranted herein, or repair or replace the Product with conforming Product so as to minimize interruption to Authorized User's ongoing business processes, time being of the essence, at Vendor 's sole cost and expense. This warranty does not extend to correction of Authorized User 's errors in data entry or data conversion.

This warranty shall survive beyond termination or expiration of the Agreement.

Nothing in this warranty shall be construed to limit any rights or remedies otherwise available under this agreement

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APPENDIX F

Agency Coordinators

Each New York State agency (departments, offices, public authorities, boards, commissions) have been asked to name a year 2000 coordinator. This list was updated as of 1/9/98.

Agency	Year 2000 Coordinator	Contact Information
Adirondack Park Agency	John Banta	(518)891-4050; e-mail
Advocate for the Disabled. Office of	Rosemary Lamb Deborah Buck	(518)473-4129; e-mail (518)474-2825; e-mail
Aging, Office for the	Tim Smith	(518)473-6141; e-mail
Agriculture & Markets, Dept. Of	Dolores Dybas	(518)457-7368; e-mail
Alcoholism and Substance Abuse, Office of	Mike Drake	(518)474-8704; e-mail
Attorney General, Office of the	Margaret Reedy	(518)486-3972; e-mail
Banking Department	Pam Talkovsky Jacob Joseph	(212)618-6561; e-mail (212)618-6458; e-mail
Board of Elections	Frank DeNucci	(518)486-6431; e-mail
Budget, Division of	Margaret Fitzgerald	(518)474-4598; e-mail
Civil Service, Dept. Of	Mike Hopko	(518)457-8147; e-mail
Consumer Protection Board	Stephen Helmin	(518)474-3563; e-mail
Correctional Services, Dept. Of	Richard Martin	(518)457-2540; e-mail
Council on Children & Families	Frank Bogardus	(518)474-6294; e-mail
Court Administration, Office of	Paul Morrell	(518)283-8203; e-mail
Criminal Justice Services, Div. Of	Barbara Gordon	(518)457-6066; e-mail
Developmental Disabilities Planning Council	Sheila Carey	(518)432-8233; e-mail
Dormitory Authority	John Coleman	(518)257-3505; e-mail
Economic Development/Science & Technology Foundation	Anne Poleto	(518)474-2552; e-mail
Education Department	Lynn Humiston	(518)486-2348; e-mail

Empire State Development Corp.	Luanne Petrella	(212)803-3153;e-mail
Employment Relations Board	Arthur Finn	(212)564-2441 ext 310
Energy Research & Development Authority	David Young	(518)862-1090; e-mail
Environmental Conservation, Dept. Of	Susanne Peckham	(518)457-5724; e-mail
Environmental Facilities Corp.	Michael Roizman	(518)457-7922; e-mail
General Services, Office of	Jerry Foster	(518)474-6700; e-mail
Governor's Office of Employee Relations	Debi Orton	(518)473-6202; e-mail
Governor's Office of Regulatory Reform	Mike Hartigan	(518)473-9347; e-mail
Health, Dept. Of	Cathy Lyon	(518)473-4769; e-mail
Higher Education Services Corp.	Mike Buttino	(518)473-1210; e-mail
Housing & Community Renewal, Div. Of	Robert G. Kelly	(518)473-5681; e-mail
Human Rights, Div. Of	Paul Loheide	(212)961-8580; e-mail
Insurance Department	JoAnn Bomeisi	(518)402-5330; e-mail
State Insurance Fund	Bob Sammons	(518)437-5285; e-mail
Labor, Dept. Of	Doug McLaughlin	(518)457-1160; e-mail
Lobbying, State Commission on	Jennifer Hausmann	(518)474-7126; e-mail
Lottery Division	Denise Zimmerman Robert Hayes	(518)388-3530; e-mail (518)388-3402; e-mail
Mental Health, Office of	Dick English	(518)402-4449; e-mail
Mental Retardation & Developmental Disabilities, Office of	Gail Croteau	(518)473-3500; e-mail
Metropolitan Transportation Authority	Chuck Conn	(212)878-7124; e-mail
Military & Naval Affairs, Div. Of	John Meacher	(518)786-4359; e-mail
Motor Vehicles, Dept. Of	Marilyn MacBride	(518)474-1132; e-mail
Niagara Frontier Transportation Authority	W. Gene Breeden	(716)855-7356; e-mail
Parks, Recreation & Historic Preservation,	Mary Skelly	(518)486-1886; e-

Office of		mail
Parole, Board of	Martin Kelly Jeff Nesich	(518)473-9531 (518)473-9536
'ort Authority of NY & NJ	Tandy Guinn, Jr.	(212)435-7016; e-mail
Prevention of Domestic Violence, Office for the	Linda Cassidy	(518)486-7674
Public Employment Relations Board	Rosemarie V. Rosen	(518)457-2676
Public Service, Dept. Of	Jud Eson	(518)474-1614; e-mail
Quality of Care for the Mentally Disabled	Thomas Corrado	(518)473-4066; e-mail
Racing and Wagering Board	John Kinnicutt	(518)453-8460; e-3500; e-mail
Real Property Services, Office of	Rebecca Stegman	(518)473-4617; e-mail
Social Services, Dept. Of	Garry Adams Jerry Fausel	(518)474-9669; e-mail (518)473-3222; e-mail
State, Dept. Of	Steve Lovelett	(518)473-8166; e-mail
.tate Comptroller, Office of the	Roger Herzhauser Laurie MacPadden (Retirement) John Casale (Retirement) Ron Frey (Retirement)	(518)486-6523; e-mail (518)486-4399; e-mail (518)486-9875; e-mail (518)473-2332; e-mail
State Police	John Goetz	(518)457-6501; e-mail
SUNY Construction Fund	Al Dannes	(518)443-5746; e-mail
Tax & Finance, Dept. Of	Dorothy Nanek	(518)457-2847; e-mail
Tax Appeals, Div. Of	Robert Rivers	(518)266-3004: e-mail
Teacher's Retirement	Bob Gustafson	(518)447-2951; e-mail
Thruway Authority	Stephanie Karwan	(518)471-4346; e-mail
Transportation, Dept. Of	John Rondinaro	(518)485-5474; e-mail
Veteran's Affairs, Div. Of	Bernard Sullivan	(518)474-3723
"orker's Compensation Board	Ed Donohue	(518)486-7692; e-mail
Youth, Div. For	Karen Beaver	(518)473-7267; e-mail

APPENDIX G
ARTICLES

LEGAL ISSUES CONFRONTING THE FEDERAL GOVERNMENT AND THE STATE GOVERNMENTS DUE TO THE YEAR 2000 "MILLENNIUM BUG"

By Jeff Jinnett*

On September *25*. 1996. Senator Daniel Patrick Moynihan (D-NY), following up on a Congressional Research Service study of the federal government's Year 2000 problem, introduced Senate Bill 2131. proposing the creation of a bipartisan National Commission on the Year 2000 Computer Problem (hereinafter, the "Year 2000 Commission") (see the Internet Uniform Resource Locator ("URL") of *"http://infosphere.safb.af.mi/~jwid/fadl/world/crsrpt.htm"* for a copy of the CRS study). On January 21. 1997. Senator Moynihan reintroduced the bill in the 105th Congress as Senate Bill 22 (see *"http://www.comlinksxom/legal/s22.htm"* for the full text of the bill). This article is intended to highlight the critical technical, legal and regulatory issues which need to be addressed and the potential role of the Year 2000 Commission in meeting that challenge. Hopefully this will foster more widespread public sector and private sector support of the federal Year 2000 Commission, resulting in the enactment of Senate Bill 22 into law.

This article will discuss (a) the scope of the Year 2000 problem at the federal government and state government levels, (b) the status of federal and state corrective efforts, (c) technical, legal and regulatory issues which may influence how the federal government and state governments should approach Year 2000 corrective efforts, including issues relating to the creation of multi-state compacts, municipal securities disclosure requirements, disclosures of Year 2000 problems required under GAAP. federal and state disaster relief procedures, federal and state mandates to the private sector as to Year 2000 compliancy and potential tort claims liability of federal and state agencies if they fail to become Year 2000 compliant, and (d) the need for coordination between the federal government and the state governments and between the federal government and the governments of other nations. The above discussion will be organized around an analysis of the six issues constituting the proposed mandate of the Year 2000 Commission.

Senate Bill 22 (the "Commission on the Year 2000 Computer Problem Act") lists the following six issues as needing to be addressed:

> *"(1) a brief analysis of the history and background concerning the reasons for the occurrence of the Year 2000 computer problem;*
>
> *(2) a determination of the costs of reviewing and rewriting computer codes for both the Federal government and the governments of states for the 3 -year period*

immediately lowing the date of enactment of this act, including (i,) a legal analysis of responsibilities for the costs: and (ii) possible equitable bases for sharing the costs;

(3) an analysis of the implications of the Year 2000 computer problem with respect to intergovernmental and integrated systems;

(4) (i) a determination of the period of time necessary to remedy the Year 2000 computer problem (including testing); (ii) if the earliest practicable date determined under (i) is not January 1, 2000, a determination of (I) with respect to each Federal agency (as that term is defined in section 551(1) of title 5, United States Code)-- (aa) priority functions of that Federal agency; and (bb) priority systems of that agency; and ('H) which Federal agencies are at risk of being incapable of performing basic services as a result of the Year 2000 computer problem,

(5) the development of balanced and sound contracts to be used in necessary Federal procurement with respect to using private contractors in the computer industry, including contracts to carry out compliance with measures necessary to achieve a remedy of the Year 2000 computer problem for computer programs and systems (i) in use as of the date of enactment of this act; and (ii) acquired after the date of enactment of this act. and

(6) an analysis of the effects and potential effects on the United States economy that would result if the Year 2000 computer problem is not resolved by June 1, 1999"

Discussion of the Issues To Be Addressed by the Year 2000 Commission:

This article will discuss each of the issues posed in Senate Bill 22 in sequence and why the answers to the issues are critically important to the solution of the Year 2000 computer problem on both a federal and state level.

Issue No. 1: ***"A brief analysis of the history and background concerning the reasons for the occurrence of the Year 2000 computer problem;":***

It is generally understood that software programmers beginning approximately thirty years ago used six digits to represent the date, month and year in business application software in order to save processing memory, which was expensive at the time (for an early article on the Year 2000 computer problem, see Datapro Research Corp., "Computer Processing of Dates Outside the 20th Century", April. 1987). In more recent years. six digits were used by programmers out of habit or in order to assure that new software programs would interface smoothly with older programs using six digit date fields (for a detailed description of the history of the Year 2000 problem, see Leon Kappelman and James Cappel, "A Problem of Rational Origin That Requires a Rational Solution", Journal of Systems Management. July. 1996. Vol. 47. No. 4, at p. 6). To complicate the Year 2000 corrective e ort, many business application software packages must also be modified to account for the fact that the year 2000 is a leap year.

An issue which the Year 2000 Commission could examine is the role that governmental standards played in accommodating the Year 2000 problem (also variously known as the "Millennium Bug", the "Century Date Change Problem" and the "Y2K Problem"). The Year 2000 Commission could also analyze what role the government should play in the future, if any, in mandating computer standards to avoid problems in the future similar to the Year 2000 problem.

Governmental Standards

For example, the Year 2000 Commission could examine the question of whether the American National Standards Institute (ANSI) should attempt to harmonize its Year 2000

date field standard with the standard adopted by the International Organization for Standardization (ISO) (compare ANSI X3.30-1985 (R1991) "Representation for Calendar Date and Ordinal Date for Information Interchange" with ISO 8601:1988 "Data Elements and Interchange Formats"). ANSI X3.30 was adopted as a standard by the federal government (acting through the National Institute of Standards and Technology (NIST)) for use in electronic data interchange (EDI) transactions as Federal Information Processing Standard (FIPS) 4-1 "Representation for Calendar Date and Ordinal Date for Information Interchange". A Change Notice has been issued, however, for FIPS 4-1, recommending the use of a 4-digit date field for the year. rather than the two-digit date field permitted by the ANSI X3.30 standard (see the Internet URL of *"http://www.nist.gov/itl/div879/yr2O00.htm")*. The Federal CLO Council has adopted FIPS 4-1 (see the ITAA Year 2000 Outlook, December 27, 1997 at *"http://www.itaa.org")*. In addition, NIST has released a Y2K test specification based on the Gregorian calendar system (see the Internet URL of *"http://www.nist.gov/v2k/datetest.htm")*.

Following the NIST example. the Automotive Industry Action Group promotes the use of a mandatory eight-digit date field (YYYYMMDD), but the X12C subcommittee of the ANSI Accredited Standards Committee (ASC) still permits the use of six-digit fields (see the ITAA Year 2000 Outlook. March 14, 1997, at *"http://www.itaa.org")*.

The matching of ANSI. FIPS and ISO standards may become more important in the future. For example. it would be of great concern if the European Union (the "EU") were to raise non-tariff trade barriers to U.S. products designed for export to the EU because of concerns about date field interface problems. In this regard, it should be remembered that many types of non-computer equipment also use date field timing devices, such as security systems, HVAC systems. traffic lights and elevators. The EU concern might be that a "MM-DD-CCYY" date field format within a U.S. product (which is one of the date field formats permitted under the ANSI standard) might cause interface problems with the ISO 8601 "YYYY-MM-DD" date field standard. ISO 8601 has been adopted in the EU as European Standard EN 28601 (see. "A Summary of the International Standard Date and Time Notation", located at the Internet URL of *"http://www.ft.uni-erlangen.de/~mskuhn/iso-time.html")*.

Also, for purposes of EDI electronic commerce transactions involving multinational companies or crossing international borders, it might be preferable if the U.S. X12 EDI standard could be harmonized with the European UN/EDIFACT EDI standard with respect to date field usage.

Historical Precedents

The Year 2000 Commission also might be able to discover useful information on how other governments have coped with similar computer software changes in the past. For example, in 1989, when the Emperor of Japan died, the Japanese government and private sector businesses had to convert their computer date fields to reflect the end of the 64 year "Showa" period and the first year of the "Heisei" period. This and other historical "date changes" (such as the New Years Day, 1969 ABENDS date field problem (arising due to the first encounter with thirty year mortgages) and the November 16, 1989 MTS system date field computer problem) are discussed as part of the Year 2000 frequently asked questions (FAQ) located at the URL of *"ftp://www.year2000.com/pub/year2000/y2kfag.txt"* (for a useful source of information on the Gregorian and Julian calendars, see the URL of *"http://www.magnet.chiserendipity/cal stud html"* for date conversions between different types of calendars, see *"http.i/www.webhelp.corn/calendar. htm")*.

Issue No. 2: ***"A determination of the costs of reviewing and rewriting computer codes for both the Federal government and the governments of states for the 3 -year period immediately following the date of enactment of this act, including (i) a legal analysis of responsibilities for the costs; and (ii) possible equitable bases for sharing the***

The Gartner Group has estimated that the cost of correcting the Year 2000 problem worldwide is approximately $300 billion to $600 billion (see the article entitled "'Year 2000 Problem' Gains National Attention", at the URL of *"http://www.gartner.com/aboutgg.pressrel/pry2000.html"* see also. "The Gartner Group-Year 2000 Arithmetic", in Insurance Specialist. Vol. 2, Issue 4. at pp. 42-43). In an Industry Analysis, J.P. Morgan Securities, Inc. as estimated, based on its own research, that the cost approximates $200 billion (see W. Rabin, "The Year 2000 Problem", at the Internet URL of *"http://www./pmorgan. com/MarketDataIndlResearch/Year2 000/index, html")*. The estimated cost of correcting all of the affected computer systems of the federal agencies has been variously estimated to be (a) $30 billion (see Richard Nunno, "The Year 2000 Computer Challenge". CRS Report for Congress, June 7, 1996) at *"http://www.infosphere.safb.afmil/jwid/fadl/world/crsrpt.htm"*, (b) in the range of $10 - $15 billion by Representative Horn (see the ITAA Year 2000 Outlook, May 2, 1997 at *"~gpj~yJtq9~~g")*. (c) approximately $9 billion by the market research and consulting Corporation (see the ITAA Year 2000 Outlook, January 10, 1997 at *"http://www.itaa.org")*. (d) $5.6 billion by Federal Sources, a market research firm (see the ITAA Year 2000 Outlook. April 4. 1997. and (e) $2.3 billion by the Office of Management and Budget (see the ITAA Year 2000 Outlook, February 7, 1997 at *"http://www.itaa.org")*.

The $30 billion estimate for the federal government is not surprising, since (a) the federal government is reportedly the largest single purchaser of information technology, spending approximately $25 billion per year on IT services and products (see, Testimony of Stephen M. Smith, Managing Partner. Federal Government Practice of Andersen Consulting, before Congress. Federal News Service. July 17, 1996) and (b) in an International Data Corp (IDC) study, it was reported that 83 percent of federal mainframe sites surveyed reported moderate or high degrees of date sensitivity (see John Moore, "Mainframe Readiness Falls Behind Schedule". Federal Computer Week, August 26, 1996, located at *"http://www.fcw. com/pubs/tcw/0826/agency2. htm")*.

It is likely that state governments also have substantial Year 200u problems, since state governments also are significant information technology purchasers. In fact, the governments of 46 states, six cities, three counties and two school districts have greater annual revenues than Dow Corning, which ranks as number 500 on the Fortune 500 list (see the article by Jeremy Mazur and Jason Victor entitled "The Fortune 500 and America's Governments", located at the Internet URL of *"http://web.governing. com/ governing/fortune. html")*. As an example of the preliminary budgets some states already have adopted for their Year 2000 corrective work, Nebraska and North Carolina reportedly have each budgeted $30 million for their conversions (see, ITAA Year 2000 Outlook. August 2. 1996. located at ~ The state of Florida has completed its inventory of impacted systems an as estimate total corrective cost at $117 million (see. State of Florida Information Resource Commission, "Information Technology Update". February 14. 1997 at p. 12). The City of New York estimates that its Y2K corrective costs will exceed $100 million (see the ITAA Year 2000 Outlook, January 3, 1997 at *"http://www.itaa.org")*.

Funding Issues

For some states, funding may be a critical issue where the legislature has not fully funded the state's Year 2000 corrective plan. States may wish to consider issuing Year 2000 bonds to raise sufficient funds for their corrective plans, where legally permissible. Alternatively, states may wish to enact legislation authorizing the issuance of Year 2000 tax-exempt financing in advance. By doing so, the state may proceed with the issuance of the Year 2000 bonds even if the state legislature is not in session at the time that the funding need is recognized.

Essentially, the Year 2000 software corrective process is an example of "software reengineering". Following the Institute of Electrical and Electronic Engineers, Inc. (IEEE) definition of "software reengineering", a baseline inventory is the first step, followed by analysis and only then by the changing of the software code. Although federal and state agencies may be tempted to skip the inventory phase and start immediately with the corrective work, this short-cut should be discouraged. If software programs are missed, the computer system may not test out as being Year 2000 compliant after corrective work. Without any computer system inventory as a baseline, it may be difficult to pinpoint the reason for the testing failure.

Indeed, under the Paperwork Reduction Act of 1995, each federal agency is required to inventory its computer software assets. In many instances, the inventory can be automated by the use of scanning or parsing software, reducing the time to complete the inventory and the personnel time required. An estimate can then be made as to the total cost of making the hardware and software Year 2000 compliant. For an example of one formula for estimating this cost, see the formula at the URL of *"http://cfcse.ncr.disa.mil/jexhome/y2estm8r.html"*.

A cost-benefit analysis must then be made by the agency as to whether it makes more sense to migrate to a newer computer system architecture which is already Year 2000 compliant, or to correct the older system currently being used. According to the Federal Aviation Administration (FAA) advisory document entitled "Guidance Document For Year 2000 Date Conversion, located at the Internet URL of *"http.//www.faa.gov/ait/vear2000/v2kguide.htm"*, the inventory phase requires 25-40 percent of total effort, the corrective work phase requires 10-20 percent of the total effort and the testing phase requires 40-55 percent of the total effort.

Potential Obligation of Vendors to Absorb Year 2000 Corrective Cost

It is possible that agencies which have contracted for long-term maintenance or data processing outsourcing lasting past the year 2000 may be able to request the third party vendors to absorb part or all of the Year 2000 corrective work. For example, under some outsourcing agreements, the vendors agree to correct any "bugs" or "defects" in the computer system at the vendor's cost. An issue exists as to whether the Year 2000 problem qualifies as a system "bug" or "defect" which properly is the vendor's responsibility. Government counsel will need to review the relevant contracts to determine the parties' relative rights. However, if the federal agency simply proceeds to correct the Year 2000 problem without first making claim against the vendor, it likely will have waived its right to claim reimbursement from the vendor (see, e.g., Jeff Jinnett, "Legal Issues Concerning the Year 2000 'Millennium Bug"', located in the article archive at Peter de Jager's Year 2000 site at the URL of *"http://www.vear2000.com/archive/NFlegalissues. html")*.

Costs of Programmers Will Increase Each Year Until 2000

There are in excess of two thousand software programming languages in existence, with perhaps 500 programming languages in current usage, and date fields are sometimes used for purposes other than signifying the date (such as the use of "99" to signify the end of a file). (See, e.g., the Internet URL of *"http.'//cuiwww.unige.ch/langlist"* for a database of existing programming languages; see also, the informative article by Capers Jones entitled "The Global Economic Impact of the Year 2000 Software Problem", located at the Internet URL of *"http://www.spr. com/librarv/y2kOO.htm")*.

Therefore, federal and state agencies might have to locate and retain programmers skilled in many different languages to assist the agencies in correcting the non-compliant date fields. In this regard, the agencies will be competing with the private sector for an

increasingly scarce supply of programmers and the cost of programming help may increase as the year 2000 draws near. with the private sector outbidding the public sector for the better programmers. In testimony before Congress. Kevin Schick. at that time Research Director of Gartner Group. estimated that when federal, state and local governments finally get funding at the start of fiscal 1998 for their Year 2000 corrective work, the cost of that corrective work will be over two times the cost of doing the same work in 1996 (see Testimony of Kevin Schick before the House Government Reform and Oversight Committee. Subcommittee on Government Management. Information and Technology, Federal News Service. April 16, 1996).

In this regard. it is noteworthy that the legislature of the state of Texas has passed legislation giving state agencies and universities the authority to grant bonuses of up to $5000 per week to Y2K workers in an effort to retain qualified personnel (see the ITAA Year 2000 Outlook. June 6. 1997, at *"http.//www.itaa.org").*

Need to Avoid Duplication of Efforts

Given this problem. the federal government and the state governments should consider coordinating their efforts wherever possible to locate software programs which are utilized in multiple federal and/or state agencies. Programs utilized by numerous agencies could be modified to be Year 2000 compliant just once, with the new com- it version being reproduced for the benefit of all of the affected agencies. Since this may necessitate securing the consents of third party software vendors where software is licensed, this procedure will require some advance planning.

Use of Designated Processing Sites

Further, where federal and/or state agencies perform essentially similar data processing, the various agencies could agree to devote their combined efforts to make certain of the agencies fully compliant as quickly as possible, increase the processing capacity of those selected agencies and utilize them to process the data of all of the affected agencies which are unable to make their own systems compliant in time. The selected agencies therefore would act as fall-back processing sites for the other agencies. The costs of these group accommodations could be allocated amongst the agencies comprising the group, with the federal government and the involved states making an accounting to each other on a regular basis.

Centralized Versus Decentralized Approach

California has created a Department of Information Technology to oversee the state agencies' Year 2000 efforts and "leverage" the experiences and expenditures of one agency for the benefit of the others (see Ellen Perlman, "On Track to Disaster", Sacramento Bee, September 22, 1996). State chief information officers (CIO's) such as California's Department of Information Technology (DOIT) could be the focal point for state coordination efforts with the federal government. Some states, however, have opted not to follow the state CIO structure. For example. a survey of states by NASIRE indicated that at least seventeen states have adopted a decentralized approach to the Year 2000 problem (see, e.g., ITAA Year 2000 Outlook, October *25,* 1996, located at the URL of *"http://www.itaa.or*-,NASIRE itself could also be helpful in disseminating information to its state members (see the URL of *"http://www.nasire.or*-information on the NASIRE 1996 Y2K conference, see the ITAA Year 2000 Outlook December 13, 1996 at *"http://www.itaa.org"* and *"http://www.nasire.org/year2000/y2 ex. html").*

Finally, the Internet World Wide Web can act as a useful clearinghouse for information between the coordinating entities. For example, several states already maintain Web sites to distribute Year 2000 information with respect to their Year 2000 corrective programs (see, the URL's of *"http://www.year2000.ca.gov"* for California.

"http.//www.state.inn.us/ebranch/admin/ipo/2000/2000.html" for Minnesota, "http://www.das. state.ne.us/dascdp/rfp/rfp.htm" for Nebraska. "http://www.state.lx. us/vear2 000" for Texas and the State of Washington's site at "http://www.wa.gov/dis/2000/v2000.htm"). It is likely that other states will be adding Year 2000 Internet Web sites in the coming months. For Web sites of other states, see "http://www.nasire.org/ss/ST2000. html".

Issue No. 3: ***"An analysis of the implications of the Year 2000 computer problem with respect to intergovernmental and integrated systems;***

Computers are like idiot savants. Computers can do incredibly complex calculations with lightning speed. but are so dumb, that they think a two digit year of "00" represents the year 1900 rather than the year 2000. Further, the more complex the computer system, the easier it is for something very simple and small to wreak havoc in the system. The federal government and state governments therefore have to develop more sophisticated fall-back plans to assist agencies in accomplishing their missions even in the face of computer system failures.

This idea dovetails with the recognition that just as the Internet is a network of innumerable computers around the world (essentially an immense client/server system), the federal and state government computer systems interface and communicate with each other more than one would think. The IDC study cited above found that sixty-nine percent (69%) of the federal respondents surveyed reported that their agencies exchange date-sensitive mainframe data with other agencies, and thirty-one percent (31%) said that they exchange date-sensitive data with state and local governments. (see John Moore, "Mainframe Readiness Falls Behind Schedule", supra; see also, the MITRE articles on the Y2K problem, located at the Internet URL of *"http://www.mitre. org.80/researchiy2k/docs/BRIEF.html"*). Similarly, the public sector and private sector computer systems are growing more and more interdependent. One step toward achieving better coordination between the Federal agencies and state governments is Vice President Gore's plan to assign the Intergovernmental Enterprise Panel (IEP) responsibility for intergovernmental Y2K efforts (see the ITAA Year 2000 Outlook, March 28. 1997, at *"http://www.itaa.org"*).

Although innovation can arise from the decentralization of the federal and state public sector computer systems. overcoming the Year 2000 problem in the narrow window of opportunity left may require more centralized coordination of the federal and state public sector systems. The tension between the federal government mandating interface standards, date field standards and the like as against the state governments and the private sector handling their own Year 2000 problems free of federal government interference will require more debate and analysis. This debate and analysis could begin at the Year 2000 Commission.

Issue No. 4: ***"(i) a determination of the period of time necessary to remedy the Year 2000 computer problem (including testing); (ii) if the earliest practicable date determined under (i) is not January 1, 2000, a determination of—(I) with respect to each Federal agency (as that term is defined in section 551(1) of title 5, United States Code)— (aa) priority functions of that Federal agency; and (bb) priority systems of that agency; and (II) which Federal agencies are at risk of being incapable of performing basic services as a result of the Year 2000 computer problem;":***

Status of Federal and State Year 2000 Efforts

Once an agency has completed its inventory, it can estimate the number of programmer hours it will take to correct those software programs which are not being replaced. Generally, it is advised that all corrective work be completed by January 1, 1999, so that at least one year is allocated for testing to confirm compliance. The federal survey sent out by the House of Representatives Government Reform and Oversight Subcommittee on

Government Management. Information and Technology indicates that many federal agencies are at the very beginning of their inventory stage (see the questionnaire, located at the URL of *"http://www.army.mil/armv-y2k/conss.htm"* and the results of the survey at the URL of *"http.i/www.year2000.comiarchive/survey. html"* see also, Christopher Dorobek. "Four Agencies Earn A's on 2000 Report Card; House Panel Gives 14 Agencies D's and F's", Government Computer News. August 5, 1996. Vol. *15,* No. 19, at p. 1). Representative Horn reiterated his concern that Federal agencies were evidencing "dangerously optimistic planning" after the February 24. 1997 hearings before his Subcommittee (see the ITAA Year 2000 Outlook, February 28. 1997. at *"http://www.ft'gq.p~g").* Also, in the IDC study cited above, about one quarter of the respondents said that their correction of software code was more than two years away and one third said the completion of testing after correction was more than two years away. (see John Moore, "Mainframe Readiness Falls Behind Schedule", Federal Computer Week. August 26. 1996, located at the URL of *"http://www.fcw.com/pubs/fcw/0826/agency² htm").*

Rep. Carolyn Maloney (D-NY) has introduced HR 1177 ("The Millennium Computer Act of 1977"), which if enacted into law would require Federal agencies to become Year 2000 compliant and certify compliance to Congress by July 1, 1999 (see ITAA Year 2000 Outlook. April 4, 1997 at the URL of *"http://www.itaa.or~;* see also, Jacqueline Paige, "Bill Introduced in House to Ensure Year 2000 Comp iant Federal Systems", BNA's Electronic Information Policy & Law Report. April 4, 1997).

The status of Year 2000 corrective efforts by the various state governments was the subject of a survey conducted by NASIRE, with forty-four states responding (see ITAA Year 2000 Outlook, October 25. 1996. located at *"hgpj~jwwwjtga.~~g").* NASIRE's survey indicates that most states are still in the wit on y thirteen states reporting that they are in the implementation or testing phase.

Unless software tools are discovered which can speed up the corrective process considerably, it appears possible that at least some federal and state agencies will not become fully Year 2000 compliant in time, with resulting disruptions to agency operations. In this regard, it should also be noted that some agencies have to produce projections going forward to the year 2000. which will trigger a system failure prior to January 1, 2000 (i.e., an earlier "Event Horizon") (see. Noah Ross, "The End of the Century is Nearer Than You Think." Application Development Trends, April, 1995).

Currently No Centralized Year 2000 Control at the Federal Level

So far, no federal "Year 2000 Czar" has been appointed. At the present time, each federal agency's Year 2000 corrective efforts are being directed by the CIO of the particular agency. The office of federal agency CIO was created in the Information Technology Management Reform Act of 1996 (ITMRA) and the General Accounting Office (GAO) and Office of Management and Budget (0MB) were given oversight responsibilities, repealing the Brooks Act and replacing the General Services Administration (GSA) in that role. As a result of this, GSA abolished the Federal Information Resources Management Regulation (FIRMR), effective August 8.1996. The approximately 25 affected federal agencies and departments meet in a Federal Chief Information Officer Working Group to discuss the implementation of the CIO concept.

At the request of the 0MB. the Social Security Administration (SSA) has created an informal interagency Year 2000 working group, since it began its Year 2000 efforts in 1989 and is further along in implementing its Year 2000 corrective plan than most other federal agencies. The Year 2000 Interagency Committee Internet Web site is at *"http://www.itpolicy.gsa.gov/mks/yr2000/y²OJtocl.htm".* The Year 2000 Interagency Committee has also prepared a Year 2000 Best Practices guide (see. *"http.//infosphere.saTh.afmil/~jwid/fadl/fedguide.htm")* and has prepared warranty language for agencies to consider using when they contract for new software (see,

"http://www.itpolicy.gsa.gov/mks/yr2000/y2kfrzl.htm"). The Interagency Committee has subsequently become the Federal CIO Council Y2K Subcommittee (see the ITAA Year 2000 Outlook. December 27. 1996, at *"http://www.itaa.org")*.

Estimation of Total Year 2000 Costs

Federal agencies are expected to include their estimates of the cost of Year 2000 corrective work in the agencies' fiscal 1998 budgets and five year information technology forecasts (see Lisa Corbin. "The Year 2000 Problem", Government Executive, May 1996, at p. 18). The 0MB in its February 6, 1997 report to Congress estimated the total cost of corrective work for the Federal government at $2.3 billion (see *"http://www.comlinks.com/gov/omb2697.htm")*. At the present time, federal agencies are being expected to undertake their Year 2000 inventories, corrective work and testing by "reprogramming" existing budgeted funds. One exception to this is that the Fiscal 1997 Senate Defense Authorization Bill sets aside *$5* million for the Department of Defense (DoD) to benchmark competitively selected automated Year 2000 corrective software. In addition, the President's Fiscal Year 1998 budget earmarks $200 million for state employment security agencies to fund Y2K conversion work (see the ITAA Year 2000 Outlook, February 21, 1997, at *"http://www.itaa.org")*.

Use of the GAO or 0MB as Year 2000 Audit Agency

The Year 2000 Commission could act as a central clearinghouse of information for the various federal and state agencies. It also could assist in developing an approach to auditing the progress of the various agencies in becoming Year 2000 compliant. For example, the GAO and/or the 0MB could be authorized to adopt an audit methodology which would be applied to all federal agencies. At the present time, no single entity has been given formal audit responsibility for ensuring that the federal agencies become Year 2000 compliant in time. The U.S. Senate has directed the GAO, however, to conduct a limited audit of the DoD in connection with its Year 2000 efforts and is reportedly considering asking the GAO to conduct a government-wide survey of Year 2000 preparedness (see ITAA Year 2000 Outlook, August 16. 1996. located at the URL of *"~ipj~www.i~q4p~g")*. Both the GAO and 0MB have produced useful IT management guides in t e past in t is area (see, e.g., the GAO's "Executive Guide: Improving Mission Performance Through Strategic Information Management and Technology" (GAO/AIMD-94-1 15, May 1994) and the OMB's "Evaluating Information Technology Investments: A Practical Guide" (1995)). The GAO has also released a special Y2K guide entitled "Year 2000 Computing Crisis: An Assessment Guide", which can be viewed at the Internal URL of *"http://www.gao.gov/special.pubs/v2kguide.pdj"*.

If, for example, the GAO were designated the Year 2000 audit agency, each federal agency could be required to adopt a GAO- approved Year 2000 corrective plan and to devote the resources and personnel necessary to become compliant in time. The GAO could input these agency corrective plans into a project management software package. During the implementation of their Year 2000 plans, the agencies could be required to transmit information via modem or diskettes using electronic questionnaires to the GAO as to the corrective work completed. The GAO could use the project management software to compare this completed work against the project schedule contained in the agency's Year 2000 corrective plan submitted to the GAO. The GAO then could make periodic reports to the President and to Congress on the status of each agency's Year 2000 corrective efforts.

The alternative to designating one audit methodology and having the GAO, 0MB or another single entity audit all of the federal agencies is leave the President and the Congress in the dark as to the actual state of readiness of the federal government until January 1, 2000 or such time as an earlier Event Horizon occurs for a particular agency. The Congress has held numerous hearings concerning the Year 2000 problem and the status of the federal government's corrective efforts, but the testimony produced at the hearings cannot compare

with the audit reports which the GAO or 0MB could produce if given proper authority by the Congress and the President (see, e.g., the hearings listed at the Internet URL's of *"http://www.house.gov/science/hearing.htm#Full Committee"* and *"http:i/www.itpolicv.gsa.govimks/vr20004v2]Ocong.htm")*.

Issue No. 5: ***"the development of balanced and sound contracts to be used in necessary Federal procurement with respect to using private contractors in the computer industry, including contracts to carry out compliance with measures necessary to achieve a remedy of the Year 2000 computer problem for computer programs and systems (i) in use as of the date of enactment of this act; and (ii) acquired after the date of enactment of this act;":***

Year 2000 Warranty Language

Various proposals have been made with respect to appropriate warranty language to assure the federal agencies purchasing new software that the new software will be Year 2000 compliant. For example. in the 1997 Senate Defense authorization bill, the DoD is required to ensure that all systems purchased after September 30, 1996 will comply with time and date standards for providing "fault-free" processing of data and date-related data in 2000. The Navy Operational Test and Evaluation Force (OPTEVFOR) adopts this "fault-free performance" approach (see *http://ivww.nismc.navy.mil/horizon/year2000/optevfor.htm"* see also. ITAA Year 2000 Outlook. July 26. 1996, located at the Internet URL of *"http://www.itaa.org":* see also, the U. S. Department of the Navy's "Year 2000 Problem Survey and Reporting Requirements," located at *"http://www.nismc.navv. mil/horizon/year2000/encl-J.htm")*. The General Services Administration has developed warranty language seeking accurate processing of date data rather than "fault-free" processing (see the URL of *"http://www.itpolicv.gsa.gov/mks/2000/y2kfizl.htm")*. The Civilian Agency Acquisition Council and the Defense Acquisition Regulations Council also amended the Federal Acquisition Regulation (FAR) on an interim basis to include a Year 2000 compliancy definition (see the Internet U RL of *"http://www.itpolicy.gsa.gov/mks/yr2000/yr2000.htm")*.

Representative Connie Morella (R-MD), who chairs the House Science Committee's Technology Subcommittee. recently indicated at the NIST Y2K conference held on June 9-10, 1997, that a bill would soon be submitted prohibiting the Federal government from purchasing any information technology which was not certified by the vendors to be Year 2000 compliant, pursuant to Part 39.106 of the Federal Acquisition Regulation (FAR) (see the ITAA Year 2000 Outlook. June 13, 1997. at *"http://www.itaa.org"* see also, *"http://www.house.gov/science/morella 6-9. htmL)*.

As an example of warranty language formats currently being adopted by the state governments, the State of Minnesota has proposed warranty language which focuses on ensuring "Year 2000 compatibility" (see, e.g., the State of Minnesota's "Proposed Language for Intertech Overload RFP", located at the URL of *"http://www.state.mn. us/e branch/admin/ipo/2000/agltr. html")* and warranty language ensuring "Year 2000 Compliance" (see the IRM Standard, Version 1, located at *"http://www.state.mn. us/ebranch/admin/ipo/hb/document/stdl 4-1. html")*.

The Mitre Corporation, a computer systems engineering company, has suggested that instead of warranty language mandating blanket Year 2000 compliancy, that agencies utilize performance standard language (see the URL of *"http://www.mitre. org:80/research/cots/Y2K QUESTIONS, html")*. Companies in the private sector have also suggested criteria for Year 2000 compliance (see, e.g., "GTE 2000 Proposed Criteria for 'Century Compliance"', located at the URL of *"http://www.mitre. org:80/research/cots/GTE CRITERIA. html"* and especially Table 6, which identifies the various dating standards now in use in connection with different business applications, such as with ATM cards, SQL databases and telephone systems).

One technical problem which agencies should avoid is taking two computer systems which interface well, but are not Year 2000 compliant, and then making the two systems Year 2000 compliant by two different techniques. resulting in the two computer systems both being compliant, but no longer interfacing properly. For example, a vendor could utilize a date field expansion technique for the first system. Another vendor might correct the second system utilizing a "100 year sliding window" technique. Both computer systems are technically Year 2000 compliant in and of themselves. But since incompatible corrective techniques were used, they no longer interface with each other as they did prior to corrective action and a "bridge" will have to be developed for the two systems to be able to interface again. The Year 2000 Commission could assist the federal government and state governments in developing appropriate warranty language to deal with this potential problem.

Use of Contract Templates/Omnibus Contracts

The Office of Federal Procurement Policy (OFFP) is reportedly creating a contract template for a performance-based statement of work which federal agencies could use to quickly prepare procurement documents. (see "Year 2000 Surfaces in Procurement", Federal Computer Week. April 1. 1996, located at *"http://www.fcw.com/pubs/fcw/0401/side J7Ri~?~jT* It appears, however, that since there may not be enough time for every agency to let out a Request For Proposal (RFP) for Year 2000 corrective work and negotiate a new contract, some agencies may decide to use existing omnibus contracts already existence, such as DISA's DEIS II contract and GSA's A and B/C Schedules (see Paul McCloskey, "Agencies to Tap Omnibus Vehicles for Year 2000 Gear", Federal Computer Week, August 19, 1996, located at *"http://www.fcw.com/pubs/fcw/0819/y2k/contracts.htm")*. The Year 2000 work would then be merely added to the omnibus contracts as additional work schedules. The Year 2000 Commission could examine this practice to determine what audit procedures may be advisable in order to confirm that the work is being let out to existing prime contractors and subcontractors which have sufficient Year 2000 expertise and resources.

Unfortunately, state governments may not have similar omnibus contracts in existence or may be required by statute to prepare RFP's, let out the contracts for public bidding and be required to take the lowest bid. This type of complicated and slow bidding procedure may increase a state's risk of failing to become fully Year 2000 compliant in time. State legislatures may therefore need to review the state bidding procedures and implement amendments to allow fast-track bid procedures for Year 2000 work. An example of this is the California Year 2000 Master Service Agreement (MSA), developed by the Procurement Division of the Department of General Services and the Department of Information Technology to afford fast-track contracting capabilities to the California state government and local governments (see. ITAA Year 2000 Outlook, October 4, 1996, located at *"http.i/www. itaa. org")*.

In any event, both federal and state government agencies should consider seeking "turnkey" agreements from a single prime contractor where possible and appropriate, rather than acting as the general contractor themselves. The prime contractor then would be responsible for the work done by its subcontractors. This may help agencies avoid the situation where the computer system fails to operate properly as a total system, even though the individual modules of the system supposedly have been made Year 2000 compliant, and the individual contractors on the project can only engage in "fingerpointing" at each other as to where the responsibility lies for correcting the problem.

Application of FACNET, FARA and FASA

The Year 2000 Commission could also examine (a) whether full use of the Federal Acquisition Computer Network (FACNET) (designed for projects under $100,000) is being made by the federal agencies for smaller projects, and (b) whether Year 2000 products and

services are being effectively acquired under the revised federal acquisition rules contained in the Federal Acquisition Reform Act of 1996 (FARA). the Federal Acquisition Streamlining Act (FASA) and the Truth in Negotiations Act (TINA).

Database of Year 2000 Upgrades and Year 2000 Compliant Software/Hardware

In addition, a central database could be maintained to keep track of the availability of Year 2000 upgrades for older hardware and software items from the private sector. A starting point for this could be the Internet database being developed by the Government Information Technology Executive Council (GITEC), formerly the Council of Federal Data Center Directors (see the URL of *"http://www.ssa.gov4year2000/v2klist.htm")*. Additional databases of Year 2000 compliant products and services are available from GSA (see the URL of *"http://www.itpolicx'. gsa. gov/mks/yr2000/vendors2.htm")* and by the Defense Information Systems Agency (see the DISA Year 2000 COTS Products Compliance Catalogue at *"http://www. mitre. org/research/cots/COMPLIANCE CAT html")*. The above databases could also include a listing of all vendors which have obtained the new ITAA*2000 certification that a vendor's methodology for delivery of products and services is designed to be Year 2000 compliant (see the ITAA*2000 Certification Program at *"http://www.itaa.org/certprl. htm")*.

The alternative is that the federal and state agencies will each have to send letters and make telephone calls to hundreds. if not thousands of vendors, in order to determine the availability of Year 2000 upgrades and Year 2000 compliant software/hardware. This duplicative effort and unnecessary expense could be avoided with coordination of efforts and the use of a centralized database accessible to all federal and state agencies over the Internet.

The GSA. DISA and/or GITEC databases could also be maintained to record the Year 2000 corrective work currently under progress at the various federal and state government agencies and to identify the vendors involved, so that other authorized federal and state agencies could better identify each vendor's work in progress and expertise. The database could also identify useful private sector information resources, such as the Year 2000 Resource Book, edited by Leland Freeman, which profiles over forty Year 2000 vendors and over 100 Year 2000 corrective tools (see *"http://www.mstnet.com/year2000/vr2000.htm")*. In a hopeful sign in this regard. the Federal CIO Council Y2K Subcommittee reportedly has created a COTS Subcommittee to explore the possibility of creating a government-wide Y2K compliance database (see the ITAA Year 2000 Outlook, February 14, 1997 at *"http://www.itaa.org")*.

Issue No. *6: "An analysis of the effects and potential effects on the United States economy that would result if the Year 2000 computer problem is not resolved by June 1, 1999;":*

High-Tech Economy

According to one report. the U.S. private sector investment in software and data processing rose from eighteen percent (18%) of total investment in 1981 to forty-one percent (41%) in 1996, with the information processing category growing at an annual rate of twenty percent (20%) as compared to growth in total investment of only five percent. (see, Diane Coyle, "Hard Figures for a Software-Driven Economy", The Independent, June 6, 1996, at p. 26). These statistics underscore the fact that the U.S. economy is evolving into a high technology, knowledge-based economy. The disruption of the public sector's and private sector's computer networks due to the Year 2000 problem therefore is likely to have a greater negative effect than it would have ten to fifteen years ago.

Impact on Economy/Stock Markets

The impact of the Year 2000 problem on the U.S. economy and stock markets could be

considerable. A good starting point for this issue is an article by Capers Jones, Chairman of Software Productivity Research. Inc., entitled "The Global Economic Impact of the Year 2000 Software Problem", located at the Internet URL of *"http://www.spr.com/library/y2k00.htm"*. In particular, some investors and fund managers are beginning to analyze which companies may be most vulnerable to the Year 2000 problem in order to protect the value of their stock portfolios (see, e.g., *"http://www.y2kinvestor.com/letter.html")*.

When America Online. Inc. (AOL), the Internet service provider, went off-line for less than one day on August 7. 1996. its stock dropped approximately three points. With approximately 91 million shares outstanding, trading at approximately 34 prior to August 7th and at approximately 31 after the sell-off, the market value of outstanding AOL stock was reduced by approximately $273 million. If numerous companies were to experience a drop similar to the drop in AOL stock on or about January 1, 2000, and the negative impact on the market were to be magnified by the automatic kicking in of computerized trading programs, the loss in investor confidence could be considerable and be long-lasting. Panicked investors might divest themselves of stocks in favor of investments in gold, an investment decision which contributes little to the U.S. economy. In addition, while companies are struggling to cope with the Year 2000 problem, scarce corporate capital may be diverted from other research and development projects which produce new products and enhance the competitiveness of the U.S. economy.

Business Interruption Insurance Issue

Companies which fail to become Year 2000 compliant in time and shut down may not be covered by their business interruption insurance policies and may be uninsured in this regard, because the Year 2000 problem may not qualify as an insurable "fortuitous event" (see, Jinnett, "Legal Issues Concerning the Year 2000 'Millennium Bug"' at *"http://www.year2000. com/archi ve/NFlegalissues. html"*). The Gartner Group has estimated that approximately fifty percent *(50%) of* the companies with a Year 2000 problem will not become compliant in time and will have all or part of their computer systems shut down or start producing incorrect data on or after January 1, 2000 (see, Mark Evans, "The Profit Clock is Ticking on 2000 Countdown," The Financial Post, May 8, 1996, Section 2, at p. 22). If the Gartner Group is correct in its prediction, then a large segment of the U.S. economy may potentially incur significant uninsured business interruption losses.

Year 2000 Litigation Warnings

Finally, numerous articles have been published recently surmising that substantial litigation will be produced as a byproduct of the Year 2000 problem. (see, e.g., Jeff Jmnnett, "Year 2000 'Millennium Bug' Litigation", The Los Angeles Lawyer Magazine. June, 1997; Wendy Leibowitz, "Lawyers Brace for Countdown and Out to 2000", The National Law Journal. October 28, 1996; Jay Eisenhofer. "Has Your Business Been Bitten by the $600 Billion Millennium Bug?; Outline of Potential Legal Remedies", The Le al Intelli encer, September 11, 1996; Warren Reid, "2001: A Legal Odyssey (The-iumBug),Te Computer Lawyer, June. 1996. Vol. 13, No. 6, at p. 15; "Lawyers Ponder Y2K LiabiliW' Concerns", ITAA Year 2000 Outlook, October 11, 1996; Lawrence Siskind, "The Year 2000 Crisis", The Weekl Standard. September 23, 1996; Bruce Gaylord, "Beware the Year 2000:De sing a So ware Time Bomb", Computer Law Strategist. Vol. XIII, No. *5,* September, 1996, at p. 1; Simon Halberstam, "Who Can Sue Whom", The Times, October 7, 1996, at p. 41; Thomas Hoffman, "Year 2000 Problem Comes Bundled With Legacy of Potential Litigation", Coin uterworld, October 14, 1996, at p. 88; Anthony Aarons, "Cinderella's Nightmare", Los Angeles Daily Journal (Cyberlawyer), October 3, 1996; Leah Nathans Spiro, "Panic in the Year Zero Zero," Business Week, August 12, 1996, at p. 72; Mary W. Holden, "Millennium Bug Threatens to Spread Mad Computer Disease", Chicago

1996. at p. 78; Jeff Jinnett, "Legal Issues Concerning the Year 2000 Bug"', at the Internet URL of

"http://www.year2000.comiarchive/NFlegalissues. html"). This flood of litigation, if it occurs. may act as a further drag on the federal and individual state economies. Bond Ratings

To the extent that a municipality appears likely to fail in its Y2K corrective efforts, municipal debt rating agencies. such as Moody's Investors Service. Standard & Poor's Corporation and Fitch's Investor Service may be forced to take the Year 2000 computer problem into account in rating the municipality's debt (see, e.g., *"http://www.cpa.texas.goviiocalinf/debtguide/ch2.3. html")*. The downgrading of a municipality's debt rating would result in higher interest rates for the bonds being issued, a serious issue for most municipalities.

Recommendations of the Commission

Senate Bill 22 also directs the proposed Commission to make recommendations to the Secretary of Defense, to the President and to Congress, as follows: ***"During the period during which the Commission conducts the study under paragraph (1), the Commission shall make such recommendations as the Commission determines to be appropriate concerning addressing the Year 2000 computer problem (including addressing the problem as a matter of national security and making recommendations concerning the procurement contracts referred to in paragraph (1)(E):":***

In some instances, the Year 2000 Commission will be able to provide detailed proposals to the President and Congress. together with draft bill language for proposed Year 2000 governmental procedures. In other cases, the Year 2000 Commission will only be able to raise issues and outline various competing solutions to the issues. The following are examples of certain issues which could be more fully explored with the assistance of the Year 2000 Commission.

Disaster Recovery "Hot Site"

Assuming that a particular federal or state agency determines in 1999 that it will not be able to correct its customized computer software to be fully Year 2000 compliant by January 1, 2000, is it possible that the agency might be able to send its data to an outside disaster recovery "hot site" for processing on a generic software system which has been previously determined to be Year 2000 compliant ? The "hot site" might not be able to process the agency's data as well as the original customized software package at the agency's computer center could, but at least the agency would not shut down. Would such a backup plan be cost-effective and what mission-critical functions could reasonably be handled at such a "hot site" ? The Veteran's Administration Austin Automation Center has offered to provide Year 2000 corrective services to other government agencies. Could the Austin processing center or other governmental facilities be adapted to act as disaster recovery "hot sites" for federal agencies and/or state agencies which fail to become Year 2000 compliant in time?

Security Issues

It is generally understood by Year 2000 computer experts that even if a company were to become fully Year 2000 compliant itself, if it receives data or software from a third party which is not Year 2000 compliant, the contaminated data or software can contaminate the company's own computer system. Although the Year 2000 problem may not be a "virus" in the technical sense, it can "contaminate" a computer system. In addition, in order to correct the Year 2000 problem, numerous consultants and outside programmers will have to be given access to governmental computer systems. What security measures should the federal government institute in order to defend its computer systems (especially DoD systems) from outside contamination, rogue programmers brought in as independent contractors to Year 2000 corrective vendors and hackers attempting to take advantage of the disruption of

normal security safeguards ? (see. e.g., Heather Harreld. "Hacker Attacks, other Abuse Continue to Rise", Federal Computer Week, March 17, 1997, at *"http://www. fcw. corn/pubs/ft w/] 997/0317/hacker htm")*.

Special Year 2000 Taxes/Unfunded Mandates

Deficit spending is prohibited by the constitutions of many states, complicating the states' ability to raise funds for their Year 2000 corrective work. The State of Nebraska has attempted to solve this funding problem by part of its cigarette tax to fund an Information Technology Infrastructure Fund for four years for its Year 2000 corrrective work (see Bill Hord. "Computer Funding Bill For Year 2000 Given Wider Scope", Omaha World Herald, March 27, 1996, at p. 20). Should the U.S. Congress consider such an action on the federal level?

In his testimony before Congress, Daniel Houlihan of NASIRE raised the additional issue of whether the federal government could provide funding for systems which were created to satisfy federal mandates. (see FDCH Political Transcripts for the September 11, 1996 Joint Hearing with the Technology Subcommittee of the House Science Committee and the Government Management, Information and Technology Subcommittee). Certainly, if new mandates are imposed on states in the next three years (such as the obligation to conduct drug testing on minors as a precondition to their obtaining driver's licenses), these calls by states for federal funds for Year 2000 corrective work will likely increase.

Tax Incentives

The Emerging Issues Task Force of the Financial Accounting Standards Board (FASB) has decided that companies should currently deduct the cost of their Year 2000 corrective work, rather than capitalizing the costs (see Alison Bennett, "Expensing Computer Change to 4-Digit Years in 2000 is Appropriate, Practitioner Says", BNA Management Briefing, July 23, 1996; see also, Joan Paul, "Year 2000 Tax Issues-Preventing an Even Bigger Hit to the Bottom Line" at *"http://www.comlinks.corn/legal/trnjb9.htm")*. The EITF position would require companies to take an immediate "hit" to their financial statements for their Year 2000 costs. In order to encourage private sector companies to incur the Year 2000 costs and become compliant as quickly as possible, should federal and/or state tax incentives be passed into law to support Year 2000 corrective work ? Further, since companies will be reporting lower profits due to the incurring of Year 2000 corrective costs, states will need to determine the extent to which tax revenues will decrease as a result of the lower reported profits. One consultant has estimated that the state of New Jersey may face a tax revenue shortfall of $2 billion over the next three years (see the ITAA Year 2000 Outlook, April 18. 1997 at *"http://www.itaa.org")*.

Governmental Mandates to the Private Sector

The Office of the Comptroller of the Currency has issued (jointly with the FFIEC) Advisory Letter 96-4 advising all national banks to become Year 2000 compliant by December 31, 1998, leaving one year for testing (see the URL of *"http://www.occ.ustreas. gov/ftp/advisory/96-4 att. txt")*. An Interagency Statement was subsequently issued on May 5, 1997 by the FFIEC (see the Internet URL of *"4gpjyjjy~'jyyyjzpgjoyjy7jq4yppjy2~trn")*. The FFIEC has also issued Year 2000 or use y examiners (see *"http://www.ffiec. gov/y2 k'yr2000. htm")*. The New Jersey Department of Banking and Insurance issued Order no. A97-129 on May 21, 1997 ("In the Matter of the Effect of Year 2000 on Computer Systems for Entities Subject to Periodic Examination by the Department of Banking and Insurance"), requiring all banks and insurance companies regulated by the department to file a completed Y2K survey. Should the federal government and state governments consider issuing Year 2000 mandates for regulated industries where a failure to become Year 2000 compliant might have a serious negative impact on the public health and

The State of Oklahoma legislature has passed a Concurrent Resolution calling on state agencies and institutions of higher learning to become Year 2000 compliant and to report their plans to become compliant to the Legislature by November 1, 1996, with more specific plans every following November through 1999 (see. ITAA Year 2000 Outlook, August 2, 1996. located at the Internet URL of *"http ://www. itaa. or"*). Should the other states be encouraged to follow Oklahoma's example?

The U.S. Securities and Exchange Commission (SEC) has reportedly studied the impact of the Year 2000 problem on the public securities market and has announced that it intends to include questions as to Year 2000 compliancy in SEC audits of registered broker-dealers (see. Geof Wheelwright. "SEC's Appeal to Count the Costs", The Times. September 11, 1996: Aaron Pressman. "SEC Checking on Firms' Computers for the Year 2000," Reuters Financial Report. June 17. 1996). In addition. on May 12, 1997, the SEC issued a statement as part of a "Current Issues and Rulemaking Projects" release concerning the obligation of public companies to disclose in their annual reports on Form 10-K and quarterly reports on Form l0-Q their Year 2000 problem and the corrective action they intend to take (see *"http://www.sec.gov/rules/othern/cfcrO97. txt")*.

Should state securities commissions require Year 2000 disclosures to be included in offering statements for securities registered under their state "Blue Sky" laws ? Should FASB issue guidelines for independent accountants in connection with their audit of companies' financial statements with respect to Year 2000 problems?

U.S. Export Control Laws

Many companies are reportedly considering giving all of their software applications to a third party vendor for correction of the Year 2000 problem, with corrective work being done at less expensive programming facilities in countries such as India, the Philippines and South Africa. Will companies mistakenly export encryption software and other software applications forbidden from export under the provisions of the Arms Export Control Act due to ignorance of the U.S. Munitions List and the haste with which Year 2000 compliance work is being undertaken ? Do special steps need to be taken by the federal government to guard against this problem?

Federal Securities Laws

Although offerings of securities by municipalities are exempted from registration requirements and civil liability provisions of the Securities Act of 1933 (the "1933 Act") and from the reporting requirements under the Securities Exchange Act of 1934 (the "Exchange Act"). municipal securities offerings are not exempt from coverage under the antifraud provisions of Section 17(a) of the 1933 Act, Section 10(b) of the Exchange Act and Rule lOb-S promulgated by the SEC under Section 10(b). (See, e.g., Release No. 33-7049/34-33741, 17 CFR 211. 231 and 241, "Statement of the Commission Regarding Disclosure Obligations of Municipal Securities and Others"). The antifraud provisions prohibit municipal issuers and the brokers and dealers assisting the issuer from making any false or misleading statement of material fact, or omitting any material facts necessary to make statements by that person not misleading, in connection with the offer, purchase or sale of any municipal security. Also, when a municipality issues information to the public after an offering of municipal securities which is reasonably expected to reach investors and the trading markets, the above antifraud provisions also apply to those disclosures.

Municipal securities dealers are also subject to rules designed to prevent fraud and promulgated by the SEC and by the Municipal Securities Rulemaking Board. (See. e.g., Release No. 33-7049/34-33741, 17 CFR 211,231 and 241, "Statement of the Commission Regarding Disclosure Obligations of Municipal Securities and Others"). In addition,

voluntary guidelines for disclosure in connection with the issuance of municipal securities have been issued by the Government Finance Officers Association and by the National Federation of Municipal Analysts. State and local governments therefore need to consider what risk factors and other disclosures may be necessary as to their Year 2000 corrective plans in connection with the preparation of the offering documents for municipal securities (the "Official Statements") required to be distributed to underwriters pursuant to Rule 1 5c2- 12, promulgated by the SEC under the Exchange Act.

Disclosures Required Due to Accounting Principles

It appears that the overwhelming majority of states, cities, counties and school districts currently rely on Generally Accepted Accounting Principles ("GAAP") as determined by the Government Accounting Standards Board ("GASB") in preparing their financial statements (see, SEC Release No. 33-7049/34-33741, at section 3(C)(3)(a)). Municipal issuers will need to analyze whether Statement of Financial Accounting Standards No. 5 ("Accounting for Contingencies") requires the municipal issuer to disclose in its financial statements any risk of interruption of governmental operations due to the Year 2000 computer problem (see, e.g., Jeff Jinnett, "Legal Issues Concerning the Year 2000 'Millennium Bug'", at *"http://www.year2000.com/archive/NFlegalissues. html").*

Tort Claims Act/Tucker Act

Under the Federal Tort Claims Act (28 U.S.C. Sections 1346, 267 1-2678, 2680), may citizens sue an agency of the federal government if they are injured as a result of the agency failing to render its computers Year 2000 compliant in time due to the negligence of the agencies' employees ? Thirteen exceptions are listed in the Tort Claims Act where the federal government may not be sued for tort liability, such as an exception for "discretionary functions". An analysis could be made by government attorneys as to the various claims which are likely to arise due to particular Year 2000 problems and whether any of the various exceptions may apply.

Under the Tucker Act (28 U.S.C. Sections 1346(a), 1491), may citizens or companies sue the federal government for breach of contract and other monetary claims not arising in tort due to the failure of one or more federal agencies to render their computer systems Year 2000 compliant ? The Tucker Act empowers the Claims Court to hear suits against the federal government, based on any contract with the government (express or implied), so long as the suits seek primarily money damages and do not involve tort claims. A similar analysis by government attorneys could be required to anticipate the potential Tucker Act claims which might result from particular federal agencies failing to become Year 2000 compliant.

Many states have Tort Claims Acts and would face similar issues. Typically, state tort claims statutes only waive the state's sovereign immunity from suit and the qualified immunity of government officials (in some states, up to a maximum dollar limit, such as $100,000) in limited cases. Courts interpreting these statutes have held a state liable in cases where (a) the state owes a special duty to the claimant rather than a duty to the public-at-large, (b) the liability arose out of a ministerial act rather than a discretionary act by government officials, and/or (c) the tort liability involves "egregious conduct" on the part of the governmental body or official.

Thus, in some states, if a convicted criminal were to be released on parole early due to computer error and injure a citizen while on parole, the state would likely not be liable, because the state's duty was to the public-at-large. However, would the same result apply if a traffic light malfunctioned due to its internal timer not having been made Year 2000 compliant and a serious traffic accident occurred ? In some cases, a state has been held liable for traffic accidents caused by a dangerous highway condition where the state knew of the dangerous condition and failed to take action to remedy it.

Would it be advisable for the Congress to consider amending the Federal Tort Claims Act and the Tucker Act and/or for the state legislatures to amend their claims acts to exclude liability for damages caused by the failure of any agency to become Year 2000 compliant in time? The Congress and the various state legislatures may decide for reasons of public policy not to exclude claims based on the Year 2000 problem, but it might be advisable for the responsible legislators to at least consider the question, since the potential damages could be considerable.

Federal and State Disaster Relief

If a state government were to fail to become Year 2000 compliant in time with respect to mission-critical systems. how should the federal government respond if the state government were to request federal disaster assistance?

The definition of a "Major Disaster" under the Disaster Relief Act, 42 U.S.C. Section 5122 (2), is:

"any natural catastrophe or. regardless of cause, any fire, flood, or explosion, in any part of the United States, which in the determination of the President causes damage of sufficient severity and magnitude to warrant major disaster assistance under this chapter to supplement the efforts and available resources of States, local governments, and disaster relief organizations in alleviating the damage, loss, hardship, or suffering caused thereby."

It is conceivable that a computer malfunction caused by the Year 2000 problem could result in a disaster fittinu the statutory definition. If a disaster were to occur such as a electric power plant explosion due to a computer malfunction caused by the Year 2000 problem. and the President were to declare the affected area a disaster area, would businesses affected negatively by the Year 2000 problem in the surrounding geographic area (but not affected by the power plant explosion) be entitled to claim federal disaster relief? Among the other benefits, casualty losses can be deducted in the year they are incurred, after subtracting insurance proceeds and a S 1 00 threshold for each casualty, to the extent they exceed 10% of Adjusted Gross Income.

The President may wish to consider in advance the types of disasters which can occur due to the Year 2000 problem and decide in advance whether federal disaster relief will be provided and how it can be targeted to those directly affected by the disaster. Also, the states could consider how their state disaster relief agencies should coordinate with the Federal Emergency Management Agency (FEMA) to prepare in advance for potential disasters caused by the Year 2000 problem. (see, e.g., the FEMA Web site at the URL of *"http://www.fema.gov").*

Multi-State Compacts

It may be in the best interests of the states to form multi-state "compacts" to engage in coordinated efforts on the Year 2000 problem. The activities of these compacts might involve the creation of Year 2000 databases, coordinated corrective work and joint "hot site" efforts, and coordination of Year 2000 financing activities, all in order to reduce overall costs to the participating states. It should be noted that Article 1, Section 10, clause 3 of the U. S. Constitution provides that "No State shall, without the consent of Congress, enter into any Agreement or Compact with another State, or with a foreign Power..." (the "Compact Clause"). Decisions of the U.S. Supreme Court, however, have generally interpreted the Compact Clause as being intended only to prohibit the formation of compacts or combinations between states which may encroach upon or interfere with the federal government's power or which grant the states powers which they would not have absent the compact.

Examples of compacts between states exist (a) which have required the approval of

Congress (e.g., the New York-New Jersey Port Authority Compact, the Delaware River Port Authority Compact and the Metropolitan Washington Airports Authority Compact), and (b) which have not required Congressional approval (e.g., the Interstate Compact on Placement of Chi1a~iTi~lating to the adoption and foster care of children and the Multistate Tax Compact to facilitate the proper determination of the state tax liability of multistate corporations).

Typically, interstate compacts either (a) create a uniform process or procedure (e.g., the *Interstate Agreement on Detainers* between 48 states and the United States to dispose of outstanding criminal charges brought against prisoners incarcerated in other jurisdictions), (b) manage a common physical resource or develop a commonly needed man-made physical resource (e.g., the *Tahoe Regional Planning Compact* between California and Nevada to coordinate regional planning for the Lake Tahoe Basin), (c) determine property rights (e.g., the *Arkansas River Compact* between Kansas and Colorado to resolve existing disputes concerning the Arkansas River), or (d) otherwise address a common problem among the participating states (e.g., the *Central Interstate Low-Level Radioactive Waste Compact,* created pursuant to the federal Low-Level Radioactive Waste Policy Amendments Act of
1985).

AYear 2000 Compact among states might fall into the same category as the above-referenced *Low-Level Radioactive Waste Compact* as a compact designed to address a common problem among the participating states. Congressional approval might not be necessary for the creation of Year 2000 Compacts between states on the theory that the Year 2000 Compacts were not designed to take any power from the federal government, but rather to assist the states in handling a short-term computer problem. The Year 2000 Commission could examine this issue and advise Congress as to whether federal authorizing legislation might be appropriate to address this potential legal issue.

Finally, an issue might arise as to the legality of states forming a Year 2000 Compact for purposes of undertaking joint financing to raise funds for Year 2000 corrective work. In the past, some multistate compacts have allowed for the issuance of bonds to finance the purpose of the compact. For example, the *New York-New Jersey Port Authority Compact* authorizes the Port Authority to issue bonds. The *Low-Level Radioactive Waste Policy Compact* also contemplates the allocation of waste disposal costs among the participating states. Again, the Year 2000 Commission could examine whether enabling federal legislation should be enacted to resolve this legal issue if multistate Year 2000 financing appear necessary and desirable.

Coordination with Other Nations

The United States is not an island unto itself with respect to the Year 2000 problem. Our allies and trading partners face the Year 2000 problem as well and any serious damage to their economies or political systems would ultimately harm our economy and security. The EU, for example, faces the problem of not only having to correct its computer systems to become Year 2000 compliant, but also to change over its systems to recognize the new unit of currency, the ECU. Under the Maastricht Treaty, the move to the ECU is to be formally approved by the participating nations in January of 1998, with the conversion beginning in January of 1999 and being completed in 2002.

If the EU fails to render its computer systems Year 2000 compliant in time, how will this impact the U.S. economy, NATO operations, and other areas where the U.S. and members of the EU interface or cooperate ? Martin Bangemann, the EU's industry commissioner, reportedly is creating a working group to study the Year 2000 problem (see, "European Commission Investigating Millennium Bug", Newsbytes, June 28, 1996; "Clockwork Mice", Financial Times, July 1, 1996; European Report No. 2144, June, 1996). In the United Kingdom, spurred by Ian Taylor, the British Minister of Trade and Industry, the Government's Central Computer and Telecommunications Agency (CCTA) is reportedly

coordinating the efforts to correct the U.K. governments Year 2000 problem. (see. "DTI: Act Early to Defuse Millennium Time Bomb". M2 Presswire. June 26. 1996; see also the CCTA

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Web site at *"http://www.open.gov. uk/ccta/mill/mbhome.htm")*. Should the U.S. Year 2000 Commission mandate include the authority to coordinate efforts with the EU working group, the CCTA in the United Kingdom and other non-U.S. governmental Year 2000 task forces? Should the mandate include coordination with possible future United Nations efforts with respect to the Year 2000 problem?

CONCLUSION

The above are just some of the potentially weighty questions on which the Year 2000 Commission might be able to provide additional guidance to the federal government and the state governments as they grapple with what is widely recognized by computer experts to be a major challenge to the computer industry and a major disaster in the making, if not handled correctly and efficiently. Although decentralized experimentation can be very useful, the federal government and the state governments do not have the luxury of time with respect to the Year 2000 problem. This is one deadline which cannot be extended and due to the complex interrelationship of governmental and private sector computer systems, all systems need to be made compliant in time and all system interfaces need to be tested for functionality. Further, since the Year 2000 corrective effort is so labor intensive and expensive, costs need to be reduced as much as possible.

The utmost in coordination on all federal and state public sector levels is therefore required to eliminate duplication of efforts and to ensure that the failure to implement a corrective plan by any agency is detected as early as possible. The Year 2000 Commission can serve an extremely useful purpose in identifying critical steps and devising methodologies for accomplishing the necessary interagency coordination.

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June 16. 1997

Author's Note: This article is intended to provide general information and is not intended to provide legal advice with respect to specific transactions or matters.

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A serious computer problem. variously known as the "Year 2000", "Y2K", "Century Date Change" or "Millennium Bug" problem, faces many companies. Although computer experts have done much to promote

awareness of some of the technical issues surrounding the Year 2000 problem, little has been published concerning the related legal issues. This article is intended to provide a summary discussion of some of the major legal issues which may arise due to the Year 2000 problem and is written with non-lawyers as well as lawyers in mind.

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Background

The Year 2000 problem arises because most business application software programs (mainframe, client/server and personal computer) written over the past twenty years use only two digits to specify the year, rather than four. Therefore, on January 1, 2000, unless the software is corrected, most computers with time-sensitive software programs will recognize the year as "00" and may assume that the year is "1900". This could either force the computer to shut down or lead to incorrect calculations. Two digits were used by programmers in the past instead of four digits to designate the year to save (then-expensive) memory during processing.

As an example of the type of incorrect calculation which can be produced due to this problem, when a computer sorts dates by year, "00" (for the year 2000) could be identified as an earlier date than "99" (for the year 1999). A financial spreadsheet or projection therefore might show the financial trend for the 1999-2000 period running backwards rather than forwards. Insurance company computers might report a policy running through the year 2001 as having instead expired in 1901. A non-compliant bank computer calculating interest for a financial instrument for the six year period of 1995 through the year 2000 might instead calculate the interest for the period of 1900 through 1995, for a ninety-six year period instead of a six year period. More detailed information concerning the Year 2000 problem and available Year 2000 conferences and seminars can be found at the Internet World Wide Web site located at the Uniform Resource Locator ("URL) of "http://www.year2000.com".

Year 2000 Problem Corrective Costs in the Billions

Gartner Group, Inc., an information technology research firm, has estimated that it will cost between

$300 billion to $600 billion to correct the Year 2000 problem worldwide. .LThe software corrective work frequently is very time-consuming, requiring considerable programming effort to examine millions of lines of source code (software code readable by a human programmer) in order to locate the six digit date fields and correct them.

For example, The Prudential Insurance Company of America reportedly expects to correct approximately 125 million lines of code at a cost of approximately $150 million. Although the costs of corrective action vary from company to company, it is not unusual to find reports of approximately $1.10 per line of source code to correct the date field problem. *I.*

Modification of Existing Computer System Versus Migration to New Systems

In some cases, a company may have to make the initial decision as to whether to (a) modify its existing hardware/software system. or (b) migrate to new hardware/software platforms or architectures. It has been said that behind every crisis lies an opportunity. As an example of this, a company with an aging mainframe system may decide to migrate to a decentralized client/server system with local area networks and wide area networks. Alternatively, a company with an existing client/server environment may decide to create an "intranet" where its computers communicate with each other using the standards and protocols of the World Wide Web, the graphical portion of the Internet. For a company with an existing Internet site, the creation of an "intranet" or "private corporate web" would serve to add scalability to the company from its "intranet" through to its Internet site.

In making the above cost-benefit analysis, the company may wish to take into account the accounting and tax treatment of the possible alternative plans. It should be noted that The Emerging Issues Task Force ("EITF") of the Financial Accounting Standards Board ("FASB") decided on July 18, 1996 that companies in the process of implementing a Year 2000 corrective plan should currently deduct the cost of software corrective modifications rather than capitalizing it. The EITF minutes reportedly did not address purchases of new software to replace existing non-compliant software. ~

No "Silver Bullet" Solution

Given the multitude of computer programming languages in use and the variety of business uses for date fields. computer experts have advised that no single "silver bullet" exists to correct the Year 2000 problem. In fact, over 40 vendors currently market in excess of 100 software tools to correct the Year 2000 problem (see. e.g., the URL of "http://www.mstnet.com/year2000/yr2000.htm" for information about The Year 2000 Resource Book published by Management Support Technology, which profiles most of these vendors and their products).

Although it appears that any company can become Year 2000 compliant if it starts corrective action soon enough and devotes sufficient resources to the effort. Year 2000 experts recommend that corrective action begin as soon as possible and not be delayed until there may not be enough time left to complete the requisite reprogramming and testing. Companies may face unexpected technical delays, as where they discover that portions of their old "legacy" mainframe software have no source code documentation and the original programmers have died, retired or are otherwise no longer accessible. Companies may also face delays due to legal difficulties, as discussed in more detail below.

Many Companies Will Not Become Year 2000 Compliant in Time

According to a recent study by Olsten Corp., nearly one in six North American senior executives surveyed were unaware of the Year 2000 problem. Gartner Group, Inc. has estimated (with a probability of 0.7) that approximately 50% of the companies with this software problem may not become Year 2000 compliant in time and will have all or part of their computer systems shut down (or start producing incorrect data) on or after January 1, 2000.1 Major software vendors such as IBM are in the process of issuing Year 2000 upgrades to existing software products (see, e.g., the URL of "http://www.software.ibm.com/year2000/perspect.htm1"). For major or companies with heavily customized

software systems, however, much of the corrective work will have to be done by the companies themselves.

TECHNICAL/LEGAL INVENTORY

Software Inventory/Data Processing Flow Chart

The first step a company should take to become Year 2000 compliant is to prepare an inventory of the hardware and software being utilized in its business. Although the Year 2000 problem is primarily a mainframe software problem. it can also exist in computer hardware (e.g,. clocks in the BIOS code located on the PC (ROM) chips), in client/server environments and in PC software. In addition to utilizing scanning software (which searches a networked system to locate and identify software packages on the system), the company should prepare a data processing flow chart with supporting documentation showing specific processing steps being performed by the company's computer system in order to accomplish the required business functions (see Diagram "A", at the end of this article).

All software programs known to be owned or licensed by the company should then be identified to the flow chart in order to determine if any processing steps are revealed which have no software programs identified to them, thus revealing previously unknown, undocumented software in use (see Form "1", at the end of this article). In some cases, undocumented software can enter a computer system if staff computer technicians use third party applications, tools and utilities to solve pressing processing problems and neglect to notify higher management that new software has been inserted into the system.

Some companies reportedly are foregoing the inventory step, proceeding directly to corrective Year 2000 work on their computer systems. In the final testing phase. however, this may result in the computer system refusing to test as Year 2000 compliant due to undocumented software applications, tools or utilities which have not been fully corrected. As noted below, moreover, a failure to conduct the initial inventory phase in conjunction with a legal audit may lead to problems in preserving the company's legal rights against software vendors.

Legal Audit

Once all software packages are identified, the company's general counsel and/or outside counsel should locate and review the license agreements and long-term maintenance agreements relating to all third party licensed software. The company will then be able to identify the appropriate vendor to contact in order to request information as to the availability of Year 2000 software upgrades. (See also Year 2000 upgrade informational sources such as the URL of "http://www.auditserve.com/yr2000/yr2ktrk.html").

It has been reported in the press that companies have begun sending letters to all of their software vendors requesting information as to when their software will become Year 2000 compliant.~ In some instances the software licensed has undergone a product name change during the years, or the owner/licensor of the software has changed its name or been the subject of an acquisition. In that case, a search of various computer databases such as Lexis~-Nexis~ [2]may be necessary in order to determine the correct current vendor and product name.

Potential Obligation of Maintenance Vendors to Fix Year 2000 Problems

A further purpose is served by locating the relevant license agreements and maintenance agreements for all third party licensed software. If the third party license agreement is accompanied by a long-term maintenance agreement surviving past January 1, 2000, the vendor may have an obligation to make its software Year 2000 compliant at the vendor's expense. Counsel will need to review the relevant license and maintenance agreements in this regard. but until recently, many such agreements were silent as to the Year 2000 problem.

Some vendors may disclaim liability for providing Year 2000 upgrades at no additional cost under the

maintenance agreements. arguing that the Year 2000 problem was well-known in the computer industry and constitutes an "assumed risk?? of the customer. The failure to at least request a vendor in writing to make its software Year 2000 compliant at its own cost under the long-term maintenance agreement may constitute a waiver by the customer of its right later to seek reimbursement for the costs it incurs in making the changes itself. It would also. in that event, deprive the customer~ s insurer of subrogation rights against the vendor.

Potential Obligation of Outsourcing Vendors to Fix Year 2000 Problems

Companies should also review all their data processing outsourcing agreements in order to determine if the outsourcing vendors may have an obligation to undertake the Year 2000 compliance work at their cost. It has been suggested that key provisions in the typical outsourcing agreement which may be relevant to this analysis are the sections dealing with the scope of facilities management and the size of anticipated workload.

Company counsel should also examine any provisions in the outsourcing agreement whereby the outsourcing vendor agrees as part of its fixed fee to cure any "defects", "bugs" or "viruses" found within the software programs used in processing the company s data. The "Millennium Bug" might not technically be viewed to be a virus, since a virus is typically understood to be a software program that can "infect" other programs by modifying them to include a version. possibly evolved, of itself.ll The Year 2000 problem might, however, be viewed to constitute a "defect" or "bug" within the program. which interferes with the programs intended operation.

The obligation for an outsourcing vendor to cure software defects in the system sometimes is found in a systems software maintenance provision in the data processing outsourcing agreement. A typical provision of that type might read essentially as follows:

> "Systems Software Maintenance. As part of the Base Services, Vendor shall provide Customer with Systems Software maintenance and Systems Software production support services as described in Exhibit including but not limited to (1) preventive and corrective maintenance to correct defects and failures in the Systems Software and any third party systems software, (2) installing, testing and maintaining upgrades to the Systems Software and any third party systems software and (3) changes. enhancements and replacements of the Systems Software or additional Systems Software, as Vendor deems necessary, in order to perform the Services in accordance with the Performance Standards."

As in the case of long term maintenance providers. outsourcing vendors may strongly resist the suggestion that year 2000 corrective costs be absorbed as part of their fixed fee. Companies in this situation still may decide to make the demand of their outsourcing vendor in writing rather than waive it. The company then would proceed to correct the Year 2000 problem at its expense while expressly preserving its right at a later date to seek reimbursement of its costs from the outsourcing vendor.

Product Switches

Some software vendors may abandon hardware and/or software products rather than incur the cost of creating Year 2000 upgrades. Hardware vendors may also decide to abandon products in order to kill off a second-user market and force customers to upgrade to more expensive equipment. A careful review of the relevant agreements with the vendor will then be necessary in order to determine the vendor's legal ability to force such a product switch.

Contaminated Third Party Data

A company's computer system, even if Year 2000 compliant, may fail to process, produce error messages or generate incorrect data if the company receives contaminated programs and/or data from third party suppliers which are not Year 2000 compliant. In this respect, the Year 2000 "Millennium

Bug', even though not created with malicious intent and possibly not technically constituting a "virus", may still be thought of as acting in the manner of a "virus" that can re-infect a computer system even after it has been made Year 2000 compliant.

A complete data processing flow chart of the company's computer systems would help to resolve this difficulty by identifying where third party software programs and/or data is input and processed. Companies which are vulnerable to non-Year 2000 compliant software or data from outside suppliers should (a) contact their suppliers at an early date in order to determine their suppliers' Year 2000 compliance plans and (b) monitor their suppliers' progress in actually becoming Year 2000 compliant. Company counsel should also analyze what legal recourse may be available in the form of indemnification provisions and similar provisions in the company's contracts with the suppliers which could serve to protect the company in the event the suppliers do not become Year 2000 compliant in time.

GENERAL CONTRACT ISSUES

Year 2000 Compliance Warranties

Various companies and governmental agencies have reportedly revised their standard contract forms to require that any new software proposed to be sold or licensed to them be Year 2000 compliant.[1]? The following are a few sources for examples of Year 2000 compliance warranty language: (a) GSA Year 2000 contract language presented to the Year 2000 Interagency Committee, at the URL of "http wwwwitpolicy.gsa.gov/library/yr2000/y2O9rfpl .htm" (b) "Year 2000 Warranty", located at the URL of "http://www.year2000.com/archive/warranty.html" (c) Michael Krieger, "Drafting Tip: The Threat of 2000: Calendar Clause Protection", in the May, 1996 issue of Cyberspace Lawyer, Vol. 1, No.2; (d) National Institute of Standards and Technology, Department of Commerce: FIPS PUB 4-1, "Representation for Calendar Date and Ordinal Date For Information Interchange", located at the URL of "http://www.nist.gov/itl/div879/vr2000.htm" (e) APT Data Services, "Pain or Gain in the Year 2000?", Computer Business Review. March 1, 1996, No. 36. vol.4; and (f) "Draft Year 2000 Sample Procurement Specifications" at the URL of "http://204.222.128.9/horizon/year2000/drftspec.htm".

It should be noted that the vendor should be required to both "represent" and "warrant" as to its product being Year 2000 compliant so that the customer is legally entitled to both equitable remedies (such as rescission of the contract) for a breach of the "representation" and remedies at law (such as money damages) for breach of the "warranty".

"Millennium Bug" as an Event of "Force Majeure"

Many contracts contain a "force majeure" clause which protects a contract party from a claim of default when it fails to perform due to an Act of God or other event beyond the party's reasonable control. It is unlikely that the Year 2000 problem would be viewed as an Act of God, since it is a known problem, which can be corrected with enough planning and resources. However, depending on the particular language used in each force majeure clause and the facts and circumstances surrounding the failure to perform, the Year 2000 problem may be claimed to constitute an event of "force majeure" in some contract disputes. Some companies may wish to alter their standard force majeure language to rule out the Year 2000 problem specifically.

Software License/Copyright Restrictions

As the time remaining for corrective work becomes short, some companies may decide to simply provide an off-line copy of all of their computer applications, tools and utilities to a Year 2000 service provider. The service provider would then load the software onto its computer system in order to perform the Year 2000 corrective work. One legal issue which should be kept in mind is that many software licenses contain confidentiality restrictions barring the licensee from disclosing, or providing a copy of, the software to any third party without the consent of the licensor.

Even if the service provider were to copy the company's software onto an off-line computer system at the licensee's premises, the vendor may argue that the creation of this maintenance copy, despite its retention on the licensee's premises. constitutes a breach of the license agreement and an infringement of the vendor's copyright in the software program.

Further, if the Year 2000 service provider were to decompile, disassemble or otherwise reverse engineer a software application where it had been given only an "object code" version of the software (i.e., software in a format readable only by the computer and not by a human programmer), this would also violate a related software license agreement which prohibited such reverse engineering. Although Section 117 of the U.S. Copyright Act arguably permits the purchaser of a copy of software to modify the copy in order to be able to correct the Year 2000 problem, a licensee of software who is prohibited from modifying the licensed software would be expected to honor the license restrictions.i2 The licensee in that instance would normally contact the vendor for a Year 2000 upgrade or modification or obtain the vendor's consent to make the modification itself.

In addition, some maintenance agreements provide that warranties as to system performance automatically become void if any party other than the software maintenance vendor modifies the system. Care should be taken to avoid this result. where possible.

A difficult legal issue arises if the licensor indicates that it will issue a Year 2000 upgrade in mid-1999 and the "object code only" licensee doubts that the licensor will meet even that late deadline. It is conceivable that in cases where the licensee cannot replace the defective software, the licensee may decide to reverse engineer the software in order to obtain access to source code and modify it, taking the risk of a breach of license agreement lawsuit from the vendor, rather than the risk of not receiving a Year 2000 upgrade in time. In such a case, the licensee's breach of the agreement might appear less egregious if the licensee made the modifications itself, rather than have an unaffiliated third party service provider make the modifications.

In light of the above issues, service providers offering Year 2000 corrective services may attempt to provide their services on an "as is" basis and may require identifications from their customers against third party licensor suits for infringement.

Export Restrictions on Encryption Software

Companies may decide to retain the services of an overseas Year 2000 service provider, such as a programming facility in India. the Philippines or South Africa, in order to obtain the services of less expensive programmers. Also, programmers experienced in COBOL ("COmmon Business Oriented Language") and other relevant programming languages may become scarce in the next few years as their services are booked up for Year 2000 corrective work by individual companies and Year 2000 service providers. Companies starting their Year 2000 corrective work late may be forced to retain programmers outside the U.S. in order to gain access to the quantity of personnel needed.

In that event, the company should be careful to examine any cryptographic software applications in its software system portfolio prior to export. Encrypted applications might include wire transfer systems, communications systems or any other software application where the processed data is encrypted to make it secure. (For additional information on cryptography and encryption software, see "RSA's Frequently Asked Questions About Today's Cryptography", at the URL of "http://www.rsa.com/PUBS/labs fag.pdf').

Under the Arms Export Control Act, certain encryption software is listed on a U.S. Munitions List and is prohibited from being exported. The prohibition is enforced by the Office of Defense Trade Controls ("DTC") in the U.S. Department of State pursuant to its International Traffic in Arms Regulations ("ITAR"). Under certain circumstances, the DTC may decide pursuant to a "commodity jurisdiction" procedure that the software proposed to be exported has both a commercial and military potential use and is governed by the less restrictive Export Administration Regulations ("EAR"). The exporting

company then may apply for a license to export the encryption software from the U.S. Department of Commerce. If jurisdiction remains with the State Department, however, the export request might also have to be reviewed and approved by the National Security Agency.

Due Diligence on Acquisitions

In connection with all due diligence investigations of target companies. the acquiring company should investigate the target company's Year 2000 compliance status. Some companies may decide to sell divisions or subsidiaries before the Year 2000. because it would cost more to make the division or subsidiary Year 2000 compliant than its net revenues justified. The acquiring company should make this same analysis and either reserve the right to adjust the purchase price to reflect this Year 2000 compliance cost or reserve the right to "walk" in the event the acquiring company's post-due diligence estimate of the Year 2000 compliance cost exceeds a pre-agreed minimum.

DISCLOSURE ISSUES

The Wall Street Journal, in an article entitled "The Year 2000 and the CEOs' Big Secret",.t~ recently reported that companies with significant Year 2000 problems were reluctant to talk about the magnitude of their Year 2000 corrective work, for fear of providing damaging information to future plaintiffs in the event the Year 2000 problems were not corrected in time. As is discussed in more detail below, companies may not be able to safely hide their Year 2000 problems. because disclosure may be required under various accounting standards. securities laws and bank examination policies.

Accounting Standards Which May Mandate Disclosure

The guiding principles for the preparation by a company of its financial statements are "generally accepted accounting principles" ("GAAP"). These standards are promulgated by FASB and the American Institute of Certified Public Accountants ("AICPA"). One of the GAAP principles promulgated by FASB is Statement of Financial Accounting Standards No. 5 ("SFAS *5*") ("Accounting for Contingencies"), which provides that contingencies which are reasonably possible, whether or not the amount can be calculated or estimated. must be disclosed in a note to the financial statements.

Statement of Financial Auditing Standards

SFAS *5* defines a "contingency" as an existing condition, situation, or set of circumstances involving uncertainty as to possible gain or loss to an enterprise that will ultimately be resolved when one or more future events occur or fail to occur. SFAS *5* uses three classifications:

(A) Probable6the future contingent event is likely to occur.

(B) Remote6there is only a slight chance that the future event will occur.

(C) Reasonably possible6the chance of the event occurring is more than remote, but less than probable.

SFAS *5* gives as an example of a "loss contingency" the "risk of loss or damage to enterprise property by fire, explosion or other hazards", which definition arguably could include the crippling of an enterprise's computer system by the "Millennium Bug". If it is reasonably possible that the company will not become Year 2000 compliant in time. SFAS 5 appears to require the company to disclose this fact in a note to the audited financials.

Moreover, if (a) it is "probable" that the company will not become Year 2000 compliant in time, (b) an asset has been impaired or a liability incurred as of the date of the financial statements, and (c) the amount of the loss can be reasonably estimated, then a charge against earnings for the estimated loss may be required under SFAS 5 and the liability would be reported in the body of the financial statements.

At some time prior to January 1, 2000. a company's independent public accountants ("auditors") may feel obliged in their audit of the company's financial statements to examine the likelihood of the company's failing to become Year 2000 compliant in time. Auditors may wish to document their assessment of the Year 2000 disclosures by their clients in order to show compliance with applicable Statements on Auditing Standards ("SAS"), promulgated pursuant to the AICPA's Generally Accepted Auditing Standards ("GAAS"), the guiding standards for the audit of financial statements. SAS No. 53 ("The Auditor's Responsibilities to Detect and Report Errors and Irregularities") imposes on auditors the duty to plan each audit to provide reasonable assurance of detecting "errors", defined as unintentional misstatements and omissions. and "irregularities", defined as intentionally false or misleading statements, that reach a "financial statement" level of materiality. SAS No. 59 ("The Auditor's Consideration of an Entity's Ability to Continue as a Going Concern"), which relates to a company's ability to remain a going concern for a "reasonable period" not to exceed one year, may also force the auditor (commencing in 1999) to consider the effect on the company of a failure to become Year 2000 compliant.

The auditors therefore may be obligated, in order to demonstrate compliance with SAS Nos. 53 and *59*, to review the company's Year 2000 compliance plan and the status of its implementation. Other Statements of Auditing Standards, such as SAS No. 54 ("Illegal Acts By Clients"), may also raise significant issues with respect to the impact of a failure to become Year 2000 compliant on a company's financial reporting.

Pressure to Disclose Due to Potential Securities Law Liability of Auditors

An auditor is considered to be an "expert" under Section 11(b) of the Securities Act of 1933 ("1933 Act") for purposes of the financial statements reported on by the auditor and included, together with the auditor's opinion, as the "expertise" portion of the issuer's registration statement in connection with the sale of securities. As is discussed in more detail below, auditors have securities law liability for material misstatements or omissions in the company's financial statements.

In particular. auditors are held to a higher obligation to exercise "due diligence" with respect to their portion of the registration statement than non-experts, such as the issuer and the underwriter, are held to with respect to the entire registration statement. With respect to the "expertised" financial statement portion of the registration statement, the issuer and underwriter are not required to have made an investigation but must establish that they had no reasonable grounds to believe and did not believe that there was a material misrepresentation or omission in the "expertised" financial statement portion.

As a result of the auditors' higher "due diligence" obligation (and in light of the potentially disastrous impact on a company's business operations if it failed to become Year 2000 compliant in time), auditors are likely to become more cautious in the next few years in dealing with a company's Year 2000 compliance problem in the course of auditing the company's financial statements.

Disclosure in Auditors' Opinions

In a standard unqualified opinion, the auditors would typically state, among other things, that (1) the financial statements are the responsibility of the company's management, (2) the auditors' responsibility is to express an opinion on these financial statements based on their audit, which audit was conducted in accordance with GAAS, (3) GAAS requires the auditors to plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, and (4) in the auditors' opinion, the financial statements present fairly, in all material respects, the financial position of the company as of a particular date, and the results of its operations and its cash flows for the year then ended in conformity with GAAP.

If a note were added to the company's financial statements concerning the Year 2000 problem and the

auditors were to decide that a departure from the standard unqualified opinion is required due to uncertainty concerning the company's Year 2000 problem. the auditors might add an additional explanatory paragraph to their standard unqualified opinion reading something like the following:

> "As discussed in Note to the financial statements, a material portion of the Company's hardware and software computer system used in the conduct of its operations requires correction with respect to the so-called "Year 2000" problem, as is more fully described in Note _. The Company has adopted a Year 2000 corrective plan and is in the process of implementing that corrective plan. The ultimate success or failure of the corrective plan and the extent of such success or failure cannot presently be determined. Accordingly, no provision for any liability that may result from the failure of the Company to implement fully its Year 2000 corrective plan has been made in the accompanying financial statements."

If the financial statements were to fail to include a note with respect to the Year 2000 problem and the potential liability arising with respect to the problem, despite the auditors' recommendation to the company that such a note be added, the auditors may decide to issue a qualified opinion which states that the financial statements present fairly. in all material respects, the financial position of the company, "with the exception *of*" the effects of the Year 2000 matter, as described in an explanatory paragraph preceding the opinion paragraph of the report.

Securities Laws Which May Mandate Disclosure

Public companies are required to file an annual report on Form 10-K and quarterly reports on Form lO-Q with the U.S. Securities and Exchange Commission ("SEC"). Pursuant to Reg. S-K. Item 303, each such annual report and quarterly report must include a section entitled "Management's Discussion and Analysis of Financial Condition and Results of Operations" ("MD&A"). Instruction 3 to Item 303(a) provides that:

> "The discussion and analysis shall focus specifically on material events and uncertainties known to management that would cause reported financial information not to be necessarily indicative of future operating results or of future financial condition. This would include descriptions and amounts of (A) matters that would have an impact on future operations and have not had an impact in the past. and (B) matters that have had an impact on reported operations and are not expected to have an impact upon future operations."

As of the date of publication of this article, the SEC has not issued a formal statement concerning the Year 2000 problem. It is likely, however, that the SEC would take the position that any public company which knew that it was reasonably likely that it would not become Year 2000 compliant in time, with a resulting material effect on its business, is required to disclose this event and uncertainty in the MD&A section of its annual report and quarterly reports.

Illustrative of this is the SEC's Securities Act Release No. 6385. implemented in Financial Reporting Release No. 36 (May 18. 1989), which provides that a disclosure duty exists when "a[n]... uncertainty is both presently known to management and reasonably likely to have material effects on the registrant's financial condition or results of operations." Essentially, disclosure would be required in the MD&A unless management decided that "a material effect on the registrant's financial condition or results of operations is not reasonably likely to occur."

Potential Liability of Officers and Directors of a Public Company Which Fails to Disclose a Year 2000 Problem and Then Fails to Become Year 2000 Compliant in Time

As noted above, under certain circumstances, a public company would be required to disclose its Year 2000 problem in the MD&A section of its annual report, quarterly reports and in the company's financial statements. If the company were to fail to disclose a Year 2000 problem when required to do so. the

The annual report is often incorp'. by reference into a company's registration statement pursuant to the SEC's "Integrated Disclosure for purposes of registering stock for issuance to the public. Section 6(a) of the 1933 Act requires. 2very registration statement (which includes the prospectus) be signed by the issuing corporation's principal executive officers and financial officers, its principal accounting officer and a majority of the board of directors.

Section 11(a) of the 1933 Act makes every signatory to the registration statement (and every director of the issuer, whether a signatory or not) liable for material misstatements and omissions to any person who acquires securities issued under it. Underwriters, auditors and lawyers involved in the issuer's stock offering may also be held liable under Section 11. Evidence of "due diligence", however, can provide a defense against a Section 11 action. (See, e.g.., Rule 176 ("Reasonable Investigation and Reasonable Grounds for Belief Under Section 11"), promulgated by the SEC under Securities Act Release No. 6335).

Further, under Section 12(2) of the 1933 Act, an issuer may be held liable to a shareholder in a private action for any untrue statement in a prospectus of a material fact or failure to state a material fact necessary to make the statements made in the prospectus not misleading. Section 12(2) applies to any public offer or sale of a security (whether registered or not) "by means of a prospectus or oral communication". The issuer is afforded a "due diligence" defense if it "did not know, and in the exercise of reasonable care could not have known" of the falsity.

in addition. Section 10(b) of the Securities Exchange Act of 1934 ("Exchange Act"), as interpreted by Rule lOb-S of the SEC. essentially makes it unlawful for any person (which may include the issuer, underwriter, auditors and attorneys) to sell any security in interstate commerce while employing a "manipulative or deceptive device", which term includes making any untrue statement or omitting any statement of a material fact.

A private action by a purchaser under Section 10(b) and Rule lOb-S must allege a material and false representation or omission by the issuer in connection with the purchase and sale of securities, the use of means and instrumentality's of interstate commerce, scienter (intent to deceive, manipulate or defraud, or in certain cases, recklessness), reliance by plaintiff and damages suffered by plaintiff. A private action under Section 11 of the 1933 Act need not allege intent to deceive.

The SEC itself may institute enforcement actions with respect to registration statements which contain material and false representations or omissions under Section 17(a) of the 1933 Act (which covers any fraudulent scheme in an offer or sale of securities, whether in the course of an initial distribution or in the course of ordinary market trading) and under Rule lOb-S under the Exchange Act. Section 24 of the 1933 Act provides for criminal penalties for securities law violations.

Purchasers of securities may also avail themselves of the protection afforded by the disclosure and liability provisions of the securities laws ("Blue Sky" laws) enacted by the various states.

Standards of Care of a Director

The laws of the state of a company's incorporation typically impose standards of care on the company's directors, which could be breached if the directors are grossly negligent in dealing with the Year 2000 problem, resulting in potential personal liability for the directors. The Model Business Corporation Act (Section 8.3 0(a)), adopted by some of the states, defines the director's duty of care as the duty to act in good faith with the care an ordinarily prudent person in a like position would exercise under similar circumstances and in a manner the director reasonably believes to be in the best interests of the company.

Some states, like Delaware, have not codified the duty of care, but Delaware courts have held that directors should act with the care of an ordinary prudent person[22] Some state due care modifications add

a requirement that the director use "reasonable inquiry". Section 309(a) of the California Corporation Code sets forth an example of such a provision, providing that:

> "A director shall perform the duties of a director, including duties as a member of any committee of the board upon which the director may serve, in good faith, in a manner such director believes to be in the best interests of the corporation and its shareholders and with such care, including reasonable inquiry, as an ordinarily prudent person in a like position would use under similar circumstances."

Shareholder Suits

If a public company fails to adequately disclose its Year 2000 problem in its annual report on Form 10-K, quarterly reports on Form 1 0-Q and in its registration statements and subsequently has to substantially curtail or shut down its business on or after January 1, 2000 due to the problem. produces incorrect data commencing on that date. or otherwise experiences substantial operational difficulties, resulting in damage to its business, the company's stock price is likely to drop. Shareholder suits based on one or more of the above federal and/or state securities laws are likely to follow. Civil and/or criminal enforcement action by federal and/or state securities authorities might also occur.

In addition, irrespective of whether adequate disclosure of the Year 2000 problem was made or not, in the event a public or private company fails to become Year 2000 compliant in time, the shareholders may institute individual suits, or derivative suits in the name of the company, against the directors alleging breach of their duty of care under state law.

Documentation of Year 2000 Compliance Program to Establish Due Diligence Defense and Protection Under the Business Judgment Rule

Directors are permitted to rely on the reports of the company's officers, counsel and third party experts in the course of making corporate decisions. In the event a company's board of directors adopted a Year 2000 corrective plan, but the company unexpectedly failed to become Year 2000 compliant in time and the directors were sued by the company's shareholders, the directors would likely find it useful to be able to produce detailed documentation as to the company's Year 2000 corrective plan and the diligence with which it was pursued.

The "Business Judgment Rule" essentially protects directors from court review and liability for an honest mistake of business judgment. so long as the challenged board decision was intended to serve the business purposes of the corporation and did not involve fraud, illegality or conflict of interest. The exact formulation of the Business Judgment Rule varies from state to state and some courts require the directors to show that they performed appropriate "due diligence" in informing themselves of the merits of the business issue before reaching a decision.

As an example of a codification of the Business Judgment Rule, Section 141(e) of the Delaware General Corporation Law provides that:

> "A member of the board of directors, or a member of any committee designated by the board of directors. shall. in the performance of his duties, be fully protected in relying in good faith upon the records of the corporation and upon such information, opinions, reports or statements presented to the corporation by any of the corporation's officers or employees, or committees of the board of directors, or by any other person as to matters the member reasonably believes are within such other person's professional or expert competence and who has been selected with reasonable care by or on behalf of the corporation."

In some states, such as Delaware, director liability for breach of the duty of care, under the Business Judgment Rule. has been held by courts to require a showing that the directors acted with gross negligence. However, the Business Judgment Rule has been held by some courts not to apply to protect the directors where they abdicated their functions and failed to act. In that instance, the directors

Thus, in order to avail themselves of the protection of the Business Judgment Rule to deflect shareholder suits seeking court review of the company's adoption and implementation of its Year 2000 corrective plan. the directors may need to show that they had consulted with Year 2000 experts and responsible corporate officials in a timely manner prior to adopting the corporation's Year 2000 corrective plan. This documentation also could serve to establish a "due diligence" defense in the event the directors become the subject of a lawsuit under Sections II or 12(2) of the 1933 Act or Section 10(b) of the Exchange Act and Rule 1 Gb-S.

Statutory Limitations on Liability, Corporate Indemnification and D & 0 Insurance Coverage

Under the corporation laws of some states. such as Delaware, companies (1) are permitted (with the approval of their shareholders) to limit or eliminate their directors' (and in some instances officers') monetary liability for breaches of their fiduciary duties, and (2) may indemnify their directors against expenses. judgments, fines and settlement payments in third-party actions and derivative actions, provided the directors acted in good faith and in a manner they reasonably believed to be in the best interests of the company.

However, although many state laws permit companies to adopt the above limitation of liability and liberal indemnification policies, not all companies have adopted such limitation of liability and indemnification policies and incorporated them into their charter documents. Some corporations also have no D & 0 liability insurance or have policies with low policy limits.

Since the potential liability of officers and directors of a company which fails to become Year 2000 compliant in time could be considerable. company counsel should review with the company's directors and officers the company's D & 0 insurance policies, limitation of liability provisions and indemnification provisions so that they may be revised and updated appropriately. Officers and directors who have received personal indemnification agreements from their companies may wish to have their personal counsel re-review the agreements with the Year 2000 problem in mind.

Disclosure Due to Bank Examinations

Regulated banks with significant loan portfolios are likely to be reviewing their exposure to major debtors that have serious Year 2000 compliance problems. This is in part because bank examiners are likely to be reviewing loan portfolios of banks in the next few years to determine if adequate allowances have been made for possible loan defaults due to Year 2000 compliance problems. (See. e.g., the Federal Financial Institutions Examination Council ("FFIEC") Interagency Policy Statement on the Allowance for Loan and Lease Losses ("ALLL")).

For companies with major lines of credit or bank loans outstanding, the Year 2000 compliance problem, if not handled correctly, may seriously cripple the company's finances even prior to the Year 2000. For example, if a company's line of credit is callable in the event the auditor's letter is qualified in any respect, the delivery of an audit letter in 1999 which is qualified as to the Year 2000 compliance issue might trigger a loss of the bank line of credit at the very time when funds are needed to finish the Year 2000 corrective work.

STATUTORY/REGULATORY COMPLIANCE MANDATES

At the present time, it does not appear that the federal government has enacted any statutes or promulgated any regulations requiring any private sector companies to become Year 2000 compliant as a matter of law. However, bills have been introduced recently in both the U.S. House of Representatives (H.R. 3230) and the U.S. Senate (5. *1745)* authorizing appropriations for the Department of Defense

("DOD"), including a mandate on the Secretary of Defense to ensure that all "information technology" acquired and used by the DOD be Year 2000 compliant.

The Office of the Comptroller of the Currency ("0CC") has recognized that this computer problem could wreak havoc in the banking industry. On June 17. 1996, the 0CC issued Advisory Letter 96-4 (jointly with the FFIEC) to the CEO's of all national banks, advising them that their banks should correct the Year 2000 problem by the end of 1998, leaving one full year for testing. (See the URL of "http:i/www.occ.ustreas.gov/ftp/advisorv/96-4 att.txt").

The U.S. House of Representatives has also held extensive public hearings on the Year 2000 problem, since federal agencies make extensive use of mainframe computers and reportedly account for a significant percentage of the total corrective cost in the U.S. (See. e.g., the URL of "http://www.house.gov/science/hearing.htm #techmay" and "US Federal Government Year 2000 Survey" at the URL of "http://www.year2000.com/archive/survey.html").

It is possible. due to heightened public concern in the future, that federal and/or state mandates for companies in the private sector to become Year 2000 compliant may issue. If statutory or regulatory mandates are enacted, The Private Securities Litigation Reform Act of 1995 (Pub.L. 104-67) may become of considerable importance to the disclosure issue. This act amends the Exchange Act by adding a new Section lOA (codified at 15 USCA 1378j-1(a)), which requires auditors to include in their audits of public companies "procedures designed to provide reasonable assurance of detecting illegal acts that would have a direct and material effect on the determination of financial statement amounts." Section 1OA (15 USCA B78j-1(f)) defines "illegal acts" as "an act or omission that violates any law, or any rule or regulation having the force of law".

Thus, if statutory or regulatory Year 2000 mandates are passed at any point in the future, the new Section IOA obligations will come fully into play. The auditors must inform management and the board of directors of the occurrence of an "illegal act" (whether or not it is perceived to have a material effect on the company). If after doing this, the auditors determine that timely and appropriate remedial action is not being taken by management with respect to the illegal act (i.e., complying with the statutory or regulatory Year 2000 compliance mandate) and the auditors reasonably expect the failure to take remedial action to result in the issuance of a non-standard audit report, or resignation from the audit engagement, the auditors must report the situation to the board of directors.

The board then must report the auditors' conclusions to the SEC within one business day thereafter. The auditors are immune from private action for the findings in their report to the board of directors, but are subject to SEC civil penalties if the report is not issued as required.

INSURANCE ISSUES

Business Interruption Insurance

Insurance policies which cover "business interruption" claims (such as property insurance policies) usually require that the business interruption result from a "fortuitous event". A "fortuitous" event has been interpreted by some courts, based on Restatement of Contracts B29 1, comment [a], to be "an event which so far as the parties to the contract are aware, is dependent on chance." It can be easily argued that since the Year 2000 problem has been well known for years and is totally within the control of the insured to correct, it does not qualify as a "fortuitous" event. Insurance carriers issuing business interruption insurance may decide to highlight the Year 2000 problem in an insert or letter to their insured in the next year or two in order to be able to establish conclusively that their insured were aware of the issue.

Directors & Officers Liability Insurance

If a public company were to fail to become Year 2000 compliant in time and shareholder suits against

the directors and officers were to result. the company's D & 0 policy would become of critical importance. Generally, D & 0 policies will not make any payment, to cite some of the typical exclusions, for any loss arising from any claims made against any director or officer:

(A) for any fines or penalties imposed in a criminal suit, action or proceeding;

(B) where the loss represents a personal profit or advantage illegally taken by the officer or director;

(C) where the loss was brought about by the fraudulent, dishonest or criminal acts of the director or officer, provided that the acts brought about or contributed to the claim adjudicated;

(D) for bodily injury, sickness. disease or death of any person, assault, battery, mental anguish, or emotional distress;

(E) for damage to or destruction or loss of use of tangible property; or

(F) for injury based on invasion of privacy, wrongful entry, eviction, false arrest, false imprisonment. malicious prosecution. libel or slander.

It therefore appears that so long as the insured company is making some effort to correct its Year 2000 problem, even if it is grossly negligent in the process, it still may be covered by its D & 0 insurance.

However, if a director or officer knew of a fact or circumstance which was likely to give rise to a claim (e.g.. a material Year 2000 compliance problem) and failed to disclose or misrepresented the fact or circumstance in the application for D & 0 insurance, the insurance company may refuse to make payment for any loss arising from a claim against such officer or director.

Although D & 0 insurance is usually renewed every year. the renewal application usually requests little information and usually does not request any confirmation that no material change has occurred with respect to the representations of the company contained in the original D & 0 insurance application. Thus, unless a company is applying for D & 0 insurance for the first time or is switching insurers, its Year 2000 problem may not come up in the renewal process. In light of this, companies with significant Year 2000 problems and a short-form renewal application may hesitate to switch D & 0 insurers prior to the Year 2000.

Some D & 0 insurance renewal applications, however, do attempt to ascertain the insurer's risk of potential loss, asking, for example. for information about material changes in the insurer's financial statements or audit committee procedures. Accordingly, counsel for the insured should review the D & O insurance policy renewal application with the Year 2000 problem in mind to see if any disclosure is required.

COLLATERAL LITIGATION DAMAGE

There may be any number of instances in which the failure to become Year 2000 compliant can cause collateral litigation damage. As an example of how a company may be adversely affected in a collateral respect due to its failure to become Year 2000 compliant, consider the following hypothetical. Assume that the Federal Aviation Administration ("FAA") issues a regulation in 1998 mandating that all air carriers become Year 2000 compliant by December 31, 1999. A plane crashes in February of the year 2000 and the air carrier is sued.

At trial, plaintiffs counsel introduces into evidence the fact that certain parts in the plane were supposed to have been replaced pursuant to a pre-set maintenance schedule in January of 2000. The parts were not replaced, however, due to the failure of the carrier's maintenance computers to be made Year 2000 compliant, resulting in an incorrect calculation of each part's "time in service". Although it is unclear as to whether the parts involved were the proximate cause of the crash, the jury takes the new testimony as

evidence of the carrier's reckless attitude toward safety, discounts the carrier's testimony as to lack of culpability with respect to the crash. gives the plaintiff the benefit of the doubt as to "proximate cause" and imposes punitive damages in addition to compensatory damages in order to "send a message

CONCLUSION

Computer experts and chief information officers of corporations have long known of the Year 2000 problem from a technical point of view. As is evident from the above discussion, the legal issues surrounding the Year 2000 problem can be equally as thorny and merit serious attention. Failure to address the legal issues surrounding the Year 2000 problem can lead to (a) delays from third party vendor lawsuits. (b) loss of claims against vendors who otherwise might be required to pay for Year 2000 corrective costs, (c) legal liabilities for the company and (d) personal monetary liability for the company's officers and directors.

It is recommended, therefore, that any company facing a serious Year 2000 problem involve its general counsel and/or outside counsel. together with its CIO and Year 2000 experts, in the preparation, review and implementation of the company's Year 2000 corrective plan. The final Year 2000 corrective plan should be formally reviewed and approved by the company's key officers and its board of directors so as to lay the groundwork for the officers and directors to be able to establish a "due diligence" defense under securities laws and under the "Business Judgment Rule". Finally, the company's charter limitation of liability and indemnification provisions and D & 0 insurance policy should be reviewed and amended as appropriate.

New **York, New York**
August 21, 1996
Author's Note: This article is intended to provide general information and is not intended to provide legal advice regarding specific transactions or matters

Footnotes

(1) See "'Year 2000 Problem' Gains National Attention" at the URL of "http://www.gartner.com/aboutgg/pressrel/pry2000.html".

(2) See Roger Lowenstein, "The Year 2000 and the CEOs' Big Secret", The Wall Street Journal, July 25, 1996. atp. Cl. col. 3.

(3) See Richard Nunno, "The Year 2000 Computer Challenge", June 7. 1996 (Science Policy Research Division); APT Data Services. "Counting the Cost of Year 2000", Computer Finance. March 1, 1996, No. 10, Vol. 6; see also "Year 2000 Cost Estimating", at the URL of "http://cfcse.ncr.disa.mil/jexhome/v2estm8r.html".

(4) See Alison Bennett, "Expensing Computer Change to 4-Digit Years in 2000 is Appropriate. Practitioner Says", BNA Management Briefing, July 23, 1996; Steve Burkholder. "Switching Computers to Four-Digit Years in 2000 to be an Expense, Not Capitalized". Taxation, Budget and Accounting (BNA), July 19, 1996, No. 139. at p. G-3.

(5) See, e.g., Testimony of Barry Ingram. Chief Technology Officer and Vice President of Technical Services of EDS Government Services Group on May 14, 1996 before the U.S. House of Representatives Committee on Science. Subcommittee on Technology ("http://www.house.gov/science/barry ingram.htm").

(6) See Edge Publishing, "Millennium Bug: Most Companies Preparing For eYear 2000' Systems Issue", Edge: Work-Group Computing Report June 3, 1996.

(7) See Mark Evans, "The Profit Clock is Ticking on 2000 Countdown," The Financial Post, May 8, 1996. at p. 22: APT Data Services. "Counting the Cost of Year 2000". Computer Finance. March 1,

(8) See Paul Barker, "Consultant Warns IS: Economic Chaos Looms". Computing Canada. June 20, 1996.

(9) Lexis® and Nexis® are registered trademarks of Reed Elsevier Properties. Inc.

(10) See John Xenakis, "The Fin de Siecle Computer Virus", CFO, July 1995, Vol. 11, No. 7, p. 67.

(11) See Dr. F. Cohen, A Short Course on Computer Viruses (2d Ed.) (Wiley Professional Computing 1994) at p.2.

(12) See. e.g., Thomas Hoffman and Julia King, "Small Vendors Pressed For Year 2000 Remedy", Computerworld, May 6, 1996. at p. 1.

(13) See. e.g., R. Nimmer, The Law of Computer Technology (Warren, Gorham & Lamont 1996) at p. 1-109. Record companies and book publishers typically sell copies of their records and books to the public. Some vendors similarly sell their software or multimedia works in diskette or CD-ROM form to their buying public. Most software today. however, is licensed to the customer, rather than sold, because it allows the vendor greater control of the use and further disposition of the software. For further information on the distinction between the sale and license of software, see. e.g., S. Fishman, Copyright Your Software (Nob Press 1994) at p. 12/5-12/9.

(14) See footnote no. 2. above.

(15) See Terry Lloyd and Dan Goldwasser. "The Work of the Outside Accountant" in Practicing Law Institute. Accounting For Lawyers (1995) at p. 169.

(16) See Steve Hemmerick. "Year 2000 Problem Creates Expensive Race Against Time". Pensions & Investments. August 5. 1996. at p. *3.*

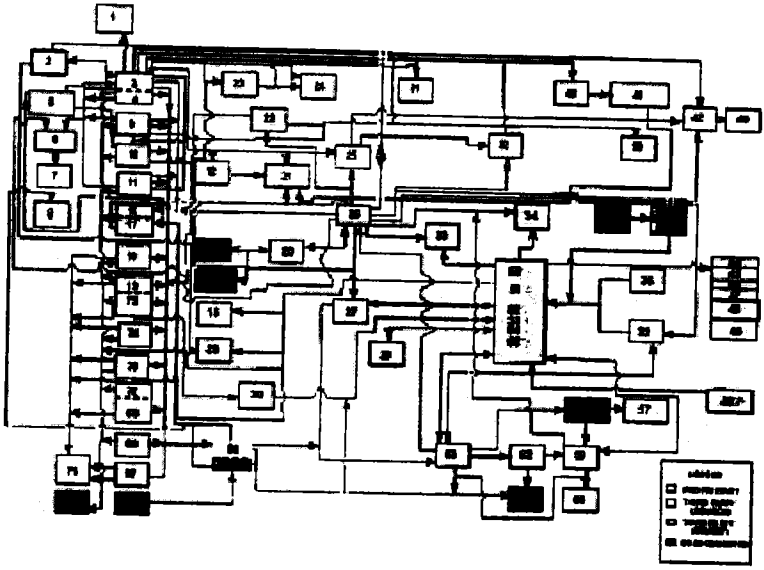
(17) See E. Brodsky and M. Adamski. Law of Corporate Officers and Directors, (Clark Boardman Callaghan 1995), Section 2:04. at p. 2-1 1 and 2-12.

(18) Id., at Section 2:07, p. 2-29.

(19) Id.. at Section 2:12. p. 2-51 through 2-56.

(20) Id.. at Section 2:05, p. 2-16 through 2-24. Section 19:03, p. 19-4 through 19-17.

(21) See Grant Buckler. "Financial Sector Grapples With 2000 Bug", Newsbytes, July 11, 1996.



FORM 1:

SOFTWARE APPLICATION DESCRIPTION

SOFTWARE APPLICATION NAME:
SOFTWARE ACRONYM:
NUMBER ON DATA PROCESSING FLOW CHART:
[FOR EXAMPLE. "NO. 62"]
MAJOR BUSINESS FUNCTIONS:
APPLICATION RECEIVES DATA FROM:
[IDENTIFY SOFT WA RE A PPLICA TIONS WHICH FEED DATA TO THE SUBJECT SOFTWARE APPLICATION-- FOR EXA MPLE, APPLICATION 63]
PROCESSES DATA AND DISTRIBUTES IT TO FOLLOWING
SOFTWARE APPLICATIONS FOR FURTHER PROCESSING:
[IDENTIFY SOFTWARE A PPLICA TIONS-- FOR EXAMPLE, APPLICATIONS 59 AND 6]]
IS SOFTWARE APPLICATION OWNED: ____YES ____NO
IF YES, IDENTIFY VENDOR AND IDENTIFY LICENSE AGREEMENT:
IS SOURCE CODE AVAILABLE: ___YES ____NO
IS APPLICATION THE SUBJECT OF A MAINTENANCE AGREEMENT: ___YES ____NO
IF YES, IDENTIFY MAINTENANCE AGREEMENT:

APPENDIX H

PC/LAN Compliance and Testing

The PC/LAN workgroup is working together to create a compliance package for PC software used by state agencies (such as Lotus 1-2-3. Alpha IV. Excel. dBase. etc.). The workgroup is coordinating the creation of these packages in order to reduce the duplication of effort across State Agencies.

Each compliance package will be available on this site and will include the following:

- A checklist of components that should be identified, corrected, and tested for the software
- Instructions on how to use the checklist
- Documentation of the Workgroups test results

If there are questions about this effort, the compliance packages, or agencies would like to get involved with the testing, please contact Cynthia Kelly. Tax and Finance (518) *457-4371.*

The following checklists are now available. Each one may be viewed by clicking on it:

PC Year 2000 Compliancy Check

Lotus 1-2-3 Checklist

Alpha4 Checklist

FoxPro Checklist

QuattroPro Checklist

PC/LAN TESTING

The Center for Technology in Government (CTG) is working with the Office for Technology and its PC/LAN workgroup to provide a testing environment for NYS agencies. Guidelines have been developed for agencies wishing to participate in a test. Testing of PC software packages is also being done at agencies and coordinated through the workgroup.

The following test results are now available. Each one may be viewed by clicking on it:

FoxPro 2.5 for DOS Test Results

Novell Netware 3.12 and Windows NT 3.51 NEW

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Year 2000 Readiness Disclosure

PC Year 2000 Checklist
To test year2000 compliance for your PC's- updated 8/18/1998

DO NOT TOUCH PRODUCTION PC'S WITHOUT Y2K COORDINATOR'S APPROVAL!!!

This is the manual way to verify compliance. Instead of manually doing the test, you can opt to buy a tool to do this test. (If you have a large number of PC's, using a tool may be the best method). In any case, you should understand what is (or should be) being verified. The test is broken into two parts: Verification and Fixing if necessary. The verification part should test both the rollover and reboot situations if you plan to leave your PC on during the change of the century. We will only test the reboot situation.

Before doing the test: Read information about the different "clocks" in the PC. Read this entire document and proceed only if you are sure of what has to be done.
PROCESS
Close all applications.

DISCONNECT FROM NETWORK! DISCONNECT YOUR PC FROM THE NETWORK BEFORE CONDUCTING ANY TESTS. (Physical disconnection is the best: unplug the network connection from the back of your PC - looks like a phone wire - then reboot your system. You must cancel or close all references to the network when prompted for the network connection information.)
Make a system(boot) diskette in case anything fails on reboot.
Backup your system before doing any tests This is a test that should be performed on all "new" PC's before being installed at the user's site.

Note the environment of the test:
Vendor/Model/Type of Processor
'OS date and version
DOS version

Windows version
For the benchmark (a date prior to 2000): Verify date settings are 4 digit year (in Windows 95: Control Panel gets you to regional settings)
Set date ahead:
Set the date using the DATE command in DOS to 12-31-1999.
Set the time to 11:59 PM.
Turn off the PC.

Power on after a few minutes. Note what date is displayed in the system clock. If the date is not 01/01/2000, set the date to 01/01/2000 and time to 11:59 PM and then turn off the PC. Turn on the PC after two minutes. Verify that the system clock is now correct. If the system clock is not correct, see fixing below.

To verify that leap years are calculated properly:
Set the date ahead to 2/28/2000 and verify that the day of the week is Tuesday.
Set the date ahead to 2/29/32 and verify that day of week is Sunday.

Fixing
Hardware solution (BIOS chip or card replacement; new PC)

Software solution
Add code to autoexec file
'd code to BIOS chip
.ool which may or may not be a TSR program
Manually change every time
Use network as time keeper

Lotus Checklist

,ear 2000 Readiness Disclosure
Lotus 1-2-3 Checklist -- V5 and SS97 (updated 6/15/1998)

What we know about Lotus 1-2-3:
We believe SS97 is compliant and versions less than v5 will probably not be acceptable for any applications that have any date fucntions.
What alterations need to be made: Expand the column width for all date fields to see the full date.
Overall Decisions
1. Data enter 4 digits for the year(don't rely on window) 2. All date displays should include 4 digit year 3. Ensure proper interpretation if importing data with 2 digit years 4. Upgrade the software to the latest version, if possible
Verify accuracy of:
1. Data imported or exported 2. Dates data entered or displayed - Should all be four digit years 3. Data sorted using a date field 4. Data fill function using dates 5. Date and time calendar functions 6. Financial functions 7. Logical operations involving dates 8. Charts that display dates 9. What -if tables that use dates 10. Macros and/or templates - Refer to general program checklist for other factors to test

NOTE: If you find any failures, problems, and/or have questions, please create a new document by creating a response to this checklist.

Year 2000 Readiness Disclosure
Alpha Four (Version 4.011) Checklist - updated 6/25/1998

What we know about Alpha Four (v4.011): Alpha Four is Y2KCOMPLIANT AS LONG AS 4 DIGIT YEARS ARE USED. When the user enters 'mm/dd/00', Alpha Four returns 'system year' for yy for versions 6.1 and under.

What alterations need to be made:

Increase all user entry fields to 10 characters Increase all displayed fields to 10 characters Eliminate all '19' hardcodes Change dates or years which are stored as character type or number type to date type fields.

Overall Decisions

1. Data enter 4 digits for the year 2. All date displays should include 4 digit year 3. Text fields will not be used for date data 4. Ensure proper interpretation if importing data with 2 digit years 5. Versions 1-3 will be upgraded to Version 6.2. Version 4 will remainas is, Version 5 is not in use and not supported by ISM.

Verify accuracy of:

Importing/Exporting (See explanation of File Types at the end of the document)

- TYPES: WK1, WK3, WK4, 123, WKS, WR1, WRK, DELIMITED, DIF, Character separated ASCII, Table-formatted ASCII, PFS, WPD, Multimate, Alpha Data Base Manager II

Hardcoding

1. Hard-coded validations in field rules 2. Hard-coded '19' on reports, screens, templates and dialog boxes

User Data Entry

1. Dates entered by user on screens, ie: - 00 becomes sytem year May want to add logic to force user to enter 4 digit years

Database Storage

1. Date stored (if in character field, alter to date field), ie: PO Numbers 2. Years identified as 'number' instead of 'date' in dbf 3. Years embedded in file numbers, or other character strings ie: Transaction numbers, PO numbers.

Displays

. Date displayed on screen 2. Date on report 3. Date printed on forms (substr to put month, day, year in separate boxes on forms) 4. Parameter to run report (look at dialog box to see if century is hard coded in date template; if so, should remove template; add code to force user to enter 4 digit year field; add length (trim) % ie: '__/__/19__'

Date Calculations/Modification/Editing/Comparisons

1. Date fields that are programmatically modified 2. Any algorithms using a date 3. Processing using date functions: (Note diskette available to quickly confirm correctness) - ADDMONTHS - ADDYEARS - CDATE - CDOW - CMONTH - CTOD - CYEAR - DATE - DATEC - DAY - DMY - DOW - DTOC - DTOS - ISDATE - MDY - MONTH - SUBSTR - TIME - TRANSFORM - YEAR 4. Calculated date fields - In programs - Screens layout - Report layout - System date: Alt-D 5. Summary Fields - In programs - Forms layout - Report layout (substr to put month, day, year in separate boxes on forms) 6. Comparison where hard-coded date expressions may be used: - = - < - > 7. Any dates used in sequencing 8. Database field rules - Field rules (V4Plus - can create script with field rule criteria; % sys field value if length of date field is 8+2 digits. Interprets window) - Make sure specify 4 digit arithmetic logical expressions - using 2 digit year. 9. Memory variable used in function (assumes 19th century; build logic for windowing to assume century.)

Indexing/Sorting

1. Any dates used in sequencing 2. Searches using date functions - FIND 3. Data sorted using a date field 4. Data sorted using a character field with imbedded dates. 5. Data sorted using a number field to represent date. 6. Building an index with a date after 1/1/2000 7. Building index - if used date field ISDATE vs valid dates 8. Building an index using a character field with imbedded dates. 9. Building an index using a number field to represent date 10. Index Ranges: check end date for range to see if hardcoded - ie: 12/31/1999 11. Dates represented as ' / / ' or ' / / ' in indexing/sorting - should be converted to isblank<datefield>

Searches

Note: Expression format is more vulnerable than table format Look for occurrences of hard-coded comparisons (eg date > 1/1/99)

Other

1. Sets - Check dates in regions 2. Link between dbfs - check common field (index) for use of dates.

Program syntax

1. Generic text patterns to look for: '/', '{', after, asof, as_of, before, begin, cal, calendar, ccyy, ccyymmdd, cen, century, clndr, cur, curr, current, cymd, date. day, ddmmyy, dob, dt, dte, eff, effective, end, finish, first, fiscal, from, frm, fy, fye, greg, gregorian, horizon, jul, julian, last, leap, mdy, mmddyy, mmddyyyy, mo, modayr, mon, month, mos, mth, mm/dd/yy, m/d/y, m_d_y, post, roman, start, stop, sysdate, sysdte, through, thru, today, week, weeks, wk, wkly, wks, year, years, yr, yrs, yy.

yyddd, ymd, yymmdd, yyyymmdd, yymmm, 00/00/00, 12/31/99, 31/12/99, 19, 199, 99, 1900, 1999, 2000. 2. Use scanning tools to scan code

Notes:

escription of File Types: DELIMITED - ASCII text file ending with a carriage return and line feed. The fields are delimited by commas and the character fields are in double quotation marks. The quotation marks can be replaced with anything else or the commas can be replaced with either blanks or tabs. DIF - VisiCalc Data Interchange Format FOXPLUS - FoxBASE+ FW2 - Framework II MOD - Microsoft Multiplan Version 4.01 PDOX - Paradox (import 3.5 and 4.0) RPD - RapidFile SDF - ASCII text file with non-delimited fields and fixed length records that end with a carriage return and line feed (System Data Format). Must bring data in with YYYYMMDD format. SYLK - Symbolic Link Interchange Format (used in Microsoft Multiplan) WK1 - Lotus 1-2-3 Version 2.X WK3 - Lotus 1-2-3 Version 3.X WKS - Lotus 1-2-3 Revision 1-A WR1 - Lotus Symphony 1.10 WRK - Lotus Symphony 1.01 XLS - Microsoft Excel Versions 2.0, 3.0 and 4.0

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Year 2000 Readiness Disclosure

⁻oxPro (Version 2.5 and 2.6) Checklist (updated 6/17/1998)

What we know about FoxPro (v2.5 & 2.6):
FoxPro 2.5 and 2.6 is Y2KCOMPLIANT AS LONG AS 4 DIGIT YEARS ARE USED.
When the user enters '02/29/00', FoxPro returns 'Invalid Date' and does not allow execution of the valid clause for the field until the date is changed to something FoxPro considers 'Valid'. Because of this, 'SET CENTURY' must be 'ON' and the user must be given 10-character date fields. ('Prepare Your Projects for the Year 2000' by Brad Schulz, FoxPro Advisor 10/1996) ISM does not support Visual Foxpro at this time. There is no need to switch from Foxpro for DOS to Foxpro for Windows for Year 2000 purposes.

What alterations need to be made:
SET CENTURY ON in primary calling program.

Initialize pivot year in primary program if needed ie: 46 would represent anything <= 46 begins with '20' anything > 46 would begin with '19' | 1947, 2045

Increase all user entry fields to 10 characters

Ensure the person entering can enter the entire four-character year

Increase all displayed fields to 10 characters

Hardcoded date comparisons that check for existence of date can change to '> {}'ie: <date> > '01/01/00' -> <date> > {} | <date> < '12/31/99' -> <date> < {}

\minate all '19' hardcodes

Years that are identified as 'number' instead of 'date' - increase length of field and value if feasible ie: 98 -> 1998

Report forms - Widen fields to display lengthened date.
Overall Decisions
1. Data enter 4 digits for the year(don't rely on window) 2. All date displays should include 4 digit year 3. Ensure proper interpretation if importing data with 2 digit years
Verify accuracy of:
Importing/Exporting
1. Importing any data (See explanation of File Types at the end of the document) - IMPORT FROM (import) - TYPES: FW2, MOD, PDOX, RPD, WK1, WK3, WKS, WR1, WRK, XLS - APPEND FROM (import) - TYPES: DELIMITED, DIF, FW2, MOD, PDOX, RPD, SDF, SYLK, WK1, WK3, WKS, WR1, WRK, XLS 2. Exporting any data (See explanation of File Types at the end of the document) - COPY TO (export) - TYPES: FOXPLUS, DIF, MOD, SDF, SYLK, WK1. WKS, WR1, WRK, XLS, DELIMITED - EXPORT TO (export) - TYPES: DIF, MOD, SYLK, WK1, WKS, WR1, WRK, XLS - SELECT (SQL) (export) - TYPES: SDF - FWRITE, FPUTS, TEXT... ENDTEXT - TYPES: SDF, DELIMITED
Hardcoding
1. Look for any occurrences of hard-coded 'SET CENTURY OFF' 2. Hard-coded validations such as date < {12/31/99} 3. Hard-coded '19' on reports and screens 4. Browses with hard-coded column width of '8' 5. Ceiling date that is not high enough
User Data Entry
1. Dates entered by user on screens ie: - 00 becomes 1900 even if SET CENTURY is ON and even if the field is 10 chars wide. No way to force user to enter 4 digit years - system automatically converts a 2 digit year. 2. Manually-entered 'es in lookup tables
Database Storage
1. Date stored (if in character field, alter to date field) ie : Extracts created - dates may need to stay in character (980212 / 19980212) format but field may need to be widened ie: PO Numbers 2. Years identified as 'number' instead of 'date' in dbf 3. Years embedded in file numbers, or other character strings ie: Transaction numbers, PO numbers.
Displays

1. Date displayed on screen 2. Date on report 3. Report layout (substr to put month, day, year in separate boxes on forms)

Date Calculations/Modification/Editing/Comparisons

1. Date fields that are programmatically modified - REPLACE - INSERT (SQL) - UPDATE - GATHER 2. y algorithms using a date 3. Processing using date functions: - CDOW - CMONTH - CTOD - DATE - DAY - DMY - DOW - DTOC - DTOS - GOMONTH - LUPDATE see: "don't use LUPDATE()" * - MDY - MONTH - SUBSTR - TIME - YEAR - SET DATE - { } vs. ctod(' / / ') or ctod(' / / ') 4. Calculated date fields - In programs - Screens layout - Report layout 5. STR(<expr>,2) Where <expr> _might_ be a year number. It is especially important to pay attention to this after year 2000 changes are made. 6. Comparison where hard-coded date expressions may be used: - BETWEEN - MIN - MAX - = - < - > 7. Other commands: - CALCULATE - EVALUATE - ADIR

Indexing/Sorting

1. Any dates used in sequencing 2. Searches using date functions - LOCATE - SEEK - SEEK() - SELECT (SQL) - SET FILTER 3. Data sorted using a date field - SET ORDER - SORT TO 4. Other commands: - ASCAN - ASORT

Program syntax

1. Generic text patterns to look for: '/', '{', after, asof, as_of, before, begin, cal, calendar, ccyy, ccyymmdd, cen, century, cindr, cur, curr, current, cymd, date, day, ddmmyy, dob, dt, dte, eff, effective, end, finish, first, fiscal, from, frm, fy, fye, greg, gregorian, horizon, jul, julian, last, leap, mdy, mmddyy, mmddyyyy, mo, modayr, mon, month, mos, mth, mm/dd/yy, m/d/y, m_d_y, post, roman, start, stop, sysdate, sysdte, through, thru, today, week, weeks, wk, wkly, wks, year, years, yr, yrs, yy, yyddd, ymd, yymmdd, yyyymmdd, yymmm, 00/00/00, 12/31/99, 31/12/99, 19, 199, 99, 1900, 1999, 2000. 2. Use scanning tools to scan code (see below)

Notes:

Description of File Types:

DELIMITED - ASCII text file ending with a carriage return and line feed. The fields are delimited by commas and the character fields are in double quotation marks. The quotation marks can be replaced with anything else or the commas can be replaced with either blanks or tabs.

DIF - VisiCalc Data Interchange Format FOXPLUS - FoxBASE+ FW2 - Framework II MOD - Microsoft ultiplan Version 4.01 PDOX - Paradox (import 3.5 and 4.0) RPD - RapidFile SDF - ASCII text file with non-delimited fields and fixed length records that end with a carriage return and line feed (System Data Format). Must bring data in with YYYYMMDD format. SYLK - Symbolic Link Interchange Format (used in Microsoft Multiplan) WK1 - Lotus 1-2-3 Version 2.X WK3 - Lotus 1-2-3 Version 3.X WKS - Lotus 1-2-3 Revision 1-A WR1 - Lotus Symphony 1.10 WRK - Lotus Symphony 1.01 XLS - Microsoft Excel Versions 2.0, 3.0 and 4.0

Web Sites: Title: Year 2000 Xbase Technical notes URL: http://www.lol.ie/~pobeirne/y2kxbase.htm There is an evaluation copy that scans code of "popular" software packages. There is also a link to Bozeman Legg, Inc which has a shareware software analyzer: http://www.bozemanlegg.com/y2kanalyzer.html * www.microsoft...me/topics/year2k/product/vfp26.htm

On April 15, 1998 Microsoft issued Stats on FoxPro 2.6 Y2K compliancy Microsoft Foxpro 2.6 compliant with minor issues Don't use LUPDATE(). When you use Set Century on with a computer that has the system date set to the year 2000 and a modification is made to the structure of a table(dbf) file, or a copy of the table file is made, the LUPDATE() funtion incorrectly displays the century as 1900. This display occurs because the date of the last ipdate is stored in the header of the .dbf file using only 2 digits.

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QUATTROPRO CHECKLIST

LAST UPDATED: 05/21/1997

OVERALL DECISIONS

1. Will output have 2 or 4 digits for the year displayed.
2. Will program logic be added for imported data to convert 2 digit year to 4 digit year.
3. Will user enter 2 or 4 digits for the year
4. Is a windowing technique used in processing?
5. Should you upgrade the software to the latest version?

Identify and test all occurrences of the following components:

Importing any data/Exporting any data

Data sorted using a date field

Dates entered by user

What format? (M/D/Y or D/M/Y)

2 or 4 digits for year?

Consistent throughout spreadsheet?

What happens when user enters 00?

Dates displayed

Various date formats

Speed Fill function using dates

Date and time calendar functions

Financial functions

Logical operations involving dates

Charts that use dates

How does date> 1999 display in chart (fits?)

What -if tables

Macros

Refer to general program checklist for other factors to test

Templates

Xpert tools

Quick format

Link with other software products

Other items to consider:

Stand-alone version vs network version?

Is spreadsheet used as input form for data entry?

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WORDPEFECT V6 CHECKLIST LAST UPDATED: 06/23/1998

What we know about WordPerfect:
"'e believe version 6 will work properly for year 2000 processing although the vendor is saying version 7 and above is .npliant. (We think version 6 is ok but not being supported).
What alterations need to be made:
Overall Decisions
1. Data enter 4 digits for the year
2. All date displays should be a 4 digit year
3. Ensure proper interpretation if importing data with 2 digit years
4. Upgrading the software to the latest version will be preferable since the vendor is not supporting the lower versions if any problems develop
Verify accuracy of:
With system clock <2000:
Data imported or exported

Tables where the date field is a key - ensure the data is sorted correctly with 1999 and 2000 data

All documents with date functions used or fields relying upon dates for the results

All macros with date calculations

Reports
With a date displayed

With data crossing 1999-2000

Charts - Properly display across millennium

Saving, Archives and back-ups
What happens when you save a file created in 1999 but saved in 2000 (does it properly recognize the later version)

Any files with year in file name

Calendar Forms

Any merged documents based on dates

Repeat above with system clock >2000
Web Site: Corel's Year 2000 Policy

QUICKEN V6 CHECKLIST LAST UPDATED: 06/23/1998

What we know about Quicken:
'e believe version 6 will work properly for year 2000 processing except for online banking activities. The fix for this will be available June 1999. Also, on the register, a two digit year only is displayed (but a four digit year is stored, processed, and printed on checks).
Quicken will not accept any year outside of 1/1/1900 to 12/31/2027 regardless of how many digits are entered. Certain areas of the product (such as schedules for 30 year loans) do not have this upper limit of 2027. (Prior to version 6, loan schedules will not work properly if the schedule exceeds 2037).
If you enter a two-digit year, 00-27 are interpreted as 2000-2027. To enter dates 1/1/1900 to 12/31/1927, user must type ' before the 2 digit year or enter the 4 digit year.
What alterations need to be made:
Overall Decisions
1. Data enter 4 digits for the year (don't rely on window)
2. All date displays on reports and checks should be a 4 digit year
3. Ensure proper interpretation if importing data with 2 digit years
4. Upgrading the software to the latest version wil be preferable (more problems with updating data files when upgrading from obsolete versions)
Verify accuracy of:
Note -- some more items will be filled in when we review actual applications using those functions

With system clock <2000
Data imported or exported (From spreadsheets, From TurboTax, From other sources)

Transactions data entered for appropriate dates in year 1999 and 2000 (see list of important dates to test)
In register -- displays properly, sorts properly

ıte maintained properly in scheduled transactions

Tranaction for 02/29/2000 accepted properly

Transactions across millennium

Remember to check registers of each type of account used (i.e. -- checking, credit card, loans, stocks, etc)

Date of checks printed
Four digit year

Proper order

List of checks to be reconciliated
In proper order

across millennium

Reports of transactions are accurate
Crossing 1999-2000

Comparison of 1999 with 2000

Scheduled transaction is properly incremented (daily, weekly, monthly, quarterly, annually) in scheduled transaction list and 'endar
. .om 1999 to 2000

Crossing 2/28/2000 to 3/1/2000

Loan schedules across the millenniums (include 30 year schedule especially)

Financial planner and budget reports

Capital Gains reports

Tax reports if report on non-calendar year

Tax planner

Investment reports

Financial functions

Charts - Properly display across millennium

Archives and back-ups

Finds

Repeat above with system clock >2000

On-line banking functions will not accept dates beyond 1999 as of now!!!!

FoxPro Test Results
(Version 2.5 for DOS)

Analysis based on an application (which has been reviewed, modified, and tested):
When you data enter a two digit year:
Stored as 19xx
Calculations on field -- based on value of 19xx
Cannot enter 02/29/00
Considered as invalid date since 1900 was not leap year
Possible to redefine "user-entry screens" so you force four digit year data entry but display two digit year on reports
Date functions work properly
Year2000 data while system date < 2000
Year2000 data while system date > or = 2000
Dates are stored as four digit year
Changes made to make application compliant:
Program X must pass dates in YYYYMMDD format. If they do not receive dates with the full four-character year from a data exchange, must use a conversion program to convert the year to four characters.
For Program Y, the changes entailed allowing users to enter the full-four character year while leaving reports to display two-character years. There were numerous changes required in the program to do so. The nature of the changes varied. One type of change was ensuring 'SET CENTURY' remained 'ON' . This ensures dates are displayed with four-character years. In conjunction with this, another type of change was expanding all data entry date 'GET' fields to 10 characters to ensure users can enter the full four-character years. The nature of changes to databases had to do with changing the data dictionary in the report writer to display the dates with two character fields. Changes were also made to the application used to update the jurisdiction lookup table.

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Alpha Four Test Results

(Version 4.011)

Analysis based on an application (which has been reviewed, modified, and tested):
When you data enter a date with 00 as two digit year :
Stored as 1997 (when system clock = 1997)

Stored as 0100 (when system clock = 2000)

When you data enter a date with two digit year except 00:
Stored as 19xx

Calculations on field -- based on value of 19xx

Possible to add edit rule so you force four digit year data entry

Date functions work properly (diskette for proof is available)

Year2000 data while system date < 2000

Year2000 data while system date > or = 2000

Dates are stored on the database as four digit year

Memory variables that accept a date must be required to accept a four digit year

Actual changes:
Two changes made to make pilot application (which was composed of several data entry screens) compliant:

Dialog box that prompted user for a date had to be changed to accept a 4 digit year

Added a field rule to require data entry of four digit year in a date field

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Year 2000 Network Test Results

Novell Netware 3.12 and Windows NT Server 3.51

All tests were conducted at New York's Center for Technology in Government (CTG). This is the first Year 2000 test conducted as part of a cooperate effort between the CTG, the New York State Office for Technology (OFT) and its Year 2000 PC/LAN Workgroup and NYS agencies.
Special thanks to CTG for assisting New York State in preparing for the Year 2000.
Date of Tests: June 26-June 27, 1997
Participants: CTG: Derek Werthmuller, Peter Bloniarz; State Insurance Fund: Sharon Tate
OBJECTIVE:

The objective of the testing was
to see how the Y2K problem affected PC network operating systems in a networked environment
to determine the amount of time and resources that are required to support such an activity.

WHAT WAS DONE:
One agency (State Insurance Fund) came to CTG for two days to test a Novell Netware system for Y2K compliance at the hardware and system-levels. No applications-level testing was done.
DESCRIPTION OF ENVIRONMENT AND TESTS CONDUCTED:

Tested Networked workstations for the Year 2000. The Network contained the following:
SERVERS
A Zenith Z-Server EX 450DE, 486DX, BIOS Manufacturer Phoenix V1.1 dated 7/26/93. This was running Netware 3.12 with no patches (Server brought from State Insurance Fund).

A 486sx machine running Windows NT Server, version 3.51. (Provided by CTG) Service Pack 5 was installed.

CLIENTS
A Pentium machine running Windows NT workstation, version 3.51. (Provided by CTG). Service Pack was installed.

A 486 with a BIOS upgrade applied running Windows 95. (Provided by CTG)

A 486 running Windows for Workgroups. (Provided by CTG)

Each machine was configured and logged into both of the servers. The date was set to 12/31/1999.
The Windows 95 machine was configured using Microsoft Client for Netware. This did not allow the date and time to be brought to the workstation. This machine was reconfigured using Novell's Client.
We also set up two Netware accounts for testing. One user id was set up to be valid for 30 days, with that time starting in December and running through January. The account was to expire January 20, 2000. One user id was set up with a password expiration happening after the year change. This was to test Netware's ability to track these things through the change to year 2000.
All machines were set to 12/31/1999 at 11:55pm. The workstations were turned off and the servers were left running. This simulates what happens in the network as it is running now.
After waiting the 5 minutes, all machines were turned on. We went machine by machine and did the same testing. The first machine was the NT workstation. This booted with the correct date. This machine was known to 'most likely' be a working machine. The file manager displays all CCYY dates just fine. We created a file in notepad and stored it on the Netware server and the attributes were displayed correctly. A file was created in notepad and stored on the C drive, then drag and dropped to the server, the file attributes were retained correctly.
The next machine was the Windows 95 workstation. This machine already had a BIOS upgrade applied. This booted up with the correct date. If you run WINFILE (windows old file manager) this exhibits the known problem of displaying any year over 1999 as :0. Explorer show the same files as 00. If you attach to a Netware drive using Explorer the workstation does not receive the date and time from the server. If you actually login and let the login script run the workstation is then synchronized to the Netware servers date and time.
Windows for Workgroups was running on an older 486 machine. When the machine was booted we went straight into CMOS. The year displayed as 1993. The DOS date showed 1/4/1980, one of the common known problems. Once the machine attached to the Netware server the date and time were synchronized with the server. The login was not yet done so with Netware and

with this configuration it is the ATTACH that sends the date and time not the LOGIN. Because the date was set in DOS the Windows date and time were also correct. Using File Manager any file with a year greater than 1999 displayed as :0. Files were created in notepad and stored on the C drive. They were then moved back and forth to the Netware server. Even though File Manager displayed the year incorrectly the other workstations could view that file on the server and the date was correct. The attributes were in place.

The File Manager display problem is listed by Microsoft as a known problem. They list no prediction of a resolution.

The Netware Server was left running through the year change. The date and time moved forward correctly. The date and time were looked at from the Netware console screen using SET TIME. After all of the workstation tests were done the server was brought down. The DOS date and time did not match the Netware date and time. The server was turned off and brought back up and now the Netware date and time match DOS. Concluding that Netware and DOS only synchronize when booted. This was repeated over and over. Next the patch offered by Novell was put on the machine. This seemed to keep the date and time with DOS and Novell in sync.

By default Windows NT does not pass the date and time to the workstations. We tested trying to get this to work from the NT server. We found that adding the command NET TIME \\<server name> /SET /Y to the LOGIN.BAT file worked fine for all workstations.

SUMMARY OF FINDINGS:

Much of the answers to these tests are available on the vendor web pages. However understanding fully what they mean by the statement "works in Y2K" requires some form of testing. For example Digital Equipment Corp. reports the DEC Lpv is Year 2000 compliant, but we found that while it does work with a year 2000 date, it must be manually set once the year changes to 2000.

APPENDIX I

Contract Title: Computer Consulting Year 2000 Templates

The Office of General Services. Services and Technology Group (OGS S&T) has made a commitment to assist the Authorized Users of its Computer Consulting and Training contracts with their Year 2000 Problem resolution. Gartner Group, a leading provider of analysis and consulting services focused on the information technology industry including the Year 2000 Problem, in partnership with OGS S&T, has prepared Year 2000 Procurement Templates for use by the Authorized Users. These templates provide a structure and format for those Authorized Users who issue Project Definitions to the OGS S&T Back-Drop Contractors specializing in the Year 2000 Problem resolution.

Templates

Awareness Project Definition
Full Compliance Project Definition
Implementation, Disaster Recovery and Documentation Project Definition
Inventory and Scoping Project Definition
Modification and Testing Project Definition
Project Management Project Definition
Attachments for all Project Definitions

Last Updated: 02/07/97

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APPENDIX J

APPENDIX K

RPS and Year 2000 Compliance
January, 1998

The RPS Team has begun work to make our various products Year 2000 compliant. Year 2000 compliance is an issue potentially impacting both the software we develop and the hardware we develop it on. The techniques we use to achieve Year 2000 compliance are also very significant because RPS is the basis for many data transfer systems as well as other processing systems. The current status ot the various Year 2000 activities is listed below.

The Agency and Year 2000 Compliance

ORPS has established several different teams to guide identification and implementation of Year 2000 changes necessary to keep agency systems up and running through and after January 1, 2000. The Year 2000 Guidance Team is charged with overall project coordination; a group of ITS staff are charged with carrying out many of the day-to-day management and coordination functions needed within the agency; separate project teams have been established to oversee work on various key components of the agency's hardware and software; and Year 2000 Liaisons (made up of representatives from each of the agency's work units) meet regularly to discuss the implementation of necessary changes within the work units. Each of these groups is playing an integral part is designing and implementing the Year 2000 project. RPS is represented on both the Guidance Team and the Year 2000 Liaisons Team.

The intent of taking an agency-wide approach to this project is to coordinate the Year 2000 Project throughout the agency to be sure that ALL necessary changes are made in both hardware and software: that modifications to critical systems are given priority and appropriate resources are allocated to make these ›difications: if necessary, to reallocate resources from other system development efforts within the agency to assist with the Year 2000 project in accordance with the Governor's memo to all state agencies of July 2, 1997; and to keep users both inside and outside the agency informed of our activities and to provide them with as much information as possible.

SOFTWARE:

RPS Version 3

As part of this project. the agency has contracted with Unisys Corporation to provide analysis of all the agency's Unisys mainframe COBOL code. Unisys will use their software analysis tools to identify date components (including specific lines of code where the date is referenced) within each program. to develop suggested solutions for making those dates Year 2000 compliant and to estimate man-hours necessary to implement the suggested solutions. RPS Version 3, including the valuation, survey and full disclosure programs, will be included in this analysis. Once the analysis has been done on the Unisys code, we plan to use that same analysis to locate and change appropriate dates on the other platforms. Because the code is, in most

"ses, very similar on all four platforms. this approach should greatly reduce the time needed to identify and ..plement the changes needed on the IBM. AS400 and micro platforms.

We will have the ability to test the modified code prior to release. The agency is installing special components within the Unisys mainframe and our micro network for testing for Year 2000 compliance. It appears that date on the AS400 can be set forward for testing and then reset as needed. We are purchasing a new IBM system to replace the 1BM9370 we are currently using in part because the 9370 is not Year 2000 compliant and cannot be made compliant due to its age.

The intent in RPS Version 3 is NOT to restructure the file to use four digit dates but rather to code such that the systems will correctly interpret the two-digit years stored on the file. This will lessen the impact on users of RPS software in that they will not have to convert or reformat their files. Any software written using the RPS files will need to be coded in a similar manner to recognize the two-digit years. When we begin to make changes, we will be able to provide users with more detailed information about the field(s) involved and the logic being used to achieve Year 2000 compliance.

AZ7

Staff from the RPS Team met with a representative of AZ Rex, Inc. who indicated that the company is currently working on a new release of the AZ7 software that will be Year 2000 compliant. They had not established a release date as yet but expect to release sometime near the end of 1998.

The RPS Team will be responsible for making any necessary changes to the standard dictionaries and queries we distribute with the system. In addition, we will be providing information to users regarding any changes we make and guidelines for changing queries they have developed.

PC Valuation

RPS Team staff are working with Sigma Systems, Inc. to identify any changes needed to make the PC Valuation system Year 2000 compliant and to make it compatible with any changes made to RPS Version 3 for Year 2000. There are no specific dates attached to changing the PC Valuation system at this time. As the investigations progress, it will be possible to develop specific project plans including completion dates.

Version 4

RPS Version 4 is being written to be Year 2000 compliant using four-digit years. The tools being used to develop Version 4 are also Year 2000 compliant (Powerbuilder and SQL Anywhere). Version 4 will be tested in the same manner as described above for RPS Version 3.

APPENDIX L

RPS and Year 2000 Compliance
January, 1998

Currently, development of Version 4 is continuing. We plan to continue development of Version
nless resources are required else\\ here to achieve Year 2000 compliance of critical systems.
ORPS HARDWARE:

As part of the agency-wide initiative to meet the Year 2000 requirements, various groups are reviewing and testing our hardware to be sure it is compliant.

Unisys Mainframe and PC's

Compliance of the Unisys mainframe and the micro network within the agency are being handled by units within Information Technology Services and coordinated through the Year 2000 Guidance Team.

A5400

The AS400 system is Year 2000 compliant. The operating system includes a century date as well as the two-digit year. Testing of RPS code on our AS400 system is addressed above.

IBM Mainframe

We are currently in the process of purchasing a new IBM mainframe system (IBM PC Server *330/390)* that will be Year 2000 compliant. Our current 1BM9370 system cannot be made compliant due to its age.

LOCAL HARDWARE and SOFTWARE:

Localities will be responsible lbr developing and implementing plans to insure compliance ot their own facilities and ftware systems. ORPS staff will be working to make RPS and other ORPS software compliant and to insure that our hardware _, compliant. ORPS will not be responsible for providing these services to localities.

QUESTIONS AND COMMENTS:

Questions regarding the Year 2000 project generally or RPS software compliance should be directed to Bonnie Scott. RPS Team. NYS Office of Real Property Services, 16 Sheridan Ave., Albany, New York 12210. Specific questions regarding our IBM or A5400 systems should be directed to Fred Folmsbee at NYS Office of Real Property Services, Newburgh Regional Office. 1135 Union Ave.. Newburgh, New York 12550, phone (914)566-2222.

The CPSR Year 2000 Action Plan

The most critical part of the Year 2000 problem is not any specific technical issue or the code arid data changes necessary in a particular language. F' .'s in the project plan of specifying and managing all the details associated with such a wide-reaching project. The purpose of this white paper is to specify an organized method of determining the scope of the problem and a systematic way of working on it.

In order to specify the theme for this action plan. consider the acronym "I ACT 2000". This acronym has the advantage of both being representative of the various phases of the Year 2000 project as well as being indicative of the critical success factors involved. The letters in the acronym stand for Inventory, Assessment, Correction, and Testing. These four phases are detailed below. The "I" indicates that this project will only be successful if people take individual ownership and accountability for the project. There is too much to be done to simply expect others to do all of it. The "ACT" indicates that the project will only be successful if it is geared to action. Spending a lot of time just studying it or waiting for a better solution to come along wastes precious time, and this project is not one where we can afford to be late - the year 2000 cannot be delayed. Finally, the "2000" indicates that we must be prepared for the year 2000 when it arrives. Despite the best plans and the best people, there are still likely to be things which were not anticipated. We must also have proper backup and recovery procedures for when any difficulties arise.

Phase 1 Inventory

The Year 2000 problem is not limited to old COBOL programs written on IBM mainframes. Because the shorthand method of referring to years by using only the last two digits has been pervasive, instances of it can be found in any area where automation or electronic circuitry is involved. Some of these may be obvious, others less so. In order to categorize the issues, there is a list of possible areas at the end of this paper. This list has been constructed through observation of many comments on the subject in various Internet discussion groups and news groups and has been verified by cross checking it against lists prepared by others such as the AIAG (Automotive Industry Action Group), a coordinated effort of the major automobile manufactures in the United States. Not all of the areas listed will be pertinent to every situation, and not every possible variation in each category is listed. However, this is a good starting point for deciding what areas to examine in any specific situation.

Phase 2 Assessment

There are a number of tasks in the assessment phase. If there is computer software involved, then examination of the code for the number of dates (density) and dependence on them should be done. If there is computer hardware or other purchased products involved, then letters to vendors establishing their Year 2000 compliance is appropriate. For all items in the inventory an assessment of how important that item is to the continued operations of the enterprise is appropriate. Items which are critical or have a high degree of "risk" associated with them deserve more attention than those which are less critical. The following categories are indicative of the "risk" involved: High Risk .Safety / Health / Environment / Regulatory reporting; Medium Risk .Plant shut-down / Production constraint / Asset control / Customer relationships; Low Risk .Inconvenience / Efficiency loss / Billing / Internal reporting. However, risk is cumulative, so a particular system may have high risk because it impacts multiple low-medium risk areas. (For a more complete robust definition and calculation of risk, the Corporate Audit Department has developed a model, contact them for details.) For critical systems, one should consider testing it anyway to determine or verify compliance, even if a vendor indicates that there are no problems. Finally, if results indicate that there may not be enough time to correct every last detail, then one might consider "triage", setting priorities as to which systems will get attention first so that limited resources may be used where most needed.

Phase 3 Correction

Like the assessment phase. the correction phase is multi-faceted. One simple solution is sometimes a simple version upgrade. Where actual computer programs or code exist, a possible solution is rehabilitate it. i.e. expand the dates or change the logic to properly handle dates in multiple centuries. Another solution is replacement of the system with a purchased or other (compliant) package, however, if a replacement strategy encounters delays, adequate time and resources must be available to revert to a rehabilitation strategy. Finally, one could consider retiring a non-compliant system or piece of hardware.

Phase 4 Testing

While some limited testing may have been done in the assessment phase, all critical systems as well as those which have been modified during the correction phase must be properly tested. A well-conceived test plan must address not only verification that the changes made during the correction phase have not introduced other problems (regression testing), but that there will not be any problems when the actual century change occurs (time-dimensional testing). To this end, we have introduced a Year 2000 test plan for application packages. A similar type of checklist would be needed for infrastructure changes, process control changes. etc. The purpose of this testing is to ensure that the problem has been addressed properly and that we have not overlooked anything. While testing cannot ensure that no problems exist, a well-conceived test plan can help us ensure that we have taken proper diligence in determining whether the system will work correctly. The testing phase can take anywhere from 30-70% of the total time and resources in a Year 2000 project, so careful planning of this phase is necessary.

In all of the above phases, one must ensure that proper documentation is made of all activities and that appropriate record retention policies and practices are used. There are quite likely to be lawsuits and various types of post-mortem analyses performed as a results of Year 2000 activities. Having the proper evidence of efforts made will be valuable. Because of the large number of Year 2000 activities and the necessity of being done on time, having appropriate measures to track progress is also important.

Categorization of areas to check for Year 2000 compliance

Note Not all of the areas listed will be pertinent to every situation, and not every possible variation in

each category is listed

1) IT Infrastructure

Hardware. PC's, etc.
Local area networks (LAN), servers, security systems, routers
PC*s (286*s, 386*s, 486*s, etc.)
Operating systems, utilities, security software, databases, etc.

Operating system, scheduling software, development tools, tape backup units
Other "standard" components, such as word processors, etc.
Microsoft office, Windows, Microsoft Access, Paradox, FoxPro

2) Application systems

MIS developed, user developed, purchased, or used (i.e. outside services)
Computer-aided design (CAD), computer-aided engineering (CAE), modeling
Material requirements planning, inventory, forecasting
Production scheduling

Ordering and billing
Accounting, general ledger
Purchasing
Personnel, payroll, human resources (HR)
Electronic Data Interchange (EDI)

3) Non-IT Infrastructure

Communications
Telephones, voice mail, wireless communication, video conferencing, faxes. etc.
Building services
Energy management systems. heating. air conditioning, electrical systems
Security systems, building access, fire alarms Elevators

4) Process Control Systems and equipment

Operating plants
Bar coding, card readers. conveyers, optical scanners, equipment testing devices.
robots
Programmable Logic Controllers (PLC½), Computer Numerical Control (CNC*
Radios, pagers
Research & Development
Diagnostic systems
Data management systems
Simulation tools
Embedded systems
Electronics, processors

5) Other areas

Utilities, financial services
Maintenance scheduling. Vehicle maintenance systems
Production suppliers
Non-production suppliers (tools, office supplies, chemicals, etc.)
Outsourcing vendors, Service providers (transportation. etc.)
Disaster recovery plans
Back-up and restore systems and procedures

NYS YEAR 2000 DATE CHANGE INITIATIVE

Statewide Priority Systems

Revised 6/24/97

Agency	Application	State Priority
Social Services	Child Abuse Registry	1
Social Services	Child Welfare	1
State Comptroller	Core Payroll	1
Health	WIC	2
Health	Rate Setting	2
Labor	Unemployment Insurance	2
Social Services	Medicaid Management	2
Social Services	Welfare Checks and Services	2
Social Services	Child Support (collections)	2
State Comptroller	Retirement	2
State Comptroller	Central Accounting - Critical Vendor Payments	2
Insurance Fund	Compensation Payments	2
Insurance Fund	Disability Benefits	2
Insurance Fund	Medical Payments (process medical claims)	2
Corrections	Release Dates	3
Criminal Justice	Criminal History	3
Criminal Justice	Identification (SAFIS)	3
State Police	NYSPIN (Law Enforcement Inquiry)	3
Parole	Parole Violations	3
Lottery	Vendor Audit System(account mgmt., winners)	4
Insurance Fund	Underwriting (policies, billing)	4
Tax & Finance	PIT (refund process)	4
Tax & Finance	Business Tax Systems - Sales Tax	4
Tax & Finance	Business Tax Systems - Withholding Tax	4
Tax & Finance	Taxpayer ID	4
Corrections	Population Management	5
Motor Vehicle	Teleprocessing Core Systems	6
Education	State Aid ($10B School Aid)	7
Criminal Justice	Wanted	8
Corrections	Inmate Accounts	9
Tax & Finance	Business Tax Systems - Corporation Tax	10
Motor Vehicle	License System	11
State	Corporation System	12
Education	Professional License System	13
State	License System (Security Guards, etc.)	14
Corrections	Inmate Discipline	15
Housing & Community Renewal	HUTS (Rent Regulation; Case processing)	15
Civil Service	APPS(positions, appointments)	16
Transportation	Bridge Monitoring	17
Social Services	Federal Claims	18
Mental Health	Billing (Feds, 3rd Party)	18
Mental Retardation & Developmental Disabilities	Billing Payments	18
Health	Vital Records	19
Tax & Finance	Business Tax Systems - Misc.	20
Workers Compensation	Assessment System	21

Factors such as the impact on the public, whether it could be supported manually, the monetary impact, the extent to whether the system anticipated

versus recorded events, etc. were taken into consideration when making these determinations. The process was subjective not quantitative and sought to elicit a general overview of the most important systems across agencies, as well as heighten manager's awareness of the magnitude of the problem.

LIST OF IMPORTANT Y2K DATES FOR TESTING

DRAFT -- AS OF 10/30/1997

Each date has an explanation as why it is an important date. The purpose of this list is to test your program's accuracy. It is helpful as guide and a checklist to make sure you are covering all your bases. You can use these dates to think about what might be critical dates for your application.

FOR ALL APPLICATIONS:

==========

~~DATE TO BE TESTED~~ ~~WHY IT IS AN IMPORTANT~~

DATE TO TEST

Sept 9, 1999 .....Some older systems used 9/9/99 for special meanings

including permanent retention; all nines may be artificial eof

Sept. 10, 1999 .....The day after 9/9/99

Dec 31, 1999 ..... The last day before century change

Jan 1, 2000 .....First day of the new millennium. First date with a "00"

abbreviated year. First month beginning on a weekend date.

Feb 28, 2000..... Day before leap year day

Feb 29, 2000 .....First leap year day

March 1, 2000 .....Day after leap year day

Dec. 31, 2000 .....First year end; Last day of the year (has there been 366 days?)

Jan. 1, 2001.....First day of the 21st century; Has the system been instructed to roll

from 00 to 01?

Feb 29, 2001.....First invalid leap year day

Dec 31, 2001 .....Has it counted 366 days incorrectly?

APPLICATION SPECIFIC: `(Additional important dates)`

==========

If application does date calculations, verify all calculations work with each and every appropriate important date. Examples of calculations:

Due Date, Aging, Tickler notices

To verify programming algorithm or file structure:

Jan. 10, 2000 .....First "5 digit" date for systems storing data as MDDYY

Feb. 30, 2000 .....First invalid month end (for systems using 30 day calendar)

Oct. 10, 2000 .....First "6 digit" date for systems storing data as MDDYY

If application does fiscal year processing:
April 01,1998.....New York state government rolls over to FY99
July 01,1998 .....Forty six state governments roll over to FY99
Oct 1,1998 .....Federal government rolls over Fiscal Year to "99" (FY99)
April 1,1999 .....New York state government rolls over to FY00
July 1,1999 .....State governments (46 of 50) roll over to FY00
Oct. 1, 1999 .....US federal government's fiscal year turns over to "00"
Sept. 30, 2000 .....US Federal Government's end of fiscal year "00"

If application does quarterly processing:
March 31, 2000 .....First end of quarter processing
Jun. 30, 2000 .....First semi-annual end
Sept 30, 2000 .....First quarter ending on weekend
Dec 31, 2000 .....First year ends on weekend

If application does monthly processing:
Jan 1, 2000 .....First month beginning on a weekend date
Jan 31, 2000 .....First end of month processing
April 30, 2000 .....First month ending on weekend

If application does sales tax processing (quarters are different than normal quarters):
2/28 (or 29 if it's a leap year)
5/31
8/31
11/30

Normal period statutes for Sales Tax are the 20th of any month.
If application does date processing involving specific "date events", such as the following examples:
First payday after 12/31/1999
Jan. 3, 2000 .....First holiday
Jan. 4, 2000 .....First banking day
Jan. 7, 2000 .....First Friday of the new year
Jan. 10, 2000 .....Employee withholdings due
Jan. 17, 2000 .....First Monday holiday
Jan. 31, 2000 .....W2s due, unemployment tax due
Feb. 15, 2000 .....W2 reports due

April 15, 2000 .....Tax day
April 30, 2000 .....Tax withholding report due, unemployment tax due etc
Earliest date used in the application
Date of window to verify if window logic does the interpretation correctly
NOTE: To verify accurate results, dates four years prior could be used. For example, to verify the number of days between 12/31/1999 and March 3, 2000, use 12/31/1995 and March 3, 1996 as control dates. To verify correct day of week, use dates exactly 28 years prior.

Mr. HORN. Now our next witness is Mr. Charles Adrion, the director of the Year 2000 Project Office in Westchester County, NY.

Mr. ADRION. Good morning, Chairman Horn, Congresswoman Maloney. Thank you for this opportunity to let me speak about the year 2000 topic and what we are doing in the county of Westchester. I am, as you said, Charles Adrion, director of the Year 2000 Project Office.

Westchester County is a suburban county located in the northern sector of the New York metropolitan area, and it's bordered on the south by New York City. The county has an operating budget of approximately $1.1 billion with nearly 6,000 employees.

The Year 2000 Project Office. The county of Westchester has an active program in place to address year 2000 issues under the direction of our year 2000 office. The office is headed by a chief information officer who reports directly to the county executive, Andrew Spano. The office is surveying all information technology systems in use at county departments and offices, to identify noncompliant systems and to recommend corrective action based on countywide priorities.

The project plan completed early in 1998 identified and scheduled the steps required for countywide compliance. The plan calls for all systems to be Y2K ready by the third quarter in 1999. Most of the efforts in the second half of 1999 will be devoted to testing applications, which have already been upgraded to compliant versions.

Awareness. The initial step in the Y2K plan was an awareness campaign at three levels. Most important was an outreach program to county departments. Presentations were given to department heads and program staff where we explained the importance of Y2K, the countywide solution, and the costs.

The county executive has required every department to assign a Y2K coordinator. These coordinators have a number of responsibilities, including reviewing and prioritizing application systems, surveying the departments for embedded systems, and identifying and scheduling subject matter experts. The departmental coordinators have responsibility for determining the Y2K status of embedded systems within their departments, working with their vendors, and implementing replacements. Departments have been advised that no contracts will be permitted without approved Y2K verbiage included.

A second awareness program was conducted internally within the IT department. Here we reviewed the overall Y2K plan and received commitments for our priority systems.

A third outreach was the municipal governments, clerks, assessors, and information workers. The project office maintains a municipal government Y2K mailing list and a county intranet web page. Compliance of municipal systems is the responsibility of individual jurisdictions. We provide assistance upon request.

Inventory. An inventory of county hardware, system software, and applications was completed in January 1998. Our operations consist of IBM and Unisys mainframes, UNIX servers, Novell and NT servers, and over 3,000 PCs connected via a T1 data network.

The mainframe hardware was reviewed and found Y2K compliant in February 1998. The Unisys system software was upgraded

in April 1998, and the IBM system software will be upgraded by September 1998. We are well into a project to upgrade all users to current versions of Microsoft products on Windows 95. Like nearly all computer users, we have a heavy dependence and investment in Microsoft products and rely on product compliance information that they publish.

We have not encountered many PCs that have to be replaced for strictly Y2K reasons, although a large number of PCs are being replaced to support various office applications which need to be upgraded to be Y2K compliant.

Our original software inventory of mainframe and UNIX systems included 274 systems with nearly 9 million lines of code. We have refined this estimate during a detailed analysis of code in use and we have a working inventory of just over 6 million lines. These applications have been assigned ratings for priority, risk, and effort. We use this to determine and adjust our work schedules.

Replacement and upgrade strategy. Responsibility for information technology applications belongs to five application managers who provide input to the Y2K plan. These managers have a mix of locally developed systems and vendor supplied packages.

Under the direction of our new CIO, the county has been aggressively looking to replace more of our locally developed systems with off-the-shelf solutions. By purchasing new Y2K compliant applications, we expect to avoid significant renovation costs. Since 1996, all county-developed systems have been year 2000 compliant.

The attached chart indicates the significance of replacement and upgrade efforts to our total Y2K code remediation effort. Only 7 percent of our lines of code are planned for renovation. Our Y2K project will be 71 percent complete by the end of 1998. The upgraded systems are financial AMS/LGFS and personnel AMS/GHRS systems. Replacements are scheduled for county clerk, probation, corrections, health, board of elections, and many smaller systems.

Costs. The majority of our costs are in the area of acquiring and installing these upgrades and replacements. A budget of $12 million has been allocated for the Y2K software effort. An additional $3.75 million is allocated for hardware and networking. Opportunity costs are not in these budgets. Many county IT projects have been delayed because of our focus on Y2K upgrades and replacements.

Staffing. The county has contracted with a vendor to perform a detailed assessment for the locally developed Unisys MAPPER-based systems. This project will finish in August 1998. We will start renovation of these systems in September and complete all renovation projects by March 1999 using vendor staff. We will use a 1944 base year windowing solution as a shop standard. Additional staff is in place to support the AMS upgrades. At present, there is no reason to believe that staff shortage will affect our ability to complete this project on time.

Other issues. The county IT department works closely with the State of New York, especially in the areas of Health and social services. We are relying on the State to provide Y2K compliant software on a timely schedule, although we have received incom-

plete information about the software from the State in some cases. We do use the red book quite a bit.

Although we are obviously attempting to deal with Y2K issues and expect to have our systems in compliance, the nature of the problem is so pervasive that there is always the chance that one of our systems, or that of a related governmental agency, will have problems in the year 2000. Moreover, we have no control over the preparedness of other governmental systems—local, State, and Federal—that work in conjunction with ours.

Thus, along with everyone else, the county of Westchester is concerned about its legal liability for year 2000 failures. The potential legal situation also has led to the general decline of cooperation between public and private organizations, which can only slow everyone's progress in dealing with this problem. Therefore, we highly recommend consideration by Congress of legislation which would hold harmless local governments for problems both of our own creation and those outside of our control.

As a local government, we are two layers away from the Federal level. It would help us if the Federal Government would exert its influence on the States and make sure that all of their systems are Y2K compliant. This is especially true for programs such as public assistance, which are substantially funded by the Federal Government.

The Federal Government should recognize that the Y2K problem is akin to a natural disaster and should be addressed that way, similar to the approach it takes when matches start massive forest fires and start to burn down homes in the West. To this extent, the Federal Government can put some appropriation aside for quick remediation of the problem and its consequences. In addition, if the Federal Government can find the appropriate resources, it could help by creating a Y2K outreach service similar to the Agriculture Extension Service as a follow-on agency.

That concludes my testimony.

[The prepared statement of Mr. Adrion follows:]

Westchester County, New York

Westchester County, incorporated in 1683, is a suburban county located in the northern sector of the New York metropolitan area. It is bordered on the south by New York City, on the east by the State of Connecticut and Long Island Sound, on the north by Putnam County and on the west by the Hudson River. The County has a 1990 census population of 874,866 and has an area of 450 square miles.

The County has a large and varied economic base containing many corporate headquarters, research facilities, manufacturing firms and well developed trade and service sectors. Approximately one third of employed County residents commute to work outside the County, primarily to New York City.

The County's 48 municipalities vary greatly in population size. Four cities: Yonkers, New Rochelle, Mount Vernon and White Plains (the County Seat), contain over 42% of Westchester's population.

The County has an operating budget of approximately $1.1 billion with nearly 6,000 employees.

Year-2000 Project Office

The County of Westchester has an active program in place to address Year-2000 issues under the direction of our Year-2000 Office. The office is headed by a Chief Information Officer who reports directly to the County Executive, Andrew Spano. The office is surveying all Information Technology systems in use at County departments and offices, to identify non-compliant systems, and to recommend corrective action based on countywide priorities.

A project plan was completed early in 1998 that identified and scheduled the steps required for countywide compliance. The plan calls for all systems to be Y2K ready by the third quarter of 1999. Most of the efforts in the second half of 1999 will be devoted to testing applications which have already been upgraded to compliant versions.

Awareness

The initial step in the Y2K plan was an awareness campaign at three levels. Most important was an outreach program to County Departments. Presentations were given to department heads and program staff where we explained the importance of Y2K, the county-wide solution and costs. The County Executive has required every department to assign a Y2K coordinator. These coordinators have a number of responsibilities including:

Reviewing and prioritizing application systems
Surveying their departments for embedded systems, and
Identifying and scheduling subject matter experts,

The departmental coordinators have responsibility for determining the Y2K status of embedded systems within their department, working with their vendors, and implementing replacements. Departments have been advised that no contracts will be permitted without approved Y2K verbiage included.

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Our original software inventory of mainframe and UNIX systems included 274 systems and nearly 9 million lines of code. We have refined this estimate during a detailed analysis of code in-use and we have a working inventory of just over 6 million lines. These applications have been assigned ratings for priority, risk, and effort. We use this to determine and adjust work schedules.

Replacement & Upgrade Strategy

Responsibility for Information Technology applications belongs to five Application Managers who provide input to the Y2K plan. These managers have a mix of locally developed systems and vendor supplied packages. Under the direction of our new CIO, the County has been aggressively looking to replace more of our locally developed systems with off-the-shelf solutions. By purchasing new Y2K compliant applications we expect to avoid significant renovation costs. Since 1996, all County-developed systems have been Y2K compliant.

The attached chart indicates the significance of replacement and upgrade efforts to our total Y2K code remediation effort. Only 7 percent of our lines of code are planned for renovation. Our Y2K project will be 71% complete by the end of 1998. The upgraded systems are the financial AMS/LGFS and personnel AMS/GHRS systems. Replacements are scheduled for County Clerk, Probation, Corrections, Health, Board of Elections, and many smaller systems.

Costs

The majority of our costs are in the area of acquiring and installing these upgrades and replacements. A budget of 12 million dollars has been allocated for the Y2K software effort, an additional 3.75 million is allocated for hardware and networking. Opportunity costs are not included in these budgets. Many county IT projects have been delayed because of our focus on Y2K upgrades and replacements.

Staffing

The County has contracted with a vendor to perform a detailed assessment for the locally developed Unisys MAPPER-based systems. This project will finish in August 1998. We will start renovation of these systems in September and complete all renovation projects by March 1999 using vendor staff. We will use a 1944 base year windowing solution as a shop standard. Additional staff is in place to support the AMS upgrades. At present, there is no reason to believe a staffing shortage will affect our ability to complete on time.

Other Issues

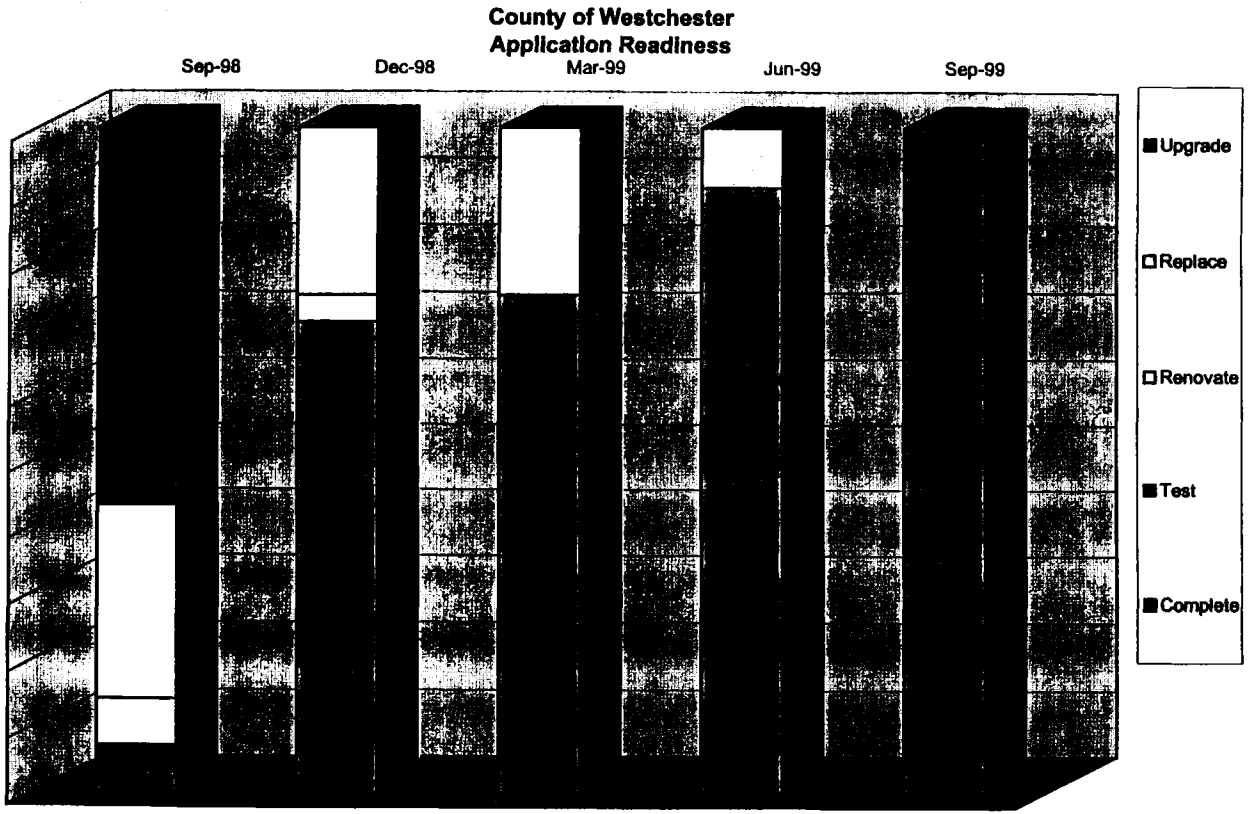
The County IT department works closely with the state of New York especially in the areas of Health and Social Services. We are relying on the state to provide Y2K compliant software on a timely schedule, although we have received incomplete information about software from the state.

Although we are obviously attempting to deal with Y2K issues and expect to have our systems in compliance, the nature of the problem is so pervasive that there is always the chance one of our systems or that of a related governmental agency will have problems in the Year 2000. Thus, along with everyone else, the County of Westchester is concerned about its legal liability for year 2000 failures. The potential legal situation also has led to a general decline in the cooperation between public and private organizations -- which can only slow everyone's progress in dealing with this problem. Therefore, we highly recommend some consideration by Congress of legislation which would "hold harmless" local governments.

As a local government, we are two layers away from the Federal level. It would help us if the Federal government would exert its influence on the states to ensure that all of their systems are Y2K compliant. This is especially true for programs, such as public assistance, which are substantially funded by the Federal government.

The Federal government should recognize that the Y2K problem is akin to a natural disaster and should be addressed that way, similar to the approach it takes when matches start massive forest fires and start to burn down homes in the West. To this extent, the Federal government can put some appropriation aside for the quick remediation of the problem and its consequences.

In addition, if the Federal government can find the appropriate resources, it could help by creating a Y2K outreach service similar to the Agriculture Extension Service.


County of Westchester
Application Readiness
Sep-98
Dec-98
Mar-99
Jun-99
Sep-99
Upgrade
Replace
Renovate
Test
Complete

Mr. HORN. Well, thank you. It's an interesting idea. I don't know if we have the time for it, is the problem. If we started in 1989 like the Social Security Administration did, I think you have got a very good idea there, spreading that information around the country, and the Extension Service is an excellent model.

Mr. Wipperman, we didn't have a chance to swear you in, sir, so if you will just stand.

[Witness sworn.]

Mr. HORN. We thank you very much for coming. And you were probably caught up in traffic, right?

Mr. WIPPERMAN. Precisely. I arrived at the Brooklyn Bridge at 8:30, and it took me an hour to get here.

Mr. HORN. We're delighted to have you here, so please proceed. You are the director of Data Processing, Nassau County, NY.

Mr. WIPPERMAN. That is correct, the 4-month new director of the Data Processing Branch, and I will start my comments by just thanking my staff publicly for being so far ahead before I got here.

Chairman Horn, Congresswoman Maloney, I would like to thank you for the opportunity to address the subcommittee on business and government regarding the problems which may be caused by the advent of the new millennium. The year 2000 or Y2K, as it has been referred to, does indeed have the potential for creating many problems. Some of these may be categorized as catastrophic and others will simply be annoyances. But make no doubt about it, there will be some problems coming in 2000.

Those problems, however, need not plague us. I think people in the information systems industry have realized that this has been coming for a lot of years. As a result, data processing organizations—as you mentioned, the Department of Social Security started in 1989—began addressing the problem years ago.

Barely a day goes in the media that this problem doesn't appear as an article. Unfortunately, in many instances people who don't understand technology believe that the first time that they read the article is the first time anyone has learned of the problem, so I think some people are willing to panic.

I can assure you that in Nassau County we began addressing Y2K problems many years ago. We are confident that the steps that we have taken will prepare us for the changing date; and any problems we will see, in fact, will be little annoyances. We don't anticipate any major catastrophic failures. But I also go to church every Sunday hoping that this is true.

I will tell you that this project is, in fact, our No. 1 priority in Nassau County. The year 2000 project began in Nassau County prior to 1994. At that time, the staff of data processing began to evaluate the mechanisms that could be used to resolve the problem. We knew that this effort was going to involve a large amount of additional work, and it became apparent that we would never do that with in-house staff, so we decided that we were going to have to work with consultants.

We knew that if we hired additional staff and we finished the problem, we would be left with additional staff. And certainly no organization ever wants to say, after you have done a yeoman's job, thank you very much, now step on someplace else. So we have ac-

tually brought in several consulting firms and engaged them and already have them in place.

The county did an evaluation to determine how such a project should be funded. After some analysis, we have determined that it was very much like a new project. It was a spike. It would have a life span well in excess of the year in which it was completed. So we chose to finance it through the issuance of capital bonds. We determined that this would give the taxpayers of Nassau County the ability to pay for the project over a longer period of time. I can safely say that from our perspective funding is the biggest issue, and I would echo some of my colleague's comments, that if you would like to send us a check, we are available.

The problems caused by Y2K did place an additional financial burden on the taxpayers of Nassau County. In fact, as was mentioned, we don't even include in our cost the opportunity cost of having not done something. At this point, we expect the total cost to be between $28 million and $35 million. However, because of the decision to bond the effort, the county executive and the county legislature were able to ensure that the project could be completed without impacting county property tax rates.

Nassau County Data Processing actually approached the project as an opportunity, so in some senses we did think about opportunity costs. We knew that since all existing applications would be included in the project, we have decided to use it wherever possible to improve on existing software.

Certain applications, such as our central financial system, we determined that replacing a 16-year-old system, which had served us very well, with a more efficient paperless process was worth the additional cost over simple remediation. So we essentially took the central financial system and said, all right, we will leave the old one in place, and by the beginning of 1999 we will have a brand-new financial system. In short, we have decided to move forward instead of simply running in place.

Early in the process, the county also made a decision to require full remediation and not allow the use of a windowing technique. Many of the consultants that approached us suggested that was the way to go, but what happens is, we are left holding the bag after they are gone. And if we haven't staffed for that, then we have a problem. We reasoned that if the data field was not expanded, we would be left with interface problems after the consultant left.

Some of the agencies, State and other local agencies which we would have to deal with, in fact when we download data to a PC, you could end up with a situation where that system is expecting four digits and it doesn't get it. It is our opinion, and we believe that of the industry, that the problem is only completely resolved when the date is expanded.

I have included a status report which presents more information on, in fact, how we address the project. It tells you where we are. I am not going to go into because it gets, I think, boring. But it's there, and there are copies.

It highlights how the effort was divided into three distinct pieces, each associated with essentially the three platforms that we are dealing with. There was a mainframe. We have a WANG, a very active WANG electronic mail network in place, and that has served

us, again, for 15 or 16 years. We try to squeeze the nickel so that the Indian rides the Buffalo, and we get our money's worth out of what we spend.

But we did that, also, to make the effort more manageable. So we are contending that one platform, the WANG platform, we could replace. And it also allows us to hold ourselves more accountable to the elected officials who, in the final analysis, are accountable to the taxpayer.

I won't discuss any more of those details now. Certainly I am happy to address any other questions that you have.

In closing, I would like to say that I think the year 2000 problem does have a potential to create disaster. It is, in a sense, like a disease for which we have a vaccine. We know that the disease is there. If we take preventive measures, then the results don't need to be negative. Now those preventive measures, in a sense, are spending money and spending time. So I believe that Nassau County has taken that vaccine. While it may seem expensive, the alternative could be worse. Thank you.

[The prepared statement of Mr. Wipperman follows:]

Remarks made by Douglas E. Wipperman to the Subcommittee on Government, Management, Information and Technology - August 13, 1998

Thank you for the opportunity to address the Subcommittee on Business and Government regarding problems which may be caused by the advent of the new millennium. The year 2000 or Y2K, as it has been referred to, does have the potential for creating many problems. Some of these could may be categorized as catastrophic and others will simply be annoyances. Those problems however, need not plague us. People in the Information Systems industry have known of this technical aberration for many years. As a result, Data Processing organizations, began addressing the problem many years ago.

Barely a day goes by that a story does not appear in the media regarding this issue. Unfortunately, those who are not involved with technology believe that the first time they read that story is the first anyone has discovered the problem. I can assure you that in Nassau County we began addressing Y2K many years ago. We are confident that the steps that we have taken will prepare us for the changing date and any problems we see will, in fact, be little annoyances. We don't anticipate a major catastrophic failure.

The year 2K project began in Nassau County in 1994. At that time, staff of the Data Processing Division began to evaluate the mechanisms that could be used to resolve the problem. Since it involved a large amount of additional work, it became readily apparent that in-house staff could not, because of the sheer volume of work, be called upon to totally address the issue. This meant, that, the County would either have to hire additional people to work on the project or would have to seek the service of outside consultants. Hiring was immediately ruled out since we realized that once the project was completed we would be left with an excess staff. No organization likes to hire people with the intent of firing them within the immediate future. We chose the approach of hiring consultants to complete the work.

The County then did an evaluation to determine how such a project should be funded. After some analysis, we determined that Y2K was very much like a new project which would have a life span well in excess of the year in which it was completed. We, therefore, chose to finance it through issuance of capital bonds. This would give the taxpayers of Nassau County the ability to pay for the project over a longer period of time. I can safely say that, from our perspective, funding has been the biggest issue. The problems caused by Y2K placed an additional financial burden on the taxpayers of Nassau County. We expect the total cost to be between 28 and 35 million dollars. However, because of the decision to bond the effort, the County Executive and County Legislature where able to ensure that the project could be completed without impacting the County property tax rate.

Nassau County Data Processing actually approached this project as an opportunity. Since all existing applications would be included in the project, we decided to use it, where possible, to improve on existing software. With certain applications, such as the central financial system, we determined that replacing the 16 year old system with a more efficient, paperless process was worth the additional cost over simple remediation. In short, we decided to move forward instead of simply running in place. Early in the process, the County also made a decision to require full remediation and not allow the use of a windowing technique. We reasoned that if the data field was not expanded, we would be left with interface problems after the consultant left. It is our opinion, and we believe that of the industry, that the problem is only completely resolved when the date is expanded.

The status report, which I have included, presents more information on how the project was addressed. It highlights how the effort was divided into three distinct pieces, each associated with different platforms. This was done to make the effort more manageable and to allow for more accountability to executive and legislative officials. I won't discuss those details now but will be happy to address them if you have any questions.

The year 2000 problems does have the potential to create disasters. In a sense, it is like a disease for which we have a vaccine. If we use the preventive measures, than the results will be positive. Nassau County, has taken the vaccine and while it may seem expensive the alternative could be worse. Thank you.

NASSAU COUNTY YEAR 2000 COMPLIANCE PROJECTS
STATUS - 8/11/98

In addition to replacing the existing financial management system with a new year-2000-compliant system, Nassau County Data Processing has undertaken to address the year-2000-compliance issue in the rest of its computerized applications. The Year 2000 project was broken up into three groups representing the different computer platforms to be addressed. This was done to expedite the overall project by dealing with those items of greatest impact and understanding first while inventorying others. This also allowed for attacking the problem in a parallel manner to minimize risks that could cause us to miss the target date.

GROUP 1 - IBM MAINFRAME

TASK: Those IBM mainframe application systems, which will still be used in the year 2000 and for which no definitive plans exist for replacement by the year 2000, are being remediated to work in the year 2000 and beyond.

SCOPE: Some of the applications included are the Civil Service recruitment and personnel records systems; Fire Communications street locator index; Nassau County Correction Center inmate registration and census system; Health Department systems for environmental health, hazardous materials, and home care; Probation Department restitution system; Consumer Affairs complaints system; and several systems for the Police Department including the personnel system and time and leave system.

STAFFING: A few applications have already been remediated for Year 2000 by Nassau County Data Processing staff including Assessment system and Treasurer Cash Receipts, Delinquent Tax, and Cash Bail systems. For these systems, the interface with the new financial system has been identified but remains to be addressed by the Data Processing staff.
To deal with the remaining and majority of the mainframe systems for year 2000 compliance, all the preliminary research, issuance of the Request for Proposal (RFP), and formulation of contract was done by Nassau County staff. Contractors from Platinum Technology, Inc. have been engaged to remediate the application code and are currently working in conjunction with the support and advisement of Nassau County management, application project leaders of those computer applications affected, and the mainframe technical support staff on this project. The projected completion date given by Platinum technology is the end of 1998.

COST: The IBM mainframe project is being funded out of Capital Project #97009. The contract with Platinum technology includes $3,582,904 of software and consulting services charged out of this capital project to address the IBM mainframe applications. The project is currently underway.

GROUP 2 - WANG (20 mini-computers)

TASK: Many Nassau County Departments use WANG mini-computers for word processing, electronic mail, and certain user-specific application systems. The year 2000 problem must be addressed in terms of both the WANG hardware and software and the user application software running on these WANG systems. The WANG Year 2000 problem presents an opportunity and in some cases, a necessity not only to migrate off of the out-dated WANG platform, but to replace it with more modern hardware that will allow for implementation of newer technologies and associated software applications while eliminating the Year 2000 problem at the same time. It is anticipated that parts and supplies for WANG systems will become scarce and WANG system software will not be upgraded by WANG to encompass the newer technologies. Additionally, annual support has become increasingly expensive for the County.

SCOPE: Many departments as users of WANG systems will benefit from this project. Replacements for WANG word processing and/or electronic mail will occur in Consumer Affairs and the Adult Division of the Probation Department, for example. Additionally, in certain departments, specific applications will be taken care of to insure accuracy in year 2000 and to migrate to any replacement platform, including Probation Family Court case tracking, Civil Service systems which track exams, applicants, and employees, Nassau County Correction Center inmate tracking reporting system, and Recreation and Parks golf reservation/sales system, for example.

PHASES: The WANG migration and Year 2000 compliance project consists of three phases. Phase 1 consists of an inventory and impact determination. Phase 2 consists of a review with the effected user departments of both the report and recommendations delivered as a result of Phase 1. Phase 3 is the remediation/migration itself.

STAFFING: The WANG project will be accomplished through the use of consulting services working largely in conjunction with Data Processing staff, and to a variable extent, user department staff depending on the department involved. One exception has occurred when an earlier experience of year 2000 problems in the Assessment Department necessitated Nassau County Data Processing staff itself to take care of the Year 2000 remediation for the Assessment Department WANG application. WANG migration will coordinate hardware replacement, software replacement, and year 2000 issues in an attempt to replace each WANG system before January 1,2000. In the event that a limited number of WANG systems have to be kept beyond that date due to unique situations at some departments, the year 2000 issues will be addressed expediently.

COST: Phase 1 of the WANG project has been funded out of Capital Project # 97022 and was completed in 12/97. Phases 2 and 3 will also be funded out of Capital Project # 97022. Phase 2 is in progress. The additional funding required for the completion of Phase 2 and for Phase 3 necessitates an additional allocation of $9,695,000 to Capital Project # 97022 which should be available in the near future.

GROUP 3 - All other (PC's, other mini-computers located throughout the County)

TASK: This Group 3 project will identify, recommend solutions for, and resolve year 2000 problems for hardware and associated software applications running on personal computers and on mini-computers, other than WANG ones, located in key County departments and agencies. In those situations where financially justified in terms of the expense required to achieve year 2000 compliance in outdated software solutions and antiquated hardware, replacements will be made with more modern and efficient technology.

SCOPE: Some of the mini-computer systems included support the County Clerk and the Hempstead Health Lab, for example. Personal computers to be included are both standalone and Local-area-network attached and service key County departments including District Attorney, County Executive, Health, Fire Marshal, Public Works, and Sheriff, for example.

PHASES: The project consists of three phases. Phase 1 consists of Year 2000 impact assessment and remediation of mini-computer systems that the Division of Data Processing currently knows to exist. Phase 2-A consists of a survey to identify personal computers, any additional mini-computers, and potential year 2000 problems. Phase 2-B consists of impact determination and a plan for remediation of the year 2000 issue. Due to the December 31, 1999 deadline, the project is being broken down in this manner so that Phases 1 and 2 can be in progress simultaneously, allowing work for Year 2000 to begin on the known mini-computers, while the survey for the unknown is being conducted. Phase 3 consists of the actual execution of the remediation plan.

STAFFING: All phases of the project will be staffed by contractors working in conjunction with Data Processing staff and the identified contact person in each of the County agencies included in the project. As a result of the RFP process, the contract is being finalized with the selected vendor.

COST: The initial phase of the project will be funded out of monies allocated to Capital Project #97009 based on a preliminary estimate of the phase 2-A inventory costs. The subsequent remediation phases of the project will require additional funding of $8,050,000 to be allocated to Capital Project #97009 in the near future.

5422d (based 5322d)

Mr. HORN. Well, we thank you for those helpful comments. We are now are going to open it up for questions for Mrs. Maloney and myself.

I am going to start with one that is overriding. And as a predicate to that, without objection, I am going to ask to be put in the record the August 3 memorandum from the American Law Division of the Congressional Research Service, Library of Congress, on potential Federal liability for failure properly to implement the year 2000 data base conversion, by Henry Cohen, legislative attorney.

The one I am going to ask questions from is the August 12th memo of the American Law Division, Congressional Research Service, and this is by Johnny H. Killian, senior specialist in American constitutional law, and this is relevant to this panel. It's the Federal immunity for local governments. The memorandum is in response to our request for a brief consideration of whether Congress would immunize local governments for liability for problems that might arise because of Y2K difficulties.

[The information referred to follows:]

Congressional Research Service • The Library of Congress • Washington, D.C. 20540-7410

August 12, 1998

TO : Honorable Stephen Horn
Attention: Russell George

FROM : American Law Division

SUBJECT : Federal Immunity for Local Governments

This memorandum is in response to your request for a brief consideration of whether Congress could immunize local governments for liability for problems that might arise because of Y2K difficulties.

First, if the States were the potential problem, they could not be sued in federal courts because of the Eleventh Amendment. Local governments, however, although they are creatures of state governments, do not have Eleventh Amendment immunity.

Second, if suits are to be brought against local governments in federal courts under federal question jurisdiction, Congress could deal with that question by excluding local governments from federal jurisdiction because of suits arising out of Y2K. Or Congress could legislate substantive immunity.

Third, if suits are to be brought against local governments in federal courts under diversity jurisdiction, it is evident that Congress could deny jurisdiction in federal courts of such suits. Inasmuch as diversity jurisdiction requires that one or the other of the parties, here, of course, the plaintiff, be from out-of-state, Congress might have legislative jurisdiction to provide immunity under the commerce clause, on the basis of protecting interstate commerce, but this course might be iffy, in terms of preempting state common-law causes of action. But it is a potential course to follow.

Fourth, inasmuch as local governments are creatures of the States, the States would have power to immunize them by enacting laws altering state common-law causes of action.

One consideration to observe is that the Supreme Court lately has interposed some constitutional federalism objections to congressional legislation regulating state and local governments. E.g., *Printz v. United States*, 117 S.Ct. 2365 (1998). It is not likely, however, that the same barriers would be erected against protective legislation, although that cannot be ruled out.

Because of time constraints, we have been required to be sketchy, but if you wish us to elaborate on these points please do not hesitate to request us to do so.

Johnny H. Killian
Senior Specialist
American Constitutional Law

Mr. HORN. First, if the States were the potential problem, they could not be sued in the Federal courts because of the 11th amendment. Local governments, however, although they are creatures of State governments, do not have 11th amendment immunity. I must say, I would think that when the State creates the subunits, which are the municipalities, I would think that the 11th amendment ought to follow that, but the constitutional star doesn't.

Second, if the suits are to be brought against local government in Federal courts under Federal question jurisdiction, Congress could deal with that question by excluding local governments from Federal jurisdiction because of the suits arising out of Y2K, or Congress could legislate substantive immunity.

Third, if suits are to be brought against local governments in Federal courts under diversity jurisdiction, it is evident that Congress could deny jurisdiction in Federal courts in such suits. Inasmuch as diversity jurisdiction requires that one or the other of the parties, here of course the plaintiff, be from out-of-State, Congress might have legislative jurisdiction to provide immunity under the Commerce Clause on the basis of protecting interstate commerce. But this course might be iffy in terms of preempting State common law causes of action, but it is the potential course to follow.

Fourth, inasmuch as local governments are creatures of the State, the States would have power to immunize them by enacting laws or altering State common law causes of action.

One consideration to observe is that the Supreme Court lately has interposed some constitutional federalism objections to the congressional legislation regulating State and local governments, and they cite that *Janice E. Hetzel* v. *Prince William County, Virginia and Charlie T. Deane,* a 1998 case. It's not likely, however, that the same barriers would be a remedy against protective legislation, although that cannot be ruled out.

Now, having laid down some of that information as to what they think the Congress can do and the State governments can do, I guess I would ask you from local governments on the sovereign immunity question, have any of the States or the localities received summons notifying you of an attempt to file a suit against you? Have we got any of those cases? Because some tort lawyers are doing that around the country. You know, tobacco was the big thing, and tobacco is small pickings, tobacco leaves, compared to this year 2000 thing, and you have got a lot of the tort bar salivating, waiting for this to come around.

Mr. ADRION. Congressman, I don't know if I can answer that question.

Mr. HORN. OK. You might want to ask your county attorney. How concerned are you about lawsuits against your entities?

Mr. DAVIS. I will be glad to start for New York City. We are very concerned and working closely with our attorney general's office.

Mr. HORN. You are going to have to move the microphone a little closer. I am having trouble with mine, too.

Mr. DAVIS. As I said, we have been working closer with our attorney general's office for over a year on this very issue. We have looked at sovereign immunity and have actually drafted legislation that is under review with our government's counsel.

We certainly don't want to speak for the attorney general's perspective, but I can say from a project perspective one of the things that we were concerned about is where we are requiring fairly—we have a fairly aggressive warranty statement that we have been asking vendors to sign to protect the State as a result of failures, and that's been out there for over a 1½ years. It's actually more aggressive than the GSA language. It has a lot of damages associated with that.

So our concern was, "Where do you draw the line with immunity here?" On one hand, on a private level, we are asking vendors to sign on the dotted line, and then what's the State's and the localities' position in terms of immunity?

Our first analysis done, we addressed the language. What we feel the real focus needs to be is look at existing sovereignty provisions and really do that detailed analysis before we move forward.

Mr. HORN. Well, I commend you on that, particularly the vendors. Have you also had some warranty from the manufacturers?

Mr. DAVIS. Yes.

Mr. HORN. That includes the manufacturer?

Mr. DAVIS. That's correct. There's also some pass-through provisions for third party software, and just the nature of the industry, the interdependence of the technology.

Mr. HORN. When we started surveying the Federal Government back in 1996 to see if anybody even knew this was a problem, several Cabinet officers had never heard of it. One agency, the Agency for International Development, said, "Oh, we have got the problem solved. We are getting all new equipment." So we gave them an A for solving the problem at this point.

And of course they bought all the new equipment, but nobody ran a test on it to see that it was 2000 compliant, so millions of dollars were spent on equipment that was not 2000 compliant, even though they were telling us that's why we are buying new equipment. It didn't work. So when we are tying them down, they don't like it, but that's tough.

As you say, GSA might be a little softer language than yours. We are going to be checking that in the next month or so to see how far they have come, because they assured us in our first hearing that they would make sure that nothing was bought in software or hardware for the Federal Government that was not 2000 compliant. So we will be looking at that.

Any other comments on the sovereign immunity question? Mr. Sullivan.

Mr. SULLIVAN. In the State of Connecticut we are just getting into it ourselves. We are being hard on vendors in term of the warranty we are provided with and make that stick, but we are not making a firm decision on whether to go ahead with legislation.

Mr. HORN. Any comments, Mr. Adrion or Mr. Wipperman?

Any other comment from the deputy mayor? Do you have a system whereby anything you are buying now is 2000 compliant?

Mr. LHOTA. Yes, we do.

Mr. HORN. You might move that microphone.

Mr. LHOTA. Someone from the State of New York is holding our vendors and the warranties relating to everything that we have been buying for the last almost 2½ years to be 2000 compliant.

Mr. HORN. Very good. Well, now, I will yield to Mrs. Maloney for the next question.

Mrs. MALONEY. Thank you, Mr. Chairman.

Mr. Lhota, you said you are spending $390 million already. That is just a tremendous amount of money.

Mr. LHOTA. $317 million.

Mrs. MALONEY. And going up. And then I was interested in the comparison between the State. It seems like the city is spending more than the State.

Mr. LHOTA. I think there's a reason for that. I mean, the State, when you look——

Mrs. MALONEY. Can we ask Mr. Davis one question? You say $250 million is the agency cost estimate, then $100 million for the priority projects. Is that $350 million, or $100 million of the priority projects and $250 million?

Mr. DAVIS. That's an excellent question. I would like to step you through that. The $250 million cost estimate is across the board. That not only includes priority systems but medium and low priority systems as well. So that was our overall statewide cost estimate, including embedded systems. Although, we are going out for a more detailed inventory on the embedded system side.

That $100 million that we have allocated centrally was an allocation specifically to support top 40 and high priority projects. To give you a sense of the numbers associated with that, $83 million just for the top 40 and about $70 million for the high priority. I should also point out——

Mrs. MALONEY. So it's a total of $350 million or $250 million?

Mr. DAVIS. $250 million. But the way I would describe it is, the subset of that $250 million for the priority projects is about $140 million.

Mrs. MALONEY. I remember when I was on the city council—they used to spend more on contracts. And our budget, when I was in city council, I believe it was only $1 billion behind the State. We have a remarkable city, and a city with a lot of costs.

But my question really for you, Mr. Lhota, before you get back to the costs, I thought you raised an excellent point when you said that all of—you said that we are all in this together. We are interdependent. If one person makes a mistake, it hurts the Federal Government, hurts the private sector, hurts everybody. So we should really have incentives to reward those localities and States that are moving forward and getting the job done. And I think we could have a marriage here, Mr. Chairman, because, you know, the Democrats want to help the cities and the Republicans like to reward individual effort. And I would just like to put a challenge out to Mr. Lhota, since he raised it, and also Mr. Davis, and one of you mentioned, I think it was Mr. Adrion that said it was like a national disaster. We should be giving aid to this as if it were a forest fire or whatever. I don't think many people really grasp how serious this is. The chairman certainly does.

But I would like you to look at an idea of a formula that rewards effort, that rewards those localities that have gone out and taken certain steps to get the job done.

And also, the point I think that Mr. Sullivan raised on the fact that the money goes centrally and then has to be reallocated out.

I know we only have 504 days left, but I think on these funding problems there may be something that we could work on together, certainly to change the funding so it goes directly to where the source problem is, so it doesn't have to be reallocated by the legislature. And then I would be interested in your ideas of a formula that could reward effort to get the job done, because we are going to—we have a tremendous problem ahead of us. And maybe we could talk further about that, but you wanted to respond to the funding problems, Mr. Lhota, and I cut you off. I apologize.

Mr. LHOTA. Mrs. Maloney, one, I would work on a funding formula, happily, to see if it's workable, and I will work with everyone from the surrounding counties as well to see if there is a formula that can be worked out.

Regarding the difference between what the city of New York will spend and what the State of New York will spend, if you recall on the days in council, the role of the State and role of the city are very different with how they provide services. The State generically, really simply, really provides to the counties various different moneys to implement welfare programs, to implement criminal justice related programs. But ultimately New York State is at the local level where we will have more and different types of computer systems that will be involved in working with the taxpayer directly in any of these programs.

So that while the State is at a very local level, our programs of giving eligibility permits, giving different permits for the consumer affairs departments, for opening up stores and anything that relates to that, is more of a hands-on approach. It would be natural that we would be spending more money since we have more programs that deal in a more retail level, if you will, instead of the State at a wholesale level. That's just the nature of the constitution of the State of New York and how we work.

Mrs. MALONEY. As I said, I recall that. I remember the amount to be spent on local contracts almost like tripling the State when I was on city council.

Mr. LHOTA. Sure.

Mrs. MALONEY. I would like to go back to Mr. Willemssen, and again, I compliment the GAO for all your hard work, as the chairman did.

You mentioned in your statement, of course it doesn't apply to Connecticut or New York, but many of the States are behind in solving the Y2K problem. Why do you think that some States are behind? Of course New York and Connecticut aren't. Is it lack of information? Lack of resources? Or other reasons? Why are States lagging, would you say?

Mr. WILLEMSSEN. I would say part of the reason is very similar to what we have seen at key Federal agencies, and that is a late start. If you take a look at the best agencies and where they are at, one of the overriding underlying causes of why they are where they are is they started very early. If you look at one of the overriding underlying causes of those in trouble it is because they started way too late.

This is not a problem where you can simply throw a lot of resources and get it done faster necessarily. It is very time-consuming.

Second, we have seen mixed reviews from States on how aggressive they have been addressing data exchanges. And that's not necessarily surprising, because it's natural to focus initially on your own systems.

I think it's instructive to hear some of the comments from a couple of the county organizations here that one will not do any windowing, that is it will expand in all cases to four digits, while another one is planning to window. This represents the different viewpoints and different perspectives on how the data exchange issue is viewed, which is, frankly, one we are very concerned about in the limited amount of time left. Because no matter how good each of these organizations does with their own internal systems, if they haven't dealt with those interfaces and incoming data, it could corrupt their systems, so all their effort could go for naught.

Mrs. MALONEY. Do you think we should have a Federal standard on the problem that you raised on the windowing or going to the four digits?

Mr. WILLEMSSEN. We generally do. We do have a Federal standard except to the extent both partners agree to do something else, then they can. The standard has been four digits for the year, but if partners agree to something else, then that's an agreed-upon exception.

My concern is not all partners have been getting in touch with one another to even know what format they're exchanging in. That's a time consuming process, let alone to test those agreements that they eventually come up with.

Mr. HORN. The chairman has some important questions, but I want to go back to the funding. One thing, I find the numbers staggering as to how much it is costing the Federal Government, State and local, to comply, and I want to understand what are we doing federally to help localities now. Mr. Sullivan mentioned that there is a Federal reimbursement now for meeting certain standards.

Could someone clarify so I understand the funding stream? What is the Federal Government sending to States, localities, to help them now with this problem, if anything?

Mr. SULLIVAN. My understanding, generally there are existing arrangements between Federal agencies and States for certain programs, whether it be employment programs or welfare programs, et cetera. And through those programs, there are advanced planning documents required for reimbursement of legitimate expenses.

And some of the agencies, like HCFA, have recently developed accelerated process for getting those reimbursements, but it's still a process where you have to meet and have a plan. You have to agree on what's in that plan. You have to then complete the plan and have—and submit progress reimbursement payments.

Mrs. MALONEY. Are those fair reimbursements? Do they cover the cost?

Mr. SULLIVAN. They are generally at the—they set a reimbursement level, whether it be 90 percent, 75 percent, or 50 percent, and that's what's agreed upon. It's usually according to the Federal agency standard of what they are reimbursed.

Mrs. MALONEY. Would anyone else like to add or to clarify this?

Mr. LHOTA. Congresswoman, if you look at what almost every State and every county in the country is doing, they have their own

separate Y2K office that is dealing with this from a global standard in making sure all of the agencies are coordinated, the Federal Government, and from their level, as Mr. Sullivan has said.

For example, HCFA is involved at its level, but that doesn't involve the entire relationship from Federal Government to State and local government. There needs to be more of that. There is no line in the New York budget, as you recall from your days on council, the Federal revenues coming in, for a specific Y2K problem; though you can find that in your budget and tax plan on how much is being dealt with on the Y2K problem.

So from the standpoint of those folks at our level, it's right up front and something that's being dealt with in cross-disciplines. It's not being done in the same way in the Federal Government.

Mr. HORN. I thank you, sir.

Do you want to comment?

Mr. WILLEMSSEN. I was going to quickly add to that, that indeed most of the relationships here are specific. Among the programs that I would be most concerned about that have a degree of Federal funding, and that are State-administered, would be Medicaid, food stamps, and child support enforcement. For those, there's not much time left. In some States those systems supporting those programs are in desperate need of help.

The other thing I want to point out more globally is, among Mr. Koskinen's sector groups that he's established is one of those groups, as I recall, has to do with State and local issues. However, I frankly don't believe that there's been a lot of activity yet within that particular sector. There are many—maybe some of the participants here want to correct me, but I have not seen much yet.

Mr. HORN. Yes. Mr. Davis.

Mr. DAVIS. Just one comment that I have. We attended the Federal-State summit in Washington, DC, recently, and John Koskinen is actually going to participate in our monthly State conference calls as of next month. We were pleased to see that relationship strengthening at the Federal level, the State level, and on to the localities.

Mr. HORN. Any other comments? Then we will end that round, which is a round of about 19 minutes.

Let me just followup on that. Just one person's view, do not hold your breath until the Federal money is going to arrive and help you on this problem. It isn't going to happen.

I happen to have been a very strong supporter of revenue sharing, which I think is one of the best programs that we ever had out of Washington, where you get the money, you know the problem, you can deal with it. Unfortunately, in a Democratic Congress and a Republican President, Mr. Reagan agreed to get rid of it, which I thought was a shameful thing to do personally, but I wasn't in Congress at that time.

In this situation we have a very small surplus, maybe, this year. Half of it is going to go automatically to retire the national debt, as every surplus will while we're in the majority. We are not going to leave the American people the mess they already have which goes up to $5.3 trillion. We are going to reduce that. So I wouldn't count on this.

But one aspect of this was the Social Security State-funded disability operation. They finally realized they hadn't done anything on that. They have been having great progress on their main central systems in Baltimore. But they then did go out and provide the money and did turn that around. It's operated by the States, as are many Federal programs, and that was funded by the Federal Government. So, as was said by a number of you, that possibility does exist.

Let me ask you on this, do you have any contingency plans that don't have anything to do with the computers being fixed in time, but that's why you have a contingency plan? Are there some things here you feel you are simply not going to be able to fix?

Some of you said we want to do it by March and then we have the rest of that year for testing, validation, so forth. And that's exactly what the President has told the executive branch now, get most of these things in terms of planning and examination and all the rest by March 1999.

Do you see things going beyond March in your particular jurisdiction? And if so, are there any contingency plans? And just give me a feel for what one of the contingency plans looks like. Mr. Wipperman, any thoughts on that?

Mr. WIPPERMAN. We are at the point, as I stated, that we believe and we are fairly confident that we are going to be able to enumerate any problems that occur that could cause catastrophe. But as I also stated, I go to church every Sunday and make sure that that is going to happen.

We have not done any active disaster or contingency plans on that basis. I mean, we are putting our entire effort in getting the job done——

Mr. HORN. OK.

Mr. WIPPERMAN [continuing]. And no effort in what happens if we don't.

Mr. HORN. Mr. Adrion, do you think you'll get the job done by that time line?

Mr. ADRION. I have managed a number of projects over the years, and it's unusual that everything goes right in and our projects finish on time. It's the nature of this business.

Mr. HORN. This is true nationwide in both industry and government. No one ever can report a project that was done on time of any magnitude.

Mr. ADRION. The kind of contingency planning that we are anticipating doing between now and the end of this year is to review with our operating departments what their requirements are and making sure that we had some—really two things, backup systems in place to accommodate it and to deliver the absolutely required services, and manual systems if necessary.

Mr. HORN. Any thoughts on this, Mr. Sullivan?

Mr. SULLIVAN. Connecticut has been putting in the infrastructure for accomplishing all of the systems and remediation efforts, et cetera, and we have stated that we would address contingency planning beginning in September. But it's my hope that we will have just the areas you are talking about under control and known by the end of the year. So that's our hope.

Mr. HORN. Mr. Davis, any thoughts on that?

Mr. DAVIS. I would say we are taking what we call a belt-and-suspenders approach, although we are pushing hard to get our mission-critical systems done, and our medium and low priority systems, which will have a productivity impact even if they won't be felt by the public. So we are taking sort of a multitiered effort. At the agency level, we are requiring contingency plans for all of those systems, although they may not make it.

That's not an IT plan which we are doing, but we are also putting a business plan in place. We are having the program units, the business units fill out contingency plans. Absent that automated system, how am I going to continue to do business? That's being done on an agency-by-agency basis.

At the State level associated with utility preparedness, we feel we need to be working with our SEMO office, State Emergency Management Office, to do that at a statewide level for utility preparedness.

I also mentioned high-risk occupancies that we are identifying. The contingency plan there, if you have a day care facility in a high-risk building and you are not getting clear answers from your landlord, you consider moving out of the building. So all of those things across the board are associated with risk and contingencies.

Mr. HORN. Mr. Lhota.

Mr. LHOTA. Mr. Chairman, my response is similar to Mr. Davis from the State of New York, in that the city is also taking a belt-and-suspenders point of view. As I mentioned during my testimony, there is a redundancy in my effort going forward. Not only are we looking, changing, and consolidating our programs and fixing the Y2K problem long in advance of December 31, 1999, we are also going through with the mayor's Office of Emergency Management what its scenarios are, so that they understand what needs to be done manually in the event that it doesn't work. Hopefully we will never get there. But we are smart enough, as you have said before, to know that nothing ever gets done on time. Given the short window that we have here, we are going down the track.

Mr. HORN. Good. Mr. Willemssen, I remember you mentioned that the assessment phase is the key to solving this problem. And you said, your testimony was that some governmental organizations have not completed this phase. Does this include the mission-critical systems? And has GAO had the chance to look at some of the States in this process?

Mr. WILLEMSSEN. It does for those agencies we have testified under in June, where I think we have 5 of 24 agencies still had not completed assessing. That does include mission-critical systems. That often does include critical internal telecommunications networks. And without assessing that and making that compliant, all the systems, some will go by the board.

Regarding individual States, we don't have any reviews of particular States. We do have an ongoing review, as you may know, in the District of Columbia that we may be scheduled to testify on soon. One thing we are doing, at the end of this month, in 2 weeks we are hosting a Y2K conference of all Federal IGs and also all State auditors to—just on Y2K to better prepare the Nation for what's to come.

Mr. HORN. Mr. Adrion, as I recall, in your testimony you sort of mentioned a general decline in cooperation between public and private organizations. Could you elaborate on the situation, what impact that is having on resolving the Y2K problem?

Mr. ADRION. And it's a comment that was made by my chief information officer, who has mentioned that both within the municipalities and business organizations in Westchester County there has been less of an inclination to even discuss the problem of cooperation, and particularly status, where we are with our implementations, because of advice given by legal counsel both on our side and the other side.

Mr. HORN. On that——

Mr. ADRION. I can't report on anything specific.

Mr. HORN. OK.

Mr. ADRION. Any instances from my own experience.

Mr. HORN. On that point of public, quasi-public governmental cooperation, since New York is the economic hub of the United States, to what degree, if any, is the city involved in chatting with their fellow groups such as bankers, investment houses, the markets, so forth?

Mr. LHOTA. Through the Office of Emergency Management as well as the Y2K office, we have been in touch with many industry groups in the city. You know, about 5 weeks ago, Wall Street had a Y2K date to make sure that not only the exchanges but all of the exchanges were—all member firms are compliant; and that was a very successful exercise.

The same—we are working with Connecticut Edison, Brooklyn Union Gas, or what is known as Keystone, as well as Bell Atlantic to make sure that all of the services are running. We are doing that with cable TV companies as well, because of the interactive nature of where some of our cable TVs are.

So it's important to go forward in that area. We are also attempting to work with the port authority on issues regarding the FAA. And we are working with the Metropolitan Transportation Authority on issues regarding the subway system. The buses are OK, it's not an issue there, but the subways as well as the Long Island Railroad and Metro North and various other commuter transits.

Mr. HORN. You have answered my next question, because we know all of Mr. Moses' various legacies here. The mayor really doesn't have too much control on some of them; neither does the Governor.

Mr. LHOTA. Nor respect.

Mr. HORN. But you are saying they are cooperating in this area. They realize there is a common bond.

Mr. LHOTA. I have not said that. We have not said that. We are attempting to work with them.

Mr. HORN. Well, do we know to what extent they are involved? Do they have project 2000 directors and all this trying to do something, or is anything happening?

Mr. LHOTA. The State should answer that.

Mr. DAVIS. Yes, I can actually answer. We, as New York City has done, we have tried to reach across not only sectors but also specific agencies, and we have been working with the port authority.

Many of the agencies that he had mentioned have been attending our every-other-month—we have statewide project managers' meetings which are focused on particular subjects. They have been attending. There's also a meeting scheduled in September to begin looking at infrastructure across the regional area.

I don't have a complete list of all the attendees, but we are reaching out to the transportation sector. The tri-state States, Connecticut will be represented, New Jersey, because we really need to look at this on a regional basis when we start talking about major utilities and transportation and banking. It wouldn't be the best use of our time to be doing it in stovepipes, organization-by-organization, State-by-State.

Mr. HORN. We are going to get into those in our next panel, which is about to begin, but I want to thank you all for your testimony.

Mrs. Maloney, do you have any further questions?

Mrs. MALONEY. All of the panel is so great. I just have one general question, because we need to get on to the next panel.

As the chairman mentioned, there is legislation with Congress that would encourage information sharing among organizations, States, localities, private sector, trying to solve the Y2K problems by providing limited liability relief for organizations that disclose their Y2K compliance status. So my question to all of you is: Would this legislation help your localities? And are there other actions that Congress could take that would help your municipal or county governments solve the problems? And if so, what are they?

Mr. DAVIS. Since I have the microphone in front of me, I will answer it first and pass it down the line.

The Good Samaritan bill, the disclosure issues that a lot of people are talking about, New York State certainly feels that anything we can do to create a more open dialog and an honest dialog across all the sectors is going to benefit everyone. We have experienced similar, I would say frustration, but challenges to getting accurate information from our vendors and our trading partners. So anything we can do to give agencies or entities a greater comfort level in sharing that information and building incentives is going to benefit all of us.

In terms of assistance, some discussions that you brought up relating to resources and streamlining those, expediting those resources down to the local level where this is really going to impact citizens ultimately, anything we can do along those lines would certainly benefit us.

Mrs. MALONEY. Any other comments?

Mr. LHOTA. I echo Mr. Davis' comments about providing information to everyone. That is important. And a central program, as you brought up, Mrs. Maloney, would be very important to create, aware, though, of the chairman's view of the money standpoint there.

What's important to know is we don't have a lot of time, both money and time. Anything that the bill does that would require us to have reporting when we've—with the limited amount of time, to divert the necessary resources to deal with an oversight or regulatory function at the same time that we would have to—at the

same time that we have for the 505 days, and tomorrow 504 days, the time is coming to a critical point.

So what's important is that the information be shared with everyone, and then let's get the job done. And then we can go back and actually do an autopsy as to how well we have done or not done. That may be a very important role to play.

Mrs. MALONEY. Anyone else?

Mr. SULLIVAN. Yeah. I would like to echo that Connecticut is in favor of the Good Samaritan legislation. Yes, it's a good, important step. One thing we have trouble in is getting good, accurate information from vendors, particularly in the medical areas, laboratory, diagnostic equipment areas. That's very expensive equipment to replace if it has to be replaced, and often you can't test it, so you have to replace it.

At the Federal-State summit Mr. Koskinen mentioned that there was an effort being made to get some data that had been acquired by the Veterans Administration passed through the FDA so it could be broadcast and made more publicly aware, publicly accessible, because the VA had done a thorough job of testing and evaluating equipment. If that information were available to States and private nonprofit hospitals, that would be a great assistance to us.

Mr. ADRION. I agree with the panel.

Mrs. MALONEY. Thank you.

Mr. WIPPERMAN. I also agree, and will echo the sentiments that if it were to, however, include more reporting processes and put an even greater burden on us, I think that's something that we in government tend to do very well.

Mrs. MALONEY. Good point.

Mr. WIPPERMAN. A lot of paper.

Mrs. MALONEY. Good point. And very briefly, Mr. Lhota, only because it's been raised in letters to my office, some observers have expressed concern about drinking water and wastewater systems that could be affected by the Y2K problem, and you mentioned all the other areas but you didn't mention that particular one. Because of the size and complexity, this would be a serious problem for New York. And if you could comment just briefly on what we are doing with our water, wastewater systems, are they also Y2K compliant?

Mr. LHOTA. The systems of the Department of Environmental Protection are Y2K compliant. We also have contingency plans. Believe me, what we can do in opening and closing valves manually, which happens right now in certain occasions, you know does happen. As you know, the third harbor, the third water pump, excuse me, opened last week. It clearly fully is Y2K compliant, so that our water as well as the sewer system is the least of our worries. They are part of the 207 primary programs that are compliant.

Mrs. MALONEY. I think all of you, all of you have given excellent statements and certainly give me more confidence in government. I think you are really the only case. I appreciate you being here today and sharing your concerns and insights and ways you think we can help you. Thank you.

Thank you again, Mr. Chairman. You have been terrific on this.

Mr. HORN. Well, I agree with everything Mrs. Maloney said. This is a very helpful panel, and you have all come with different perspectives. I think that's why we get out of Washington, to find out

what's going on. So thank you for the time you have taken to get here and share this information with us. I appreciate it.

With that, this panel is over, and we will ask panel two to come forward.

Panel two consists of Mr. Arthur Thomas, the senior vice president of Global Operations, Merrill Lynch, representing the Securities Industry Association.

Mr. George Thomas, senior vice president, director of Information, New York Clearing House.

And Mr. Robert Hedlund, director of Technology Services, Consolidated Edison Power Co. of New York.

Gentlemen, you probably were here when we went through the drill. If you don't mind, stand and raise your right hands.

[Witnesses sworn.]

Mr. HORN. OK. They all three affirm. The clerk will note that.

We will begin just as we have on the agenda here with Mr. Arthur Thomas, the senior vice president of Global Operations, Merrill Lynch, and he is representing the Securities Industry Association. Now, was that the group that sponsored the test recently?

Mr. ARTHUR THOMAS. Yes, it was, Congressman.

Mr. HORN. OK. Good. We look forward to hearing about some of that. Thank you.

STATEMENTS OF ARTHUR THOMAS, SENIOR VICE PRESIDENT, GLOBAL OPERATIONS, MERRILL LYNCH, REPRESENTING THE SECURITIES INDUSTRY ASSOCIATION; GEORGE F. THOMAS, SENIOR VICE PRESIDENT, DIRECTOR OF INFORMATION, NEW YORK CLEARING HOUSE; AND ROBERT HEDLUND, DIRECTOR OF TECHNOLOGY SERVICES, CONSOLIDATED EDISON POWER CO. OF NEW YORK

Mr. ARTHUR THOMAS. Chairman Horn, Representative Maloney, I appreciate the opportunity to testify today. My name, again, is Arthur Thomas. I'm the senior vice president of global operations services at Merrill Lynch. It is in my capacity as chairman of the Securities Industry Association's Year 2000 Steering Committee that I am testifying. I ask that a copy of my statement be included in the record.

Mr. HORN. Automatically we put them in as soon as I introduce you.

Mr. ARTHUR THOMAS. Thank you.

Mr. HORN. And then we ask you to summarize it. Take, if you would like, 10 minutes each of you, and then we can work with questions.

Mr. ARTHUR THOMAS. Very good. The Y2K effort represents the largest ever business and technology undertaking of the financial industry, at a projected cost of somewhere between $4 billion and $6 billion. As part of this effort, the Securities Industry Association and a cross-section of other organizations, including clearing corporations, depositories, utilities, exchanges, custodian and self-regulatory organizations, have banded together since 1995 to address the problem. Our primary goal is to protect the U.S. investing public and to ensure a successful transition to the year 2000.

In September 1996, the SIA Y2K Steering Committee was created to serve as a liaison to senior industry management. Over

time, however, the committee has evolved into a series of active subcommittees focusing on the following areas: awareness and education; industry-wide testing; exchanges and utilities; data and service providers; third-party vendors; physical facilities; legislative and regulatory issues; contingency planning; and international awareness.

These subcommittees are concerned with identifying and reducing risks associated with the Y2K conversion, including facilities risks such as utility companies, landlords; third-party vendors such as telecommunications, data providers; and industry utilities.

At this time, I would like to briefly survey some of the significant industry initiatives in several areas.

Awareness and education efforts. The SIA has played a major role in promoting awareness of critical Y2K issues in the United States and worldwide. Likewise, we have shared our expertise with other U.S. industries and the public sector, and the SIA has frequently been invited to discuss our Y2K model and best practices.

Specifically, we have administered score cards and surveys to securities industry senior management with regard to Y2K readiness; conducted industry conferences and symposiums; delivered updates to the U.S. Congress, the Securities and Exchange Commission, the Federal Reserve, and special subcommittees such as the House and Senate Banking Committees, as well as the Treasury Department; and supported U.S. Government efforts by speaking at government and industry forums and educating parts of the congressional staff.

In addition, the SIA has briefed the media, Congress, and other groups on the progress of our initiatives and will continue to do so.

During the past 2 years, much of SIA's activity has involved the analysis of critical issues and the development of a testing methodology that would serve the U.S. securities industry. The SIA plan involves a two-step approach, beginning with beta testing, which was conducted last month, and continuing with an industry-wide test in 1999. Because of its importance to our Y2K readiness efforts, I would like to take a few moments to give you a more detailed picture of the beta testing.

The beta test, which was completed in late July, was a test of a test and simulated a 4-day trading cycle for selected products. The test was intended to verify our methodology and prepare us for an industry-wide test early next year.

The beta test was a difficult and complex undertaking. Twenty-eight firms participated in the test of some or all of their products, along with 12 exchanges and utilities. Approximately 175 test cases were exercised and 10,000 transactions were conducted. Each firm input approximately 500 trades on each of the testing days, and each trade included specific conditions, such as canceled trade, good-till-canceled orders, and other types of trades and situations that are transacted on a normal daily basis.

The firms that participated represent 50 percent of the average U.S. daily trading volumes. They were the largest firms. The preparation of test scripts by the participants was very thorough and covered every major product group, including U.S. equities, options, corporate bonds, municipal bonds, unit investment trusts, mutual funds, money market instruments, government securities, and mortgage-backed securities.

On August 10th we held a press conference and announced the success of that test. The test's successful outcome resulted from several factors.

Participating firms were all members of the SIA's Year 2000 Testing Subcommittee and had been involved in the development of a beta test plan for more than 2 years. Another factor was the participation of several hundred product experts who volunteered to write the test scripts and develop testing conditions. In addition, there was a tremendous amount of internal testing that took place prior to the beta test within each participant firm to prepare for the actual test.

We cannot overstate the importance of individual testing prior to any industry-related event. To give you an idea of how much effort went into the beta test, consider the following points.

To participate in the test, firms had to establish their own separate year 2000 testing environment. Participating firms had to satisfactorily complete point-to-point tests with appropriate counterparties. In addition, each exchange, utility, and depository had to prepare its own set of prerequisites for testing.

Now that the beta testing is complete, we are making preparations for an industry-wide test to convene in early 1999. That's subject—that's a March, early March date. This test will involve SIA member firms, exchanges and utilities, and most likely be divided into several tiers to reflect a firm's capabilities. The industry-wide test will begin in March and continue on subsequent weekends throughout the year.

Because our industry has many interdependencies among broker dealers, stock exchanges, and industry utilities such as clearing corporations and depositories, a subcommittee was created to coordinate industry Y2K readiness efforts and define strategy and testing standards. The committee worked side by side with the Participant Testing Subcommittee to orchestrate the test.

As an industry reliant on financial information, data providers such as Bloomberg and SWIFT represent an important segment of our business. As such, a subcommittee has been created to define common industry testing delivery schedules and vehicles for data feeds.

Our industry is also heavily dependent on services supplied by third-party vendors such as AT&T, IBM, Microsoft and Oracle, just to name a few. These vendors supply us with computer hardware, software, telecommunications, and other critical products and services. A subcommittee was created to establish a plan on how and when these providers will be year 2000 compliant.

We believe that there is an urgent need for companies to make information about year 2000 solutions widely available so that organizations in the United States and abroad can address the problem quickly. However, fear of antitrust and civil liability exposure have made many businesses hesitant to do the right thing. To address these and other efforts in this area, the SIA has formed a subcommittee to focus on legal and regulatory issues.

In a move that we feel positively reflects our partnership with government and business, the SIA recently petitioned and received a business review letter from the U.S. Justice Department's Antitrust Division. The letter allows us, as an industry, under certain

conditions, to share third-party Y2K readiness information with a limited amount of fear of violating government antitrust laws.

On a broader basis, the Year 2000 Information Disclosure Act will provide protection, in certain areas, from State and Federal suits arising out of third-party vendors' claims that they or their products have been defamed or disparaged. The proposed legislation, which is designed to include all industries, will support us in dealing with our own third-party vendor readiness concerns going forward. It's a great first step, and we thank the members of the committee who sponsored it.

The SIA's activities to date have intentionally focused on preparation and readiness for Y2K. Now that the testing is underway, the SIA has begun planning for contingencies that could occur during the transition. An SIA committee working jointly with the Federal Reserve Bank of New York and the New York Clearing House has been set up to facilitate work in this area.

The SIA is on the Steering Committee of the Global 2000 Coordinating Group, whose efforts parallel the goals of the SIA in creating awareness and assisting Y2K readiness activities around the world. Currently, the group comprises 32 organizations from 20 countries and includes commercial and investment banks, insurance companies, industry associations and others. Efforts are focused on sharing best practices, testing methodologies, and generating dialog on issues of global interdependency.

Because of our early start, we are well on our way to prepare for a smooth, transparent transition to the new millennium. Our successful beta testing efforts indicate that our concept is working, and we are looking forward to the much bigger challenge of industry-wide tests in 1999.

Once we have completed our Y2K efforts, our industry will have significantly upgraded its information technology platform and will emerge with the ability to offer higher levels of service to our customers.

We intend to keep you fully apprised of our progress and results as we go forward in this effort. As always, the SIA web site is our current source of all related activities. Our address is www.sia.com. And I thank you.

[The prepared statement of Mr. Arthur Thomas follows:]

Chairman Horn, Representative Maloney and Members of the Subcommittee. I appreciate the opportunity to testify today. My name is Arthur Thomas, and I am the Senior Vice-President of the Global Operations Services Division at Merrill Lynch. It is in my capacity as Chairman of the Securities Industry Association's Year 2000 Steering Committee that I am testifying. I ask that a copy of my statement be included in the record.

The Y2K effort represents the largest ever business and technology undertaking of the financial industry, at a projected cost of somewhere between $4-$6 billion. As part of this effort, the Securities Industry Association and a cross-section of other organizations including clearing corporations, depositories, utilities, exchanges, custodians and self-regulatory organizations, have banded together since 1995 to address the problem. Our primary goal is to protect the U.S. investing public and to ensure a successful transition to the Year 2000.

Introduction/Background

In September of 1996 the SIA Y2K Steering Committee was created to serve as a liaison to senior industry management. Over time, the Committee has evolved into a series of active subcommittees focusing on the following areas:

- Awareness and Education;
- Industry-wide Testing;
- Exchanges and Utilities;
- Data and Service Providers;
- Third Party Vendors;
- Physical Facilities;
- Legislative and Regulatory Issues;
- Contingency Planning; and
- International Awareness

These subcommittees are concerned with identifying and reducing risks associated with the Y2K conversion, including facilities risks such as utility companies, landlords, etc., Third-Party Vendors (such as telecommunications, data providers, etc.) and industry utilities and organizations.

At this time, I would like to briefly survey some of the significant industry initiatives in several areas.

Awareness and Education Efforts

The SIA has played a major role in promoting awareness of critical Y2K issues in the U.S. and world-wide. Likewise, we have shared our expertise with other U.S. industries and the public sector, and the SIA has frequently been invited to discuss our Year 2000 model and best practices. Specifically, we have

- Administered scorecards and surveys to securities industry senior management on Y2K readiness;
- Conducted industry conferences and symposiums;
- Delivered updates to the U.S. Congress, SEC, the Federal Reserve and special subcommittees such as the House and Senate Banking Committees, as well as the Treasury Department; and
- Supported U.S. government efforts by speaking at government and industry forums and educating Congressional staff.

In addition, the SIA has briefed the media, Congress and other groups on the progress of our initiatives and will continue to do so.

SIA Testing Activities

During the past two years, much of the SIA's activity has involved the analysis of critical issues and the development of a testing methodology that would serve the U.S. securities industry. The SIA plan involves a two-step approach, beginning with beta testing, which was conducted last month, and continuing with industry wide testing in 1999. Because of its importance to our Y2K readiness efforts, I'd like to take a few moments to give you a more detailed picture of the beta testing.

The beta test, which was completed in late July, was a "test of a test" and simulated a four-day trading cycle for selected products. The test was intended to verify our methodology and prepare us for industry wide testing early next year.

The beta test was a difficult and complex undertaking. Twenty-eight firms participated in the testing of some or all products, along with 12 exchanges and utilities. Approximately 175 test cases were exercised and 10,000 transactions were conducted. Each firm input approximately 500 trades on each of the testing days, and each trade included specific conditions such as canceled trades, good-till-canceled orders and other types of trades and situations that are transacted on a normal day.

The firms that participated represent 50 percent of the total U.S. daily trading volumes. The preparation of test scripts by the participants was very thorough and covered every major product group, including equities, options, corporate bonds, municipal bonds, unit investment trusts, mutual funds, money market instruments, government securities and mortgage-backed securities.

On August 10th, we held a press conference and announced the success of the test to external media. The test's successful outcome resulted from several factors. Participating firms were all members of the SIA's Year 2000 Testing Subcommittee, and had been involved in the development of a beta test plan for more than two years. Another factor was the participation of several hundred product experts, who volunteered to write the test scripts and develop testing conditions. In addition, there was a tremendous amount of internal testing that took place prior to the beta test within each participant firm to prepare for the actual test.

We cannot overstate the importance of individual testing prior to any industry-related event. To give you an idea of how much effort went into the beta test, consider the following points:

- To participate in the test, firms had to establish their own separate Year 2000 testing environments and test communication lines, where applicable.
- Participating firms had to satisfactorily complete point-to-point tests with appropriate counterparties.
- In addition, each exchange, utility and depository had to prepare its own set of pre-requisites for testing.

Now that the beta testing is complete, we are making preparations for an industry wide test in early 1999. This test will involve SIA member firms, exchanges and utilities, and most likely be divided into several tiers to reflect a firm's capabilities. The industry-wide testing will begin in March and continue on subsequent weekends.

Exchanges and Utilities

Because our industry has many interdependencies among broker dealers, stock exchanges, and industry utilities such as clearing corporations and depositories, a subcommittee was created to coordinate industry Y2K readiness efforts and define strategy and testing standards. The Committee

worked side by side with the Participant Testing Subcommittee to orchestrate the test.

Data and Service Providers

As an industry reliant on financial information, data providers such as Bloomberg and SWIFT represent an important segment of our business. As such, a subcommittee has been created to define common industry testing delivery schedules and vehicles for data feeds.

Third Party Vendor Efforts

Our industry is also heavily dependent on services supplied by third party vendors such as AT&T, IBM, Microsoft and Oracle, to name just a few. These vendors supply us with computer hardware, software, telecommunications and other critical products and services. A subcommittee was created to establish a plan on how and when these providers will be Year 2000-compliant.

Physical Facilities

Another important area concerns the physical facilities of securities firms, and therefore our ability to conduct business. A subcommittee was established to assess and encourage the Year 2000 progress of utility companies, landlords and vendors in addressing the readiness of their facility

systems and security systems, the results of their facility test plans, and other issues.

Legislative and Regulatory Efforts

We believe that there is an urgent need for companies to make information about Year 2000 solutions widely available, so that organizations in the U.S. and abroad can address the problem quickly. However, fear of anti-trust and civil liability exposure have made many businesses hesitant to do the right thing.

To address these and other efforts in this area, the SIA has formed a subcommittee to focus on legal and regulatory issues.

In a move that we feel positively reflects our partnership with government and business, the SIA recently petitioned and received a business review letter from the U.S. Justice Department's Anti-Trust Division. The letter allows us, as an industry, under certain conditions, to share third-party Y2K readiness information with a limited amount of fear of violating government anti-trust laws.

On a broader basis, the Year 2000 Information Disclosure Act (H.R. 4355 and S. 2392) will provide protection, in certain cases, from state and federal suits arising out of third-party vendors' claims that they or their products have been defamed or disparaged. The proposed legislation, which is designed to include all industries, will support us in dealing with our own third party vendor readiness concerns going forward. Indeed, we support all efforts—including those that facilitate the exchange of accurate information—that contribute to the industry's Year 2000 preparedness. It is a great first step, and we thank the members of the Committee who co-sponsored it.

Contingency Planning Efforts

The SIA's activities to date have intentionally focused on preparation and readiness for Y2K. Now that testing is underway, the SIA has begun planning for contingencies that could occur during the transition. An SIA committee working jointly with the Federal Reserve Bank of New York and the New York Clearinghouse has been set up to facilitate work in this area.

International Efforts

The SIA is on the Steering Committee of the Global 2000 Coordinating Group, whose efforts parallel the goals of the SIA in creating awareness and

assisting in Y2K readiness activities around the world. Currently, the group comprises 32 organizations from 20 countries and includes commercial and investment banks, insurance companies, industry associations, and others. Efforts are focused on sharing Best Practices, Testing Methodologies and generating dialogue on issues of global interdependency.

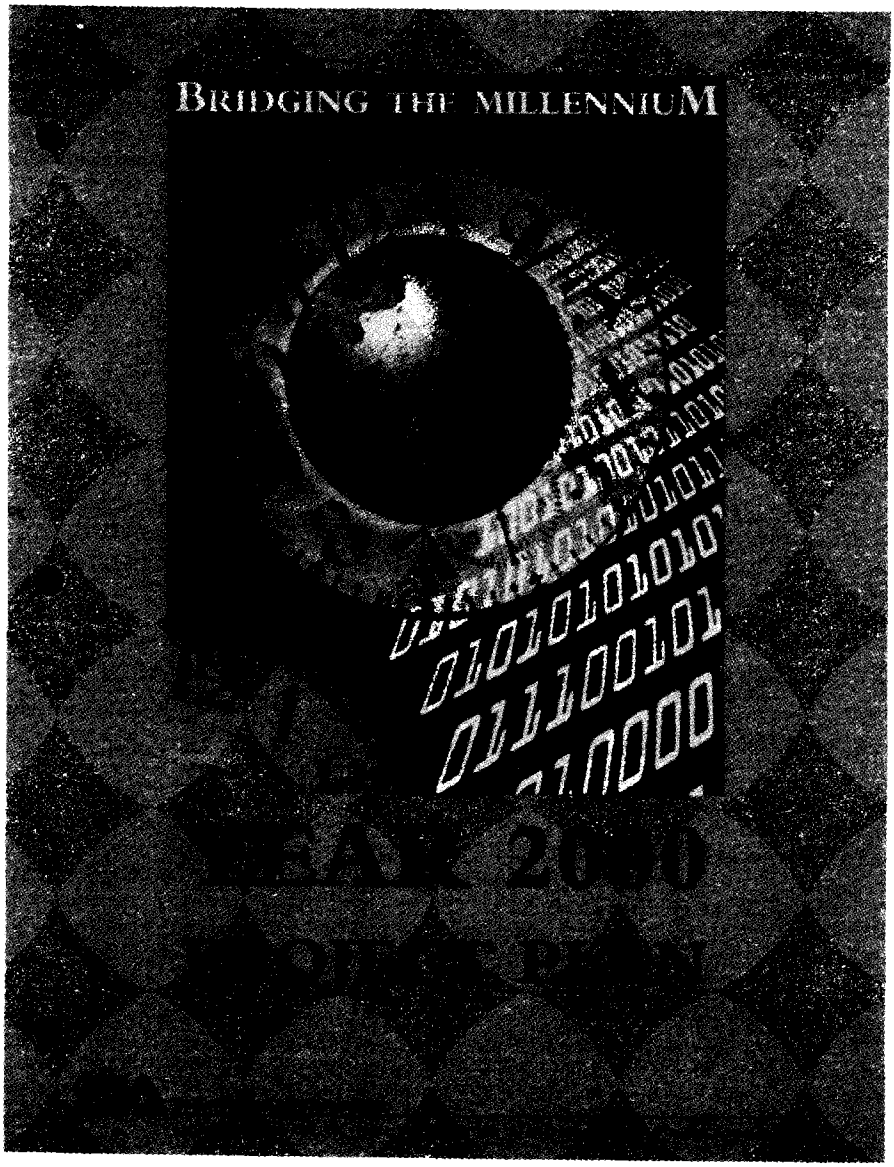
Summary/Concluding Remarks

Because of our early start, we are well along in our preparations for a smooth, transparent transition to the new millenium. Indeed, our successful beta testing efforts indicate that our concept is working, and we are looking forward to the much bigger challenge of industry testing in 1999.

Once we have completed our Y2K efforts, our industry will have significantly upgraded its information technology platform, and combined with an increase in our systems processing capacity, will emerge with the ability to offer higher levels of service to our customers.

We intend to keep you fully apprised of our progress and results as we go forward in our efforts. As always, the SIA website is a current source of all related activities. Our address is **www.sia.com**.

Thank you.


BRIDGING THE MILLENNIUM

Preparing For The Year 2000

SIA Initiatives

A Resource Guide

The Year 2000 computer problem is one of the most important issues facing businesses, governments, and others worldwide. Many computer programs vital to the securities industry expect the year as a two-digit date field. These programs, if not adapted, will not correctly handle the change from "99" to "00" on January 1, 2000; they may not be able to sort dates, calculate money, and perform other necessary functions correctly.

The Securities Industry Association began addressing the challenge in 1995, and has developed an extensive program to help prepare the broker-dealer community, clearing firms, transfer agents, and securities information processors. This plan includes identification of those systems that need to be modified, implementation of the necessary adjustments, and industrywide testing.

SIA: An Information Resource

SIA is educating the industry, regulators, and the general public about its Year 2000 project plan.

Forums
Through seminars and conferences, SIA is providing securities industry professionals the opportunity to hear experts in the field, share ideas with colleagues, and collect the latest information on Year 2000 products and services.

Together with the National Securities Clearing Corporation (NSCC), the Securities Industry Automation Corporation (SIAC), and the Depository Trust Company (DTC), SIA conducts educational seminars about its Year 2000 program.

SIA staff and volunteers also participate at Year 2000 conferences worldwide to educate international organizations about what U.S.-based firms and markets are doing.

Advocacy
SIA officials and industry volunteers meet regularly with the Securities and Exchange Commission, other government agencies, and Capitol Hill to update them on the industry's efforts and present the industry's views on Year 2000-related issues.

SIA also keeps member-firms apprised of Year 2000-related developments in the SEC and in Congress.

Staff and Committee Resources

Staff
[illegible] SIA's Year 2000 project manager, he can be reached at [illegible] The Office of the General Counsel, the Government Relations Department, and other SIA offices [illegible]

Committees
Information [illegible] to discuss Year 2000 [illegible] are addressing [illegible] and international coordination.

Eight SIA panels deal with specific aspects of the Year 2000 effort, ea[illegible] goals. Committee rosters, meeting schedules, and all Year 2000 information is availab[illegible]sia.com).

Steering Committee
This panel guides and coordinates the efforts of the various indu[illegible] issues, and will manage the testing program. Chair: Arthur Thomas, senior [illegible] Operations Services, Merrill Lynch & Co. Phone: (201) 557-4000. Email: athom[illegible]

Legal, Regulatory Issues
This subcommittee provides a forum for attorneys to ex[illegible], acts as a central repository of information, and helps develop a consensus on [illegible], vice president and assistant general counsel, J.P. Morgan & Co. Phone: [illegible]morgan.com. SIA staff adviser, Fredda Plesser, vice president and as[illegible]-0568. Email: fplesser@sia.com.

Data Management
The SIA's Data Management Division [illegible] Committee identifies common prob[illegible] solutions while insuring the development o[illegible] practic[illegible] in the [illegible]; Michael Tiernan, vice president, information [illegible], Credit Sui[illegible] First [illegible]orp. Phone: [illegible]25-1938. Email: mike.tiernan@csfb.com.

Participant Industrywide Testing [illegible]
Provides a forum for participants to [illegible] and com[illegible] participant Year 20[illegible] requirements to the Utilities and Exchange Subcom[illegible] the Data and [illegible] Providers Subco[illegible] Chair: Dawn Lowell, senior vice president, Leh[illegible] Phone: (201) 524-4700. Email: [illegible]n.com.

Exchanges, Utilities
Coordinates industry efforts a[illegible] clearing corpora[illegible]ities. It defines the strategy and standa[illegible] vice president, SIAC. Phone: (212) 383-6188. E[illegible]

Data & Service P[illegible]
Defines a comm[illegible] testing [illegible] and vehicle for the data feeds. Chair: Thomas Kroll, vice president, Fidel[illegible] (2[illegible]35-6632. Email: thomas.kroll@fmr.com.

Third Party Vendor[illegible]
Gathers and share[illegible] information on third-party vendor products. Chair: Kathleen Ulich, vice [illegible] Phone: (617) 563-9628. Email: kathy.ulich@fmr.com.

Facilities
Assesses and encourages th[illegible] landlords, and vendors. Shares information in areas of findings [illegible] security systems, [illegible]cations/landlords/property managers. Chair: Susan Jarrett, [illegible] Dean Witter & Co. Phone: [illegible]975. Email: saj@ms.com.

INTERNATIONAL EFFORTS

Global 2000 C[illegible] Group
SIA participates in [illegible] which was [illegible] to ide[illegible] initiatives will improve the readiness of glob[illegible] institutions to [illegible] 2000. Contact: William T. Munch, managing direc[illegible] Control, [illegible] Corporation. [illegible] 1 239 93 51. Email: bill munch[illegible]

[illegible] contact: Frank [illegible]
[illegible] Lynch & Co., Inc. Phone: (201) 557-1702 [illegible]
[illegible] Group Subcommittee contact: Karen Carringer, associate [illegible]
[illegible] 762-2914. Email: Karen@[illegible].com.

Industrywide Testing Coordination

The SIA project plan will culminate in an industrywide test beginning the first quarter of 1999. Especially [illegible] scenarios will test a trade from initial input to clearance and settlement in a Year 2000 environment. The test [illegible] utilize information gained in 1998's "beta test," a dress rehearsal that will involve a small group of member firms. Registration for the industrywide test, regular updates on testing procedures, and other key information is posted regularly on the website (www.sia.com).

SIA operates a toll-free hotline firms can call for information about Year 2000 testing. The number is (888) Y2K-4SIA or (888)925-4742. A related email account for testing questions has also been established at Y2Kinfo@sia.com.

Year 2000 Timetable
This plan serves as a guideline and is not meant to be comprehensive.

Code Remediation
- January 1997 through July 1998
- Complete all source code and "JCL" changes
- Expand files and data bases for data fields

Unit Testing
- March 1997 through August 1998
- Create test data
- Test individual programs

Systems Test
- May 1997 through September 1998
- Complete integration test of all subsystems
- Complete all documentation updates

Integration & Acceptance Testing
- July 1997 through November 1998
- User acceptance testing

Production Implementation
- September 1997 through December 1998
- Parallel test of all subsystems complete
- Move converted applications to production environment

Industrywide Testing
- January 1999 through June 1999
- Repeated as needed

The Securities Industry Association brings together the shared interests of nearly 800 securities firms, employing more than 380,000 individuals, in accomplish common goals. SIA members — including investment banks, broker-dealers, and mutual fund companies — are active in all markets and in all phases of corporate and public finance. The U.S. securities industry manages the accounts of more than 50-million investors directly and [illegible] tens of millions of investors indirectly through corporate, thrift, and pension plans and accounts for $270 billion of revenues in the U.S. economy. (More information about the SIA is available on its home page: www.sia.com.)

SIA

Securities Industry Association

120 Broadway, New York, NY 10271-[illegible]
[illegible]

YEAR 2000

FREQUENTLY ASKED QUESTIONS

Why did SIA organize the beta test?

The beta test was a "dress rehearsal" for the industrywide testing that will begin in March of 1999. It was a "test of the test," and has given us the chance to review the testing plans and gauge the readiness of the firms, the markets, clearing firms, and depository organizations to proceed.

What actually was tested?

The test simulated a trading cycle -- from order entry to settlement - in a Year 2000 environment. Scripts detailing the security to be traded, the type of trade, and quantity were developed and distributed to each participant.

The simulated trades were processed as if they were actual transactions - going to the securities markets, through the settlement and clearance process, and back to the firms.

How did you select the dates to simulate in the test - December 29, December 30, and December 31, 1999 and January 3, 2000?

The products tested in that group - equities, mutual funds, municipals, corporates, and unit investment trusts -- take three days to go from the time when the trade is entered to when it is cleared and settled (Options, which settle in one day, were also included in the test). Those orders that will be entered on December 29, 1999 will be the first to settle in Year 2000.

By simulating an entire trading cycle, trades were both being entered and settling on July 22 (which simulated January 3, 2000). This gave us a much more realistic view of how the systems would work in a Y2K environment.

How many organizations participated in the beta test? Which firms were involved?

In addition to the 28 firms, 13 markets, utilities, and depositories participated. A complete list of the organizations that participated in each test is included in the

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material provided. The 28 firms represented are responsible for approximately 50 percent of average daily volume on the three major stock markets.

How were the firms selected?

The beta test firms are all represented on SIA's Year 2000 Testing Subcommittee and have been involved for more than two years in developing the testing plans. In addition, they were able to set up duplicate systems to run the tests and satisfy the other prerequisites.

What were the prerequisites to participate in beta testing?

To participate in the beta test, a firm had to establish a separate Year 2000 testing environment, test communication lines (when necessary), and have satisfactorily completed point-to-point tests with the appropriate market, utility, and depository.

What requirements will firms have to meet to participate in the industrywide test?

We are using the experiences of the beta test to develop requirements and procedures that will allow every interested organization to participate. In order to ensure that firms receive the necessary support during the testing, we are considering developing a two-tiered testing approach.

How thorough were the beta tests?

The tests covered nine major product groups: equities, options, corporate bonds, municipal bonds, unit investment trusts, mutual funds, money markets, government securities, and mortgage-backed securities.

The scripts tested the most common transaction types for each product. Product focus groups, consisting of industry volunteers, designed the scripts so that each one included characteristics of the product being tested.

During the test, each firm input about 500 trades on each of the testing days, for an average of 10,000 a day. These included such conditions as canceled trades, good-til-canceled orders, and other trades that are input in a normal trading day.

How would you characterize the results of the test?

The basic methods developed over the past two years worked successfully. Firms were able to simulate trading in a Year 2000 environment, inputting

trades, sending them to the appropriate markets, and then through to settlement and clearance. Two years of hard work by hundreds of volunteers resulted in a relatively smooth test.

SIA included a "dress rehearsal" of the test in the schedule to refine the scripts and methodology. We are using input from participants and the results of our analysis of the data to make improvements. The industrywide test will progress more efficiently as a result of this exercise.

What was involved in preparing the scripts and the procedures?

The SIA's Year 2000 efforts began three years ago when the Data Management Division formed a special Year 2000 committee. Since then, eight SIA committees have been dealing with specific aspects of the Year 2000 effort. A Participant Industrywide Testing Subcommittee was formed three years ago to specifically address testing issues.

Hundreds of industry professionals have given their input by participating in groups dedicated to developing product-specific scripts and on the testing panels. PricewaterhouseCoopers is managing the process.

What changes are you making to the scripts as a result of the test? Are you making any changes in the procedures?

Some of the changes we are making include:

Correcting errors in the scripts, such as incorrect symbols. We are also using feedback from the firms to make the scripts as user-friendly and clear as possible.

Developing a different way that firms report any issues. During the beta test, tracking and incident reporting was handled at an evening conference call that included every participant. We are creating a process that will be able to accommodate significantly more participants.

When is the industrywide test scheduled to begin?

The industrywide test is currently scheduled to begin March 6, 1999 and continue on March 13, March 27, and April 10.

How will the industrywide test differ from the beta test?

The volume in the industrywide test will be considerably higher. The beta test incorporated approximately 10,000 trades a day from the 28 firms. The industrywide test will include a larger quantity of firms, which will

proportionally increase the number of trades tested. However, the markets and utilities are already processing their daily volume using software code that has already been Year 2000-tested.

What support are you offering the firms?

PricewaterhouseCoopers is staffing a help desk to answer questions from the firms about the testing procedures.

A "How To Test" Book will be provided to the firms participating in the industrywide test. This will include detailed instructions on how to follow the scripts.

A conference in New York City on October 2 will address the details of participating in the 1999 tests.

The SIA staff is also available to work with the firms and address other questions, and the SIA Web site (www.sia.com) is a clearinghouse for information on the testing process and all other Y2K-related issues.

What do you estimate the SIA project will cost? How are you paying for it?

The entire SIA test administration process is estimated to cost between $6.5 and $9 million. SIA's member firms and all participating markets, utilities, and depositories have been assessed a portion of the cost of the Year 2000 efforts.

How much will the U.S. securities industry spend to prepare their systems for Year 2000?

We are estimating the total cost of remediation to be approximately $5 billion.

Does the SIA support mandating Year 2000 disclosure?

A recent SEC Interpretive Release discussed disclosure obligations of investment advisers, investment companies, and public companies relating to anticipated costs, problems, and uncertainties associated with the Year 2000 issue. The SIA supports the release and encourages firms to keep regulatory agencies and clients informed of their Year 2000 progress.

We encourage the SEC and other regulators to continue emphasizing enforcement of existing regulations rather than writing new rules in dealing with Year 2000 disclosure.

Is there any other pay-off for all this effort and expense, besides a smooth transition to the new millennium?

There is a "Y2K dividend." Many firms have discovered during the inventory process that replacing their systems now offers not only Year 2000 compliance, but increased efficiency. Management at these firms sees this process as an opportunity to invest in state-of-the-art software.

The information technology platforms that result from the entire Year 2000 remediation process will be well-documented and well-tested, more powerful and more disciplined than ever.

What global efforts are underway to coordinate Year 2000 efforts? Are you concerned about reports that other countries are far behind in their Year 2000 efforts?

SIA recently surveyed foreign-based firms on their Year 2000 readiness. Responses showed that, while work remains to be done, foreign companies have made significant progress in becoming Year 2000-compliant.

SIA is actively working with the "Global 2000 Coordinating Group," which was formed to identify areas where coordinated initiatives will improve the readiness of global financial institutions to meet the challenges created by Year 2000.

SIA also has an International Planning Group Subcommittee to facilitate communications between major cross-border users and providers of financial service operations.

While European markets are currently preoccupied with preparing for the conversion to the euro, we believe that, on balance, the major global markets will be successful in converting to Year 2000.

Mgd/[illegible]

Mr. HORN. Well, we thank you. That's very helpful information.

We will now turn to Mr. George Thomas, senior vice president, director of Information of the New York Clearing House. Mr. Thomas.

Mr. GEORGE THOMAS. Good morning, Chairman Horn, Congresswoman Maloney. Thank you for the opportunity to discuss the year 2000 problem and its impact on payment systems and the banks that use them.

The New York Clearing House is the oldest and largest bank clearing house in the United States. It was founded in 1853 to simplify payment exchange and settlement and to promote conservative banking practices.

We are responsible for and manage two major electronic payment systems, the Clearing House Interbank Payments System, which is known as CHIPS, and the New York Automated Clearing House that we refer to as the ACH. CHIPS is a large-value interbank payment system while the ACH is a low-value system used primarily for consumers.

On an average day, CHIPS processes over 235,000 payments worth $1.3 trillion. The value exceeds $2.2 trillion on peak days. The New York ACH processes over 1.3 million payments daily for $7.8 billion. This system is used for direct deposit of pay, pension, Social Security payments. The ACH is also used extensively for the payment of monthly utility bills, insurance premiums, and loan payments.

The Clearing House recognized the significance of the year 2000 problem earlier than most organizations. At the end of 1988, the Clearing House started a project to substantially overhaul the CHIPS payment formats to accommodate immediate and future business needs. At that time, the decision was made to also make these record formats be year 2000 compliant. Not only were the external formats of the payment messages modified to accommodate the four-digit year, internal date manipulation routines and data bases of CHIPS were changed as well. This system was placed into production on August 17th, 1992.

As of today, CHIPS and all our mission critical systems have been repaired, tested for year 2000 compliance, and are in production. Our remaining work is mainly in the area of office automation, which we expect to finish by the end of the third quarter, end of September of this year.

The Clearing House year 2000 program has been reviewed by internal and external auditors, as well as the Federal regulators, with positive results. The role of the regulators ensuring year 2000 compliance has been extremely important. The U.S. banking regulators have been at the forefront of year 2000 preparation for the banking industry. Leadership by the banking regulators has been one force driving financial institutions to ensure that the components that make up the domestic and international banking system of today will be ready for the transition into the next millennium.

Contingency planning is also receiving considerable attention. The banking industry is identifying and putting into place contingency plans to address some of the problems that might occur. Financial institutions recognize that they must address and solve

these problems quickly so as not to impair critical business functions.

These plans, however, rely on mission-critical support systems that are so integral to payment system operations that without them, not only the banking industry but also business in general may be severely impaired. Among these systems are the networks of the telecommunications industry and the electric power grids. These systems must be available both domestically and worldwide. The Clearing House has established ongoing dialogs with local utilities and critical New York City agencies that support the infrastructure of Manhattan, where the Clearing House and many of the banks operate their payment systems.

The importance of telecommunications to the payment system cannot be overemphasized. All payment systems operate on public telecommunications networks operated by domestic and international carriers. Unimpaired operation of these networks is critical to successful payment processing in the new millenium. It is also a factor that is largely beyond the control of the banks.

In January 1997, the Clearing House embarked on a project to assess the readiness of all domestic local and interexchange carriers. The Clearing House also met with the Federal Communications Commission on several occasions to ask for help in obtaining the carriers' plans. Earlier this year, the Clearing House and the Securities Industry Association joined together to identify and evaluate telecommunications carriers worldwide.

Industry testing efforts are an important part of the process. The Clearing House has been providing test facilities for our banks for year 2000 testing since last fall. In May 1997, the Clearing House announced that it would conduct its first mandatory year 2000 test for CHIPS participants on September 26, 1998. This test is an important step in year 2000 compliance for the banks.

Funds transfer systems are extremely sophisticated operations that are dependent upon the integrated operation of CHIPS, Fedwire, and SWIFT for the movement of domestic and international large dollar payments. Both Fedwire and SWIFT have agreed to work with the Clearing House to coordinate their respected year 2000 test systems on this date. Banks will be able to test their ability to originate and deliver payments to their correspondents, branches, and corporate clients.

The Clearing House has announced 4 year 2000 mandatory tests for 1999, and we are coordinating a global test to be arranged for June 12, 1999 with several of the major countries around the world.

There are several issues still facing the banking community. The financial industry has many complex relationships within global markets. There are considerable dependencies that exist among all the participants in the chain. If any link in the chain were to break, the efficient global flow of funds can be disrupted, with a resulting impact on local commerce. While banks in the United States have been actively tackling the year 2000 issues for several years, efforts may not be as far along in other parts of the world.

Another issue facing all government and industrial sectors is the widespread prediction of doom that surrounds the year 2000 issue. This type of negative publicity, which is not always true, can un-

dermine the confidence that the public has in investing in the banking system. It is the responsibility of all industry participants to help separate hype and reality and make sure that the public is presented with an accurate picture of the banking system.

In conclusion, I thank the committee for the opportunity to present the Clearing House assessment of the payment system's year 2000 readiness. We believe that the payment system participants have acted responsibly in addressing these issues in a timely and comprehensive manner. Furthermore, based upon our experience and observations, we believe that the payment system will continue to operate efficiently through the century date change. In short, the payment system is sound.

We base our conclusions upon several factors: the early, aggressive testing and remediation programs of the banking community; the contingency planning efforts of the participants; the diverse network of alternative systems and the correspondent relationships; and the leadership of the U.S. banking regulators and the Clearing House.

Thank you very much.

[The prepared statement of Mr. George Thomas follows:]

Testimony of

George F. Thomas

Senior Vice President

The New York Clearing House Association L.L.C.

House Subcommittee on Government Management, Information, and Technology

August 13, 1998 9:30 a.m.

Chairman Horn, members of the Committee, thank you for the opportunity to discuss the Year 2000 problem and its impact on payment systems and the banks that use them. My name is George Thomas, and I am Senior Vice President and Director of Information Systems for the New York Clearing House Association L.L.C.

The New York Clearing House is the oldest and largest bank clearing house in the United States. It was founded in October 1853 by 52 banks in New York City for the purposes of clearance and settlement and promotion of conservative banking practices. On that very first day in 1853, the Clearing House exchanged checks that were worth $22.6 million. Within twenty years, the average daily clearings had risen to $100 million. Today our daily clearings average over $1.35 trillion.

We are responsible for and manage two major electronic payment systems, the Clearing House Interbank Payments System (CHIPS) and the New York Automated Clearing House (ACH). CHIPS is a large-value interbank payment system while the ACH is considered a low-value system which is primarily consumer oriented.

CHIPS is by a wide margin the world's largest private-sector, large-value payment system. Most CHIPS members are participants in other large value payment systems around the world. CHIPS facilitates the movement of well over $1.3 trillion daily which is an amount greater than that of Fedwire and equal to approximately 20% of the value moved over the G-10 funds transfer systems and accounts for 95% of U. S. dollar foreign exchange settlement. CHIPS currently has 92 banks participating, representing 27 countries, with

nearly 70% of them non-U.S. banks. Capital is used extremely effectively based on the principle of multilateral netting, strongly supported by U.S. and New York law. CHIPS has created significant economic value, not only for its members and participants, but also for financial and commercial organizations worldwide.

On an average day we process over 235 thousand payments and our daily volume of $1.3 trillion is netted down to around $6-7 billion supported by $3.6 billion in collateral. On our peak day (the day after a U.S. holiday) we processed almost 457,000 payments worth over $2.23 trillion.

As of July 31, 1998, over 697 million payments have been processed with a value in excess of $3.4 quadrillion. In its 28 years of continuous operation, CHIPS has never experienced a settlement failure.

The New York ACH processes over 1.3 million payments daily for $7.8 billion. This system is used for the direct deposit of pay, pension and social security payments. The ACH is also used extensively for payment of monthly utility, insurance, and loan payments.

New York Clearing House Year 2000 Readiness

The Clearing House recognized the significance of the Year 2000 problem earlier than most organizations. At the end of 1988, the Clearing House started a project to substantially overhaul the CHIPS transaction record formats to accommodate immediate and future business needs. At that time, the decision was made to also make these record formats year 2000 compliant. The Clearing House defined year 2000 compliance as the ability to correctly manipulate date-related data in single-century, multi-century, and Leap Year formulas yielding correct results without abnormal program termination. Not only were the external formats of payment messages modified to accommodate the 4-digit year, internal date manipulation routines and databases of CHIPS were changed as well. This system was placed into daily operation on August 17, 1992.

In early 1997, the Clearing House information systems staff conducted a thorough review of all Clearing House automated processes to identify possible year 2000 problem areas. In addition to Clearing House-written software, all supporting systems and software supplied by third parties were reviewed. Results of this review, as well as progress reports in the remediation and testing efforts are regularly reported to various Clearing House oversight committees including the Audit Committee, and the Clearing House Committee - the most

senior level Committee whose members are the chairmen and CEO's of the Clearing House member banks.

The Clearing House embarked upon a remediation and testing program to ensure year 2000 compliance of all Clearing House systems. As of today, CHIPS and all of our mission critical systems, including our Automated Clearing House (ACH) and Electronic Check Presentment (CHECCS) systems, have been repaired, tested, for year 2000 compliance. The work remaining is mainly in the area of office automation, which we expect to finish by the end of the third quarter of 1998. I would point out that our office automation systems consist of a network of less than 100 workstations and file servers and are not considered to be critical to the delivery of our payment services.

In early 1998, the Clearing House engaged the services of an outside auditing firm to review our year 2000 program. The review focussed on the methods used by the Clearing House to assess, inventory, remediate and test for year 2000 compliance. This review showed no serious flaws in the Clearing House plan, and noted that at the time of the issuance of the report, all mission critical systems had been remediated, tested and were in operation.

The Clearing House is also reviewed by the Federal Financial Institutions Examination Council (FFIEC). The FFIEC conducted a year 2000 examination of the Clearing House and has sent a copy of the report to all financial institutions using Clearing House services.

We have made year 2000 testing facilities available to participants since October 1997 for all of our automated systems. These systems are used by our participants to test their own internal systems for year 2000 compliance. We are monitoring use of these systems by our participants. We are encouraged by the level of usage on these systems. They indicate to us that our participants are taking their year 2000 responsibilities seriously. These testing facilities will continue to be available for participant testing through the end of 1999. I will speak more about the subject of testing later in my testimony.

New York Clearing House Year 2000 Committee

In 1996, we established a Year 2000 Committee to create a venue for Year 2000 project managers to meet and discuss Year 2000 issues, problems and solutions. This committee meets on a monthly basis and currently includes, the Bank of New York, the Chase Manhattan Bank, Citibank, Bankers Trust, Morgan Guaranty Trust, Bank of America, Marine Midland Bank, Republic National Bank of New York, European American Bank, Fleet Bank, UBS AG, Depository Trust Company, New York State Banking Department, and the Federal Reserve Bank of New York supervision and operations departments.

The New York Clearing House participates on the Federal Reserve Bank of New York's Year 2000 Forum, and has a joined with the Federal Reserve Bank of New York to form a working group on contingency planning.

The Role of the Regulators in Assuring Year 2000 Compliance

The U.S. banking regulators through the Federal Financial Institution Examination Council (FFIEC) has been at the forefront of Year 2000 preparation for the banking industry. Through their early efforts, bank regulators have helped to focus attention on year 2000 issues by issuing interagency statements and conducting banking industry forums on year 2000-related issues. These statements and forums have advised financial institutions on matters related to year 2000 planning, assessment, and communication with the institutions' customers. Recognizing the interdependencies the banks have upon one another, the banks have set about the business of making sure that their systems work. Leadership by the banking regulators has been one impetus driving financial institutions to ensure that the components that make up domestic and international banking today will be ready for transition into the next millennium.

On April 10, 1998, an FFIEC statement was released entitled "Guidance Concerning Testing for Year 2000 Readiness". In its statement, the FFIEC sets out key milestones in the banks' year 2000 testing process. By June 30, 1998, banks should complete the development of their written testing strategies and plans. Testing of in-house processing with service providers for mission-critical systems should have commenced no later than September 1, 1998. Testing of internal mission-critical systems should be substantially completed by December 31, 1998. By March 31, 1999, testing by banks relying on service providers for mission-critical systems should be substantially complete. External testing with other third parties (customers, other financial institutions, business partners, etc.) should also have begun by March 31, 1999. Testing of mission-critical systems should be completed and implementation should be substantially completed by June 30, 1999.

The FFIEC statements have underscored the importance of the Year 2000 problem for the banks. In many instances, the banks have used the power of these statements as an effective lever to encourage earlier compliance schedules by vendor companies that are beyond bank supervisors' umbrella. This leverage has produced improved vendor delivery schedules and has effectively given banks more time to perform year 2000 certification tests and resolve any issues arising from year 2000 certification tests.

Contingency Planning

Past experience provides us with insights on how the banks might deal with the disasters of the future. There have been a number of disasters that could have had devastating effects on the financial markets. A week-long power failure in lower Manhattan in 1990, a blizzard in January 1995, the bombing of the World Trade Center, and flooding in the financial district are several examples of non-year 2000 related failures that were successfully addressed by the financial community. An important factor in the financial community's ability to deal with these events are the people who run the banking business and their long-standing relationships with their service providers. We fully expect to utilize these relationships to the fullest extent possible as part of our year 2000 contingency plans.

The banking industry is identifying and putting in place contingency plans to address some of the problems that might occur. Terms like command and control centers, SWAT teams, emergency rooms, and manual work arounds are frequently used today by the banks to describe how they will deploy tactical solutions for problems that have relatively short duration. Financial institutions recognize that they must address and solve these problems quickly so as not to impair critical business functions.

Banks must be able to discharge their responsibility to act on payment instructions of their customers. In the United States, CHIPS and Fedwire are payment systems that are complete and separate systems that allow the banks an alternative in the event one is not operating. By the year 2000, the euro will be in use, and the central bank payment systems within Europe will allow alternate routing choices for the banks making euro-based payments.

Banks that have an isolated failure within their own systems can utilize alternate correspondent relationships with other banks to send and receive payments. In today's marketplace it is common practice for banks to have standing correspondent relationships which can be used to conduct business in a contingency situation. Having the relationships in place ensures that transactions can be processed through correspondents. To effect such mechanisms, the banks have the intelligence built into their systems to automatically re-route the transactions to a designated correspondent.

For disaster contingencies, the Clearing House maintains backup data centers located in diverse power grids with resilient environmental systems, including redundant electricity and cooling subsystems, and physically diverse telecommunications connections. These contingency plans have served the Clearing House well for many years. These plans, however, rely on mission-critical systems that are so integral to payment-system operations that without them, not only the banking industry but also business in general may be severely impaired. Among these systems are the networks of the telecommunications industry and the electric power grids. These systems must be available both domestically and world-wide. Without the telecommunications networks, a large portion of the banking industry will be unable to operate. To this end, the Clearing House has been very active in

assessing the status of the telecommunications carriers' year 2000 programs by holding monthly meetings, sharing deployment information and reviewing priorities. The Clearing House has also established ongoing dialogs with the local electric utilities and critical New York City agencies that support the infrastructure of Manhattan, where the Clearing House and many of the banks operate their payment systems.

The Importance of Telecommunications to the Payments System

All payment systems operate on public telecommunications networks operated by domestic and international carriers. Unimpaired operation of these networks is one of the most critical factors to the ability of banks to process payments in the new millennium. It is also a factor that is largely beyond the direct control of the banks. In January 1997, the Clearing House embarked on a project to assess the readiness of all domestic local and inter-exchange carriers. The Clearing House also met with the Federal Communications Commission on several occasions to ask for help in obtaining the carriers' plans. In early 1998, the Clearing House and the Securities Industry Association (SIA) joined together to identify and evaluate telecommunication carriers world-wide.

Through the ongoing efforts of the Clearing House, carriers and the FCC have been made much more aware of the issues and specific concerns of the financial industry. The FCC has been working with the banking industry to help bring the concerns of the financial industry to the carriers. They have been pressing the carriers informally to be more open regarding their year 2000 plans. While still very much a work in process, there are positive signs that the telecommunications carriers are properly focussing and discussing their year 2000 programs with their customers.

Industry Testing Efforts

The Clearing House first offered a year 2000 CHIPS test system on October 7, 1997. Since the beginning of 1998, this system has been made available to participants on a full-time, daily basis. The Clearing House was able to make the CHIPS test system available at such an early date because of the early efforts of the Clearing House to make CHIPS year 2000 compliant in August 1992. In 1998, S.W.I.F.T. and Fedwire made their Year 2000 test systems available for participant use. CHIPS is working with these organizations to coordinate test schedules in order to permit banks to conduct integrated end-to-end testing of their internal systems as well as interoperability testing with their trading partners. The Clearing House, S.W.I.F.T. and the Federal Reserve Bank meet regularly to discuss and coordinate testing issues.

In May 1997, The Clearing House announced that it would conduct its first mandatory year 2000 test for CHIPS participants on September 26, 1998. This test is designed to assess the

ability of the CHIPS participants to successfully interoperate with CHIPS and other CHIPS participants. The test is an important step in year 2000 compliance for the banks and in the testing schedule prescribed by the FFIEC. Funds-transfer systems are extremely sophisticated operations that are dependent upon the integrated operation of CHIPS, Fedwire, and S.W.I.F.T. for the movement of domestic and international large-dollar payments. To create a suitable test environment for the banks, the Clearing House requested Fedwire and S.W.I.F.T. to make their test systems available for the CHIPS participant community on September 26, 1998. Both Fedwire and S.W.I.F.T. have agreed to work with the Clearing House to coordinate their respective year 2000 test systems on this date.

The importance and significance of this cooperation is that CHIPS participants will be afforded an opportunity to test the U.S. payments infrastructure. Banks will be able test their ability to originate and deliver payments to their correspondents, branches, and corporate clients.

Looking forward, the Clearing House has announced four year 2000 mandatory tests in 1999 for its participants. For one of these tests, we are attempting to arrange a coordinated global test with a number of the major central banks. We have tentatively scheduled this test be held on June 12, 1999, after the introduction of the euro and early enough to assess and address the results of the test.

Issues Still Facing the Banking Community

The financial industry has many complex relationships within global markets. There are considerable dependencies that exist among all of the participants in a payment chain. If any link in the chain were to break, the efficient global flow of funds can be disrupted with a resultant impact on global commerce. While banks in the United States have been actively tackling year 2000 issues for several years, efforts may not be as far along in other parts of the world. In some cases, this is due to other political and economic factors that require the immediate attention of the affected parties. For example, the European Community is in the midst of introducing the euro on January 1, 1999. The Japanese are currently pursuing banking deregulation. The current financial crisis in Asia may seriously hinder year 2000 preparations. In other cases, we are concerned that some of the lesser developed nations have been slow to appreciate the full impact of the year 2000 on their systems and therefore may be slow to implement sufficient remediation programs.

Another issue facing all government and industrial sectors is the widespread doom-saying that surrounds the year 2000 issue. In some cases, the negative publicity may be warranted and can be useful in prodding stragglers to bring their systems into compliance. In other

cases, despite considerable evidence to the contrary, harbingers of doom shout out about impending disasters that serve no purpose other than to unnecessarily frighten the public. This type of negative publicity, which is not always true, can undermine the confidence that the public has invested in the banking system. It is the responsibility of all industry participants to help separate hype from reality and make sure that the public is presented an accurate picture of the banking system.

Conclusion

I thank the Committee for the opportunity to present the Clearing House's assessment of the payment systems' year 2000 readiness. We believe that the payment system participants have acted responsibly in addressing these issues in a timely and comprehensive manner. Furthermore, based upon our experience and observances, we believe that the payment system will continue to operate efficiently through the century date change. In short, the payments system is sound. We base our conclusions upon several factors - the early, aggressive testing and remediation programs of the banking community, the contingency planning efforts of the participants, the diverse network of alternative systems and correspondent relationships, and the leadership of the U.S. bank regulators and the Clearing House.

Mr. HORN. Well, we thank you for that very helpful statement. We will have a number of questions to bring out some more of it as we go along.

Our last member on this panel is Mr. Robert Hedlund, the director of Technology Services for the Consolidated Edison Power Co. of New York. Mr. Hedlund.

Mr. HEDLUND. Good morning, Mr. Chairman, Congresswoman. As you indicated, my name is Robert Hedlund, and I am director of Technology Services at Con Edison. I appreciate the opportunity to share with you the work being done at Con Edison to prepare for the year 2000. Specifically, I will summarize the work we are doing on our computer systems, as well as the supervisory electronics that support our electric, gas, and steam systems.

At the outset, let me say that we are taking the entire year 2000 issue very seriously and have been doing so for a number of years. We understand the impact on our customers of any inability to deliver the important services we provide. We also understand the impact on our company that problems with our internal computer systems could cause. We began our year 2000 activities in 1995 and continue to support them with considerable resources.

Let me start with the products we deliver: electricity, gas, and steam. Automated supervisory controls are embedded in our production and distribution of these products. We have developed an inventory of our electronics used in the production—and by that I mean our generating stations—and distribution of energy. For each component, we are either testing it for year 2000 compliance or reviewing tests performed by the manufacturer for compliance.

To date, we have tested over half the components, and our results have been very encouraging. While a few minor problems were found in logging components—those are components that provide recording information but have no supervisory control—all of the tested supervisory components work properly. This is because most supervisory components are time, not date dependent, meaning they are very interested in what happened in the seconds surrounding an event, not keeping track of historical information.

All testing with appropriate remediation is on schedule for June 1999 completion. So while nothing comes with a guarantee, this testing makes us confident in our system's reliability.

We are also addressing our internal computer systems and infrastructure. We have retained two vendors to work with our analysts to renovate our existing applications. Our schedule calls for all critical applications to be renovated by the fourth quarter of 1998 and all other applications to be completed by June 1999.

We have identified all changes required to our computing infrastructure. This includes devices such as PCs, servers, routers, and switchers, along with their operating systems and micro code. We are on schedule for completing all of these by next fall.

Besides the work being done in Con Edison, we are communicating with our largest suppliers of critical products and services to ensure that they are diligently preparing for 2000. We are active in industry groups such as the Electric Power Research Institute, the Edison Electric Institute and the American Gas Association.

Recognizing that we are interconnected to other utilities, we are also very active in discussions with neighboring utilities through

the New York Power Pool, the Northeast Coordinating Council, and the New York Gas Group.

We have also been discussing our efforts with many of our customers and with groups such as the Regional Planning Association.

Thank you for giving me the opportunity to share Con Edison's efforts to date on the year 2000. I hope this brief summary of our activities indicates how seriously we are treating this issue.

[The prepared statement of Mr. Hedlund follows:]

YEAR 2000 PROJECT

IN 1995 AND 1996 OUR MAIN FOCUS FOR THE YEAR 2000 PROJECT WAS ON COMPANY DEVELOPED SYSTEMS. WE COMPLETED THE INVENTORY AND COMPLIANCE ASSESSMENT OF THESE SYSTEMS. WE ALSO CREATED AN ENVIRONMENT IN WHICH THE RENOVATIONS COULD TAKE PLACE AND BE TESTED.

WE IDENTIFIED AND TESTED THROUGH PILOTS SEVERAL VENDORS TO BE USED ON THIS PROJECT. WE SELECTED THE VENDORS THAT WERE THE BEST AND CHOSE THE INITIAL SYSTEMS FOR THE RENOVATION. OUR PRIMARY VENDOR IS COMPUTER SCIENCES CORPORATION – ONE OF THE LEADING TECHNOLOGY CONSULTING FIRMS. THE OTHER IS AN OFF – SHORE VENDOR DOING MOST OF THE RENOVATION WORK IN INDIA. THIS VENDOR HAD OUTSTANDING REFERENCES FOR YEAR 2000 WORK. ALL OF OUR VENDOR CONTRACTS ARE FIXED PRICE AND OUR AVERAGE PRICE OF $ .58 PER LINE OF CODE IS SIGNIFICANTLY LOWER THAN THE MARKET RATE. HOWEVER, THE COSTS ARE INCREASING AND THE LAST CONTRACT WE SIGNED WAS FOR $ 1.30 PER LINE OF CODE. WE EXPECT TO SPEND 25 TO 30 MILLION DOLLARS ON THIS PROJECT. OST OF THIS COST IS FOR THE RENOVATION OF THE COMPANY DEVELOPED SYSTEMS.

OUR APPROACH TO PRIORITIZING THE SYSTEMS FOR RENOVATION WAS TO START WITH SYSTEMS OF MEDIUM CRITICALITY IN ORDER TO TEST THE VENDORS AND OUR RENOVATION PROCESS. AFTER THAT TEST WAS SUCCESSFUL WE STARTED THE RENOVATION OF OUR MOST CRITICAL SYSTEMS. AT THIS TIME ALL OF OUR CRITICAL SYSTEMS ARE EITHER RENOVATED OR IN THE PROCESS OF BEING RENOVATED WITH EXPECTED COMPLETION DATES IN THE FOURTH QUARTER 1998. THE REMAINING SYSTEMS ARE THOSE OF LOWER IMPORTANCE WHICH WILL BE COMPLETED BY JUNE 1999. WE ARE IN THE PROCESS OF DEVELOPING A REQUEST FOR PROPOSAL FOR THE RENOVATION OF THE REMAINING SYSTEMS THAT WE PLAN TO DISTRIBUTE TO VENDORS NEXT WEEK.

IN 1997 WE ADDED TO OUR EFFORT OTHER SYSTEMS AND TECHNOLOGIES.

WE INVENTORIED ALL VENDOR DEVELOPED SYSTEMS AND WORKED WITH THE VENDORS TO VERIFY COMPLIANCE AND ARRANGE FOR RENOVATIONS/UPGRADES. WE CREATED INVENTORIES OF OUR TECHNOLOGY AND TELECOMMUNICATIONS INFRASTRUCTURE COMPONENTS (NETWORK COMPONENTS, COMPUTERS, TELEPHONE SWITCHES), ASSESSED THEIR YEAR 2000 COMPLIANCE, AND DEVELOPED PLANS TO MAKE ALL YEAR 2000 COMPLIANT. WE ARE MAKING GOOD PROGRESS IN THIS AREA AND WE ARE ON CHEDULE.

WE HAVE ENGAGED KEY ENGINEERS FROM ALL OF OUR BUSINESS ORGANIZATIONS TO RESEARCH THE MICROCHIPS EMBEDDED IN OUR CONTROL SYSTEM COMPONENTS TO DETERMINE IF THESE ARE YEAR 2000 COMPLIANT AND TO ASSESS IF ANY DAMAGES COULD OCCUR IF THEY WERE NOT. TO DATE, INVENTORY AND TESTING OF OUR EQUIPMENT HAS YIELDED ENCOURAGING RESULTS. WE HAVE NOT IDENTIFIED ANY FATAL FLAWS THAT WILL HAVE CATASTROPHIC EFFECTS ON OUR OPERATIONS – SUCH AS THE SHUT DOWN OF THE ELECTRIC DISTRIBUTION SYSTEM AT MIDNIGHT ON DECEMBER 31, 1999. INSTEAD WE HAVE FOUND THAT THE MAJORITY OF APPLICATIONS ARE EITHER NOT "DATE" DEPENDENT OR THEY USE THE YEAR, FOR DATA LOGGING FUNCTIONS ONLY, NOT TO PHYSICALLY OPERATE THE EQUIPMENT. THE BOTTOM LINE IS THAT WHILE A TIME ENTRY MIGHT BE WRITTEN IN A LOG INCORRECTLY, THE COMPANY SYSTEM WOULD CONTINUE TO WORK ON JANUARY 1, 2000. VERY GOOD PROGRESS HAS BEEN MADE IN THIS AREA. ALL REQUIRED RENOVATIONS FOR OUR EMBEDDED TECHNOLOGY ITEMS WILL BE COMLETE BY MID 1999.

WE HAVE HAD CONVERSATIONS WITH OUR KEY SUPPLIERS OF GAS, OIL, WATER, CHEMICALS, AND POWER ABOUT THEIR YEAR 2000 READINESS. WE ARE ALSO WORKING WITH THEM THROUGH INDUSTRY GROUPS SUCH AS THE NEW YORK POWER POOL AND THE NEW YORK GAS ASSOCIATION. WE ARE IN THE PROCESS OF SENDING OUT LETTERS TO ALL OF OUR KEY SUPPLIERS (APPROXIMATELY 4500), ASKING FOR THEIR YEAR 2000 COMPLIANCE STATUS. WE HAVE SENT OUT CLOSE TO 200 LETTERS TO CUSTOMERS (COMMERCIAL AND RESIDENTIAL) WHO HAVE INQUIRED ABOUT CON EDISON'S YEAR 2000 COMPLIANCE POSITION. OUR ACCOUNT EXECUTIVES HAVE A PREPARED YEAR 2000 TALK THAT THEY HAVE GIVEN TO MANY OF OUR CUSTOMERS.

Mr. HORN. We thank you for that testimony. I would like for our friends of GAO to join us down here, Mr. Willemssen and Mr. Rhodes.

Mr. Keith Rhodes from the General Accounting Office is here with Mr. Willemssen. He is GAO's expert on the security and bank industries.

[Witness sworn.]

Mr. HORN. Let me just start on some of the questions, because you are in some of the really key industries here.

I might ask Mr. Arthur Thomas, is the industry-wide testing being conducted in enough time to correct the errors, and does it include the international markets and firms?

Mr. ARTHUR THOMAS. It is—well it's two parts. Let me answer the first one. Yes, it is on schedule. That's why we are starting in 1999 with the street-wide test. But the beta test was critical because what that did was ensure that the changes across the United States, all of the industry infrastructure that supports our daily, you know, trading, clearing, settlement activity with the Depository Trust Co., the National Securities Clearing Corp, all those entities and industry-run infrastructure are, in fact, Y2K compliant. That was proved in the beta test. And the 28 largest firms that represent almost half of the average volume with U.S. dollar based cash instruments was also proved to be—their core system proved to be Y2K compliant.

The street-wide tests entertain bringing in, you know, the rest of the industry, and you know, reaches a number of approximately 500. And so we had to also test the script itself and learn from that on how we could, in fact, manage a test that was both comprehensive in scope but could, in fact, support that large number of participants.

And again, as I stated earlier in my remarks, a great deal of pretesting effort is being mandated. And, indeed, most of the SROs I believe are intent upon mandating total—mandate a participation with regard to, you know, all security firms that, you know, in fact, clear for themselves. So yes, I think we are where we should be at this particular time. I also believe that we are ahead by far of most industries, which I think is not necessarily a good thing.

With regard to international, what we are testing is the cross-border mechanisms with regard to payment systems, security data with regard to trades, transactions that would flow, you know, in and out of the United States with regard to cross-border trading with U.S. institutions. We are not, in fact, conducting tests regarding other national markets, only as they impact the United States on a cross-border basis.

What we are doing is, we are trying to educate, share best practices, and urge them to, in fact, follow some of the guidelines that we have in the United States. Given their failure to get out in front as quickly, they are going to have to amend that script, and unfortunately I don't think it can be quite as comprehensive. I think any industry that crosses the millennium without doing proper testing is going to have some serious problems.

Mr. HORN. Did your testing include the U.S. subsidiaries abroad that have a home company in the United States and the European

subsidiaries in the United States that have their headquarters in Europe?

Mr. ARTHUR THOMAS. No, it did not. Individual firms like my own at Merrill Lynch are conducting such tests. And in fact we urge firms, but that's a firm-by-firm basis, to in fact do integrated testing, not simply to renovate a test and certify that applications and systems are Y2K compliant, but actually test those interfaces and do integrated testing. And that would include trades and data flows between subsidiaries both within and outside the United States. It is my understanding that firms such as Merrill Lynch, Morgan Stanley, the global firms are, in fact, doing that.

What I think is compelling from a standpoint of really certifying that the test, you know, proves Y2K compliance is organizations like the DTC, the Depository Trust Co., is actually going to require senior individuals from internal auditing firms to, in fact, certify that the firms that are involved in the street-wide test actually run that data through the normal end-to-end daily cycle that would replicate a day in the life of a normal trading activity. And of course that would affect the stock records and the firm's books and records.

So I think that's—that is as aggressive a scope as we can have. And again, our focus has been on protecting the U.S. investing public, but we have spent a great deal of time, effort and energy in working with our partners outside the United States.

Mr. HORN. You stated that the firms that participated in the beta test represented about half of the trading volume. You also noted that those firms were members of the Testing Subcommittee and were involved in the development of the test plan. Basically, were these firms that already had the answers to the test? I mean, the fact that they were so involved, was it a fair test?

Mr. ARTHUR THOMAS. No, it was a fair test. What that did was, you know—and their involvement meant that they really did have to do a proper assessment of all the critical systems and applications that would, in fact, impact that beta test. And it gave them an opportunity to get out in front and not only renovate and test those systems but to also do some point-to-point testing in advance internally. So it didn't—it wasn't a rigged test per se, but their involvement forced them to take more aggressive actions than they might have otherwise.

Mr. HORN. You also stated that the Federal Financial Institutions Examination Council conducted a year 2000 examination of the Clearing House. Could you give us an idea of what are some of the issues that were raised?

Mr. ARTHUR THOMAS. Well, we are not allowed to give out the results. That's one of the problems. We talked about the legal liability. Even the government won't allow us to reveal the results of the exam.

But what we have done is, each regulator has been given a copy of the exam, the results of the exam, and they have been distributed to all of the financial institutions that we service. So each financial institution that deals with us has a very good and comprehensive look at how ready we are to handle our particular responsibilities for the year 2000.

But the regulator—the lead regulator for our organization always happens to be the OCC for this exam. It will rate an organization either satisfactory, needs improvement, or unsatisfactory, so those are the only three ratings that they will give out. And then they go into each area of a comprehensive year 2000 plan and where you are as far as remediating your products and what issues and concerns that they find.

Mr. HORN. For those that were unsatisfactory, what's the situation now? Is there a certain time period that they are expected to become satisfactory?

Mr. ARTHUR THOMAS. Even the ones that are satisfactory are continually reviewed. We have another review in September. And they just keep coming back every—quarterly to see—and I am sure this happens in all of the financial institutions, whoever the lead regulators are, coming back and revisiting and making sure any findings they found in the first go around have been addressed and corrected.

Mr. HORN. Did you have some that were unsatisfactory?

Mr. ARTHUR THOMAS. In our exam? Our exam is a satisfactory exam. I hope I'm not going to be arrested for revealing that.

Mr. HORN. I'm not asking what firms. I'm trying to get an idea what portion.

Mr. ARTHUR THOMAS. The banking industry, I can't give a result from a regulator's point of view how many financial institutions are satisfactory or unsatisfactory. That's something that you will have to get from each regulator, OCC, thrift supervision.

Mr. HORN. Which are the ones that are gagging you right now? Which agencies are saying you can't reveal even a portion is not passed, did half pass, did 60 percent pass, this kind of thing?

Mr. ARTHUR THOMAS. They are gagging us as individual organizations, they're not gagging us as far as telling how many of our banks pass or fail.

Mr. HORN. Oh, because something is going to keep you from answering that question. I'm just curious which Federal entity is doing it.

Mr. ARTHUR THOMAS. The Federal Financial Institutions Examinations Council and the law, you are not supposed to reveal the ratings that your organization has been given. So if a bank calls us up and asks us what our rating is, we can't tell them. We tell them to go to the regulator and get a copy of the report.

Mr. HORN. Now who would be the regulator in this case?

Mr. ARTHUR THOMAS. In our case it's the OCC.

Mr. HORN. OCC. So the staff will followup with the OCC?

Mr. ARTHUR THOMAS. You will be able to get a copy of the report from them.

Mr. HORN. Right. Very good.

Mr. Hedlund, you stated that you expect all of your critical systems to be compliant by 1999. Could you discuss your actions to address contingencies if they aren't?

Mr. HEDLUND. OK. Well, in the testimony I gave, I really divided it between the internal computer systems of the company and then the control systems for the external, providing our services to customers. So let me take the second one first, that is, providing the services to customers.

We have not yet begun developing a contingency plan, but we obviously have significant contingency methodologies and plans already in place. Equipment fails, unfortunately, for a variety of reasons having nothing to do with the year 2000. And so whether generating units come off line or substations fail, we obviously have procedures in place that allow us to provide alternatives.

We have decided not to spend time right now because we are still testing components. The plan is to begin, either in December or January, looking at the contingency plans we currently have and determining modifications that should be made to them as the result of possibilities of the year 2000. Is that the area you were more interested in?

Mr. HORN. That's part. Obviously we are interested in a wide range of things, but I am going to let Mrs. Maloney pursue some of those areas. Go ahead.

Mrs. MALONEY. OK. Great. Thank you.

Of all of the areas that we receive local phone calls on and local concern, utilities is No. 1. People are afraid that the lights will go out or utilities won't be there. I congratulate Con Edison for moving forward and taking care of the problem.

I am curious as to sharing information with utility companies around the country. Is there a joint effort to make this happen? Could you just talk a little bit about the Federal, national effort to correct the Y2K problem? Are you meeting monthly with other utility companies? Are you meeting monthly—I would think you have got to be a sector group under the oversight of Koskinen's organization. Can you just comment on that some?

Mr. HEDLUND. I think primarily we have been dealing through the industry groups, whether it's EEI or EPRI, that are providing general information to all the utilities. We are not especially involved with utilities across the country, although we are certainly very involved with ones that are nearby to us and could cause potential problems in the event that they weren't ready, or if we had problems, problems to them. I don't know of any Federal oversight that's taking place right now.

Mrs. MALONEY. And you mentioned that it would cost you roughly $25 million to $30 million. That's minor compared to the numbers I have heard thrown around at this table today. The cost is staggering, I think. I feel—will this increase or cost be passed on to consumers, this additional $30 million, roughly, that you will have to spend to make sure that electricity is there?

Mr. HEDLUND. OK. Well, I have to be really careful because I am not an expert in rates. But as you probably know, we have a rate freeze that goes through quite a number of years. Therefore, no, this particular cost will not be passed on, and there are no avenues for it within the rate in this first period.

Mrs. MALONEY. As we mentioned earlier, the Environmental Protection Agency has indicated some concern that key environmental control and monitoring services may not function properly because of the year 2000 problem. Has Con Edison looked at the Y2K problems in its environmental control systems? And have problems been found? And have they been solved?

Mr. HEDLUND. Yes, we have. In stations and places that have these types of controls, they are included in the devices that we

look at. And as I indicated, we have not found anything in supervisory, that would cause the system to fail, although we have had problems in the types of components that are ultimately used to store information for generating reports. So remediation would be required then.

Mrs. MALONEY. Earlier, Mr. Willemssen came forward with the idea of having a national test day. I would like to ask all of the panelists if you think that's been a good idea. I know you've done it in the banking industry. You have done it in the SIA, the exchanges. You have done it individually with our regional utilities. But do you think his idea of a national test day where we all test Y2K and see if it works or not is a good idea or not? I would just like to go down the panel.

Mr. GEORGE THOMAS. Well, it's a good idea. I just don't believe that the time now allows that to occur. And we are having a lot of difficulty getting just some of the major countries. We are working with Germany, England, France, Japan, and Hong Kong just to try to get this global test set up with those countries. To try to get every organization in the United States together to do a national test I think would be very difficult to implement.

Mr. ARTHUR THOMAS. Actually, John Koskinen had asked my opinion on that, and we meet with him, along with the Securities and Exchange Commission, on a very regular basis. I thought it was a—I felt it was a good idea, not from a standpoint of what it was going to accomplish but from a standpoint of making systems Y2K compliant. And there is an issue of where you are at this point in time, and that will dictate, you know, how you go forward.

But from a standpoint of education and awareness, I think it's a supreme idea because it will capture, I think, the attention across the country, and I think there are parts of the country that have not gotten it.

Mrs. MALONEY. I just want to comment, Mr. Thomas, I serve on the Banking Committee, and I was very pleased to see that the New York Clearing House cleared checks way faster than the entire Federal Reserve and provided on-line services quicker and faster than the Federal Reserve, and I thought that was pretty good for the entire State leadership. So I wanted to mention that even though it's off the subject a little bit.

Mr. GEORGE THOMAS. We're trying to eliminate the checks. We are trying to promote electronic payments. Half the work force in the United States, less than half the work force takes advantage of direct deposit. So we are actually out there trying to convince consumers that it's a better way of getting paid. So we would like to just eliminate those check exchanges at some point, and save not only private industry but the government billions of dollars.

Mrs. MALONEY. And so my question, my last and final question to Mr. Thomas, both Thomases, is I have confidence in the financial leadership of both of your organizations to be ready for our domestic Y2K problem. My question is international. What is going to happen internationally? I am not confident that they are going to be ready. And what impact is that going to have on our financial markets, the fact that many or some of our trading partners will not be compliant? And could you just comment briefly on your international efforts to bring them up to speed? And you certainly

cannot, you know, dictate their actions, so what will be the impact internationally?

And I think compounding the problem is the so-called Asian flu, the Asian crisis. What impact will the Asian crisis have on our financial markets? The fact that they are having problems financially means that they will probably have even more problems with their computer systems. I just welcome any comment.

Mr. ARTHUR THOMAS. I will take a shot at that first. I think you have got to, you know, divide the international markets into two segments, the emerging markets and the more mature markets. And I think if you look at the mature markets in Western Europe, the thing that I think is impeding them is the focus and the resources attached to the Euro conversion, the EMU, which takes place at the end of 1998, beginning January 1, 1999.

Having said that, they have really accelerated their efforts and focus on this problem, and there are resources that can attend to it. I don't think that they are going to address it quite in the same comprehensive way as we are doing in the securities industry in the United States, but I think nonetheless they will be there in all the main infrastructure, in fact the exchanges, depositories.

I actually sit on the executive committee of EUROCLEAR, which is their kind of European depository, and will be in fact prepared. Japan was a bit late in the game, but they are focused and they are catching up.

I think with the emerging market it is going to be a bit more dicey because of resources and focus. There are areas, Mexico, Taiwan, Hong Kong, Singapore, that, you know, have exerted a great deal of effort and appear to be way on their way to being Y2K compliant.

There will be emerging markets, I think, that are going to have very serious problems. The markets will deal with it the way they always deal with it, the way they dealt with it in October. Whether it's an issue with Y2K or it's other problems within the market, the market takes care of it very quickly. But the liquidity will dry up in those emerging markets if, in fact, they cannot conduct business properly because of the Y2K or any other element. But I think the mature markets will be there. There will be I think some glitches. And I think the U.S. securities market is by far leading the way.

Mrs. MALONEY. Thank you.

Mr. GEORGE THOMAS. As far as international banking, the industrialized countries we feel are up to speed. We had some concern initially about the Far East, but that has changed.

As far as some of the countries, the emerging countries, one of the benefits that they have in some of the countries is new computerized systems, and they don't have the old baggage that many of our banks had in the past. So some of the new systems that have been developed for them, especially in the banking area, hopefully they've tested and are year 2000 compliant.

As you know, even if you're using PC's, it's not just a mainframe problem, year 2000. We have some 486s which were manufactured in 1996 that don't handle the date rollover very well and have to be upgraded. So anybody who thinks just because they have a PC system or new application that runs on PCs is protected, they better think again.

But I think on the whole that the major industrialized countries will handle this problem exceptionally well. I know we have 93 large international banks on our CHIPS system representing 27 countries, and they have gotten early exposure to this from us, and I am sure they are sending those messages back to their own country. So they will be ready here; I can guarantee you that.

Mrs. MALONEY. OK. Mr. Chairman.

Mr. HORN. Pursuing that line, which I think is very important, and Mrs. Maloney mentioned the international test day, if you will, or national test day to start with, all of us hear every day, should I take my money out of the market with this? Will they solve the problem? Should I get my own paper record, so forth and so on?

Do you think the market has already discounted the Y2K situation, or will they wait until they see what's happening in the fall of 1999 before doing that discount? I have heard both arguments, and I am just curious as to what your expert opinions are.

Mr. ARTHUR THOMAS. Well, I think, again in the United States, you know, I think it would be a complete overreaction on anyone's part to feel they had to take money out of the banks or that they have fear that they weren't going to receive, you know, confirmations of statements on their or even accurate updated pricing of their portfolios. That's simply not going to happen.

You know, with regard to market volatility specifically, that would be tied to foreign ordinary shares or funds in some of the emerging markets. That's a different story. It depends on their ability to focus and prepare. They have less infrastructure to deal with, but there is also less time for them to deal with it.

I think that you will see hedge funds. The George Soruses will be out there long before the end of 1999 making very educated bets as they have in the past, and I think that will alert the public and that will cause some market volatility. But, again, I think it isn't the highly industrialized nations, and it isn't this Nation.

Mr. HORN. The Ambassador of one highly industrialized nation in Europe told me 2 weeks ago when I asked him about this, and he said, "Oh, well, we just sort of take that as not too serious a matter," et cetera. So that's an industrial nation in Europe, and they don't seem to be doing much in this area, and those ultimately tie in with us in some way. Either we have got U.S. subsidiaries in that country or they have some in this country, and so on.

So are you feeling—have you done a check with your counterparts in various European countries to know that they are really doing something in this area?

Mr. ARTHUR THOMAS. Well, actually, I mentioned earlier there is a global Year 2000 Steering Committee. You know, we are part of it. We feel very comfortable. Again, we are looking at the financial services components within those nations. And I have talked with counterparts at Deutsche Bank and, you know, SBC Warburg and others. I feel very comfortable with what they're doing.

With regard to the actual infrastructures of telecommunications and industry, it's very difficult for us to drill down into that. Obviously that will have a serious impact. But with regard to financial services firms themselves, they seem to be much better focused, and they seem to have applied their necessary resources, again not to do it in as comprehensive a way as we have, and I don't know

of any true industry-wide tests across the industry as we are conducting.

So that's why, you know, I prefaced the earlier remarks, and I think there will be problems and glitches. But overall, I think that the mature countries, the highly industrialized nations, will be there.

Mr. HORN. Mr. George Thomas, do you have any comment on that?

Mr. GEORGE THOMAS. Well, as I said earlier, we have been dealing with the major banks in those countries, and we feel that they will be ready as far as their system. And I agree with Art that, you know, they should have a concern with telecommunications carriers that we do, because there are a certain number of companies that make these switches for the telecommunications industry and that there have been deployed around the world. And I think if there's any real vulnerability, at least in systems that rely on, which as most business today relies on these telecommunications systems, I think that if you look at our carriers, they got a late start on deploying and coming up with comprehensive plans. And if you look in Europe, we, as Art said, we have no clue on how prepared they are to handle their responsibilities.

Mr. HORN. Are we sharing the tests you have all used with your European counterparts?

Mr. GEORGE THOMAS. In fact, we are trying to include our European counterparts in the same model that we are doing. That's why we want to test—on the same day, get the German payment system operating, the British payment system, the Hong Kong, the French, all in the same business day connected via SWIFT, which is the international message carrier for international payments, and try to conduct a coordinated test, each one of us looking and judging on our own how well we do, but just giving everybody an opportunity that if you want to do foreign exchange trading and simulation, that the German system will be there at the same time as the U.S. system.

Mr. HORN. Is there an agreement on a particular mark?

Mr. GEORGE THOMAS. We have June 12th set. We have agreement from Germany, from Great Britain, and from France. We are having trouble with the Far East because they are working in a different date than us. We will work that out. Maybe we will have to do a separate test for the Far East. We definitely have the Europeans.

In fact, there's an international conference scheduled in September that I will be attending. We will be meeting with the Germans and the French and the British to move that test forward. That test will happen, and it's scheduled for June 12th, 1999. The reason it's that late is because they are focused, as Art said, on Euro and the fallout from that. They want to get that under their belts before they focus in on this path.

Mr. HORN. To what degree are you involved in interdependence on the eastern grid with Canada and power coming in from Canada? Does that work into the Consolidated Edison grid?

Mr. HEDLUND. Well, not directly, but obviously there is transmission that comes from Canada. It's not a significant amount of

our power. And to be very honest, I know an awful little about that.

Mr. HORN. Because we have the same situation in the South with Texas and Mexico. So I am just curious if there have been discussions going on between the electric and energy utilities——

Mr. HEDLUND. I don't know.

Mr. HORN [continuing]. With their counterparts. OK. Well, we will followup on that.

Mr. Hedlund, let's see, you talked in your remarks about your key suppliers, and I think that's a very important thing. How is that working out with your suppliers? I mean, how conformable are they to the year 2000 situation?

Mr. HEDLUND. Well, I guess you never know until you're really inside someone's company and investigate it thoroughly. Our large suppliers are very large companies. As we would well expect, they appear to be well involved and have things to a great degree under control.

As I mentioned in my remarks, just taking our internal computer systems, which is really what we are talking about with most of our suppliers, we understand how critical it is that they're operational and the financial repercussions that our company could suffer if they weren't. Therefore, we have to believe that major suppliers, chemicals and oil and things like that, are every bit as concerned as we are. Certainly our contacts with them have supported that.

Mr. HORN. We have mentioned the Euro in the earlier part of this. To what degree are any of you concerned about the privacy legislation that the European Parliament has adopted and will take effect on October of this year? Has there been any looking at that? It's a very tightly written bill in terms of data transmission and its impact if an individual is not signed off on that.

And in January when we had the U.S. House of Representatives parliamentary delegation meeting in Europe, we brought up the subject with the President of France, the President of Poland, and the Prime Ministers to both countries as well as the key ministers for defense and foreign affairs. We urged them to get a group of U.S. subsidiaries of their headquartered corporations and to get the U.S. subsidiaries in Europe with American-based corporations to see what are the ramifications of this. I just wondered, with your overall, overarching groupings here, have you had any working, thinking about what's going to happen on October 1st of this year?

Mr. ARTHUR THOMAS. I am not certain——

Mr. HORN. Will it affect your data movement? That's the——

Mr. ARTHUR THOMAS. I do not believe that is the case. I am aware of the issue. I am not specifically certain about what position our firm has taken. We don't—it hasn't—you know, we have not heard anything that would cause us to believe that it's going to create an impediment with regard to the movement of data.

Mr. HORN. Any——

Mr. ARTHUR THOMAS. I haven't heard any issues.

Mr. HORN. Well, you might ask somebody and see if they're taking a look at it, because I think it's going to come as a surprise to a lot of people in this country and in Europe. So I was just curious if you were thinking through what the implications might be.

How about, Arthur Thomas, when you talked about some of the firms, I don't know how you define a smaller firm in your business. Is there a number there of what a small firm is versus a large one? I know you can see pretty easily the extremes. But we used to have, for small business in America, well, that's 500 or less, and that moved, and it was 1,000 or less, that kind of thing. What's the impact of these tests for these small firms?

Mr. ARTHUR THOMAS. We didn't set specific parameters, but we did divide it hypothetically into small, medium, and large. And, you know, generally that's tied into the market share, the New York Stock Exchange and the over-the-counter NASDAQ market, and it's generally the larger firms that are more active in the industry organizations and involved in government, the exchanges and the utilities.

But, generally, a smaller firm is a regional firm that conducts business locally. I would say a Raymond James would be a smaller firm. It could be, you know, an A.G. Edwards, which would be more of a medium size firm, which was actually involved in this test. Or an Edward Jones would be a smaller regional firm. Generally they're regional firms. They don't have, you know—it's not a global organization. It's not tied to a number of employees; but, generally it's employees, the big firms with less than 3,000, 4,000 employees.

And, actually, you know, my concern is less with the smaller firms, because they will have less to do and it's easier for them to catch up. If I have a concern, it would be more with the medium-sized firms that might not have applied the resources and then aren't as far along. I think if that is the case it will be discovered in the early part of 1999.

Mr. HORN. Well, one of the things we face when we look at what the Federal Government is doing, is there is a great loss of personnel from some groups to the others, perhaps to State government, perhaps to the private sector, local government. Have you, in your firms, have they seen that happen to them, when they have a group together to solve this problem or at least ameliorate it, that talent is bought off by rivals? How much of that experience have you had with the shortage of human resources to get the job done?

Mr. ARTHUR THOMAS. Well, it's not just the shortage, it's the cost. And it changes, and it's changing upward, you know, as we speak. And into 1999, the cost becomes even—becomes even greater. Some firms have taken a position to create stay bonuses, et cetera, but generally I think those tend to be somewhat ineffective, in that some of the offers of the market change could in fact make that, you know, not as consequential as one would like it to be.

I think firms that are somewhat undercapitalized and also behind in schedule will have a difficult time resourcing this issue, especially 1999. I wouldn't even speculate as to what the cost would be, but it is very much a supply demand situation. Those firms that have gotten out ahead of it obviously have not only, I think, shown, you know, a great deal of wisdom, but they are going to save themselves a lot of money because those same resources are going to be bid up. By the same token, there will probably be a lot of IT resources once we pass the millennium.

Mr. HORN. On January 2, 2000.

Mr. ARTHUR THOMAS. If not January 2, it will be soon thereafter. But it's going to become very expensive, yes, and I think quality resources is more of a situation. You know, there will be a lot of bodies. But the quality of resources are going to be in great demand, and the time is short.

Mr. HORN. This is exactly the testimony we were given in April 1996 when we started these hearings. And the fact that people would panic at the last minute, these scarce resources would just have to be bid up to get the people to solve their problems.

Mr. ARTHUR THOMAS. I think you see the problem—some of these problems might be solved simply by outsourcing or forced mergers with firms that are Y2K compliant.

Mr. HORN. Well, in the case of the Federal Government, which is behind a lot compared to some of your firms with the type of equipment they have, they are bringing COBOL retirees out of their retirement and putting them to work. And their—the Office of Personnel Management is letting them keep the money, both the retirement and what they are getting now, so everybody is pretty well off if you once knew COBOL.

Mr. ARTHUR THOMAS. They are also making more money than they ever dreamed of making, also.

Mr. HORN. Let me get back to this, clean up a couple of smaller questions here.

The Year 2000 Disclosure Act, as was mentioned by a number of you, some called it the Good Samaritan Act, Mr. Burton put that in last week with myself and Mrs. Morella and a bipartisan group, Mrs. Maloney was on it, a bipartisan group of Democrats and Republicans. We hope it will move through the Judiciary, because it will permit the exchange of data between industries, between firms within industries without somebody yelling antitrust violations. And hopefully that will be done.

And I just wonder what activities in security and banking industries that you represent would occur when this legislation is passed that is not occurring now. In other words, how much will this really help you?

Mr. ARTHUR THOMAS. Hopefully, you know, it will open up the gates to sharing of vendor information, and that is critical. I think what would help us further in supplementing this act is if there was—a government agency would act as a repository. I think there is still going to be a fear of litigation even with this occurring. I think if there was a government agency that would act as a repository and provide access and sharing of that common information, I think that would, in fact, solve the problem. Not that this necessarily will not. It just—I have some apprehension that in-house counsel of some firms are still going to warn them, in spite of this act, of being open and forthright in sharing of information. Again, I think that it's the right thing to do.

Mr. ARTHUR THOMAS. I know our lawyers are very cautious about what we send out, what we say publicly. In fact, you know, the testimony is obviously scrutinized by them.

Mr. HORN. It's a wonder you had anything left to say. This hold harmless clause.

Mr. ARTHUR THOMAS. They hate the word year 2000 certification. They just don't like it. It's a serious problem, because we had an

external audit done by one of the big eight accounting firms. And when you read the report, they were so afraid to say anything positive that the report is basically useless, because they're afraid that if something goes wrong, they are going to be sued down the line.

In the banking industry, we have had a year 2000 committee meeting for—since 1996, and our banks are accustomed to sharing information when it's obviously—you know, they are all competitors. And this is—nobody considered the year 2000 problem a competitive issue, and they have all been working together, so we have no problems sharing.

But in the vendor area it's tough to get, and that's why we have to work through some of the regulators, to get the telecommunications companies to open up to let us see what their plans are. So I think the legislation will help. And maybe everybody's paranoid about the liability issues of the year 2000. So if we can get a better dialog and better open communication, then that bill should help.

Mr. HORN. Mr. Hedlund, the two witnesses with you represent broad associations. Now, is the Edison Electric Institute, which is the trade association for your industry, are they taking an active role in this?

Mr. HEDLUND. Yes, they are. I guess it's because a lot of the problems that we face because of how equipment behaves, is pretty uniform within our industry. So they have been pretty helpful in helping us identify particular areas that might be worthy of very careful consideration, not only by us.

Mr. HORN. Does Consolidated Edison of New York have any nuclear plants that produce for them?

Mr. HEDLUND. Yes, we do.

Mr. HORN. So you are similar to Illinois power operations where there is substantial nuclear plants there?

Mr. HEDLUND. We only have one unit.

Mr. HORN. One. What percent of your power is generated by that unit?

Mr. HEDLUND. I don't know.

Mr. HORN. Five percent?

Mr. HEDLUND. I would say between 5 and 10.

Mr. HORN. Let me ask our friends from GAO: Do you have anything you would like to say, having heard the panel and the discussion in general?

Mr. WILLEMSSEN. First of all, I think it goes without saying that in the securities, financial and banking sector it's clear they are further ahead than any other sector based on the work we have done. I am not just talking in Federal agencies but across the country.

Mr. HORN. You better get that closer to you.

Mr. WILLEMSSEN. And that's why we are encouraged by the fact that they have done some of the testing, and that's obviously what we would like to see in some of the other sectors. Sure, there is not much time left, but we still have got to push as hard as we can.

The other thing that I would mention more—speaking more generally, it also applies to the first panel, is talking about contingency plans, it's good to keep in mind that we do contingency plans to ad-

dress two sets of situations. One is where it doesn't look like we're going to make it in time, and we heard a lot of discussion on that.

We heard less discussion about we do them to deal with the unforeseen circumstances that may occur. You need contingency plans whether you think you are going to make it or not, because there are clearly things that are going to happen that you didn't foresee happening.

And, therefore, I would encourage organizations to put those business continuity and contingency plans together now to address not just where there looks like they are going to fall short, but to deal with those unforeseen circumstances that may happen.

Mr. HORN. Mr. Rhodes, do you have any comments you would like to make on this?

Mr. RHODES. Yes. I would just like to say that this is—what is going on on Wall Street right now, particularly now that the Clearing House is involved and the banking community is involved, represents—I say this without any reservation, this is the most disciplined and rigorous testing that is occurring. It's the most operationally sound testing that is occurring. And let me defend Mr. Thomas of Merrill Lynch here. It is not a rigged test.

If you look at the summary of the beta, approximately 10 percent of the tests were considered incomplete, had ranges from the mortgage based securities at zero incomplete to municipal bonds that had 23 percent incomplete, which is very good considering that this is a pretest and where you're actually testing the script. Obviously, in the street-wide where there are 500, approximately 500 entities involved, you want to see how the rigor is and make certain what the outcomes are.

But even saying that, what we are finding is that some of the firms in Europe are not going to meet the January 1, 1999 date for Europe. Therefore, they will have fallout. Asia obviously is a concern for everyone. There will be impact on that. So we are not concerned with what we are seeing domestically, but as has been stated by the other panelists, we are concerned about what we see internationally and what the impact would be there.

One point I would make on power is that as deregulation goes forward, my assumption is that—and I do hope that Consolidated Edison continues to provide a continuing majority of power to New York City—as deregulation comes on, the power, as we see out West, may be coming from another country or another State.

Consolidated Edison does not necessarily own the entire distribution system. It doesn't own the entire grid. It owns what it owns, and it can fix what it can fix, and it can test what it can test, as can Wall Street and the other areas.

The problem becomes, of course, as you pointed out many times in the hearings, the interconnectedness and the interdependency. The good news is, what they own, they understand. Unlike most of the Federal Government: What they own, they don't understand. In looking outside, what they don't own will have an impact on them, and unfortunately it's unavoidable.

And you heard the words change from "we are mandating" to "we are urging". Well, that's all one can really do in an international arena. It's not really clear whether or not the United States can firewall itself against those entities that they know are not going

to be stable come, you know, not even January 1, 2000, but September 9, 1999, or as the result of the June test that CHIPS and SWIFT and the Fed are executing.

Mr. GEORGE THOMAS. I think the important thing is, in response to this, is we are in a state now where we are really comfortable about our own environment. So this gives us an opportunity for the next 15 months to work with the international community to get more aware of what kind of problems we may face in that area. So I think the good part of being ahead of the process is that we are not focused internally anymore and we are all looking at the interdependent agencies that are out there.

Mr. HORN. Mrs. Maloney, do you have any further questions?

Mrs. MALONEY. I would just like to say, Mr. Chairman, you have really been a star on this. We started having hearings years ago on the Y2K, and he is really dogged and will continue for the rest of the summer. It's going around the country.

I just really want to compliment all of the panelists. As usual, I am very proud of my own home State and the leadership that the securities industry and the banking industry is really providing not only our State, but our country and the world. And I am confident that you are ahead of the game and on top of it.

And I just have to mention, Mr. Chairman, we do a lot of oversight hearings. We should have one on the banking Clearing House, because I did do a study earlier where they were literally doing services, providing services, both in time constraints and in quality, they were beating the Federal Reserve, which I thought was remarkable.

Mr. GEORGE THOMAS. There's some competitive issues with the Federal Reserve that we would like to talk to you about sometime.

Mrs. MALONEY. I would be glad to. Maybe that is another series of hearings we should look at. I was really interested in Mr. Hedlund's comment. The comments that I get from my constituency have more to do with electricity and utilities than all of the other areas. And they are very concerned, will those services be there? And you have assured us that they will be.

I was really interested in your comment, and maybe Mr. Wilson and Mr. Rhodes would like to comment on it, when you said you had not been called in for any oversight from the Federal Government. I would think that because Gideon would be calling in the utility companies making sure that they were on the target because that if, in fact, it didn't work, it would really be problematic. I just wanted the GAO to comment. I know we have sector groups. I would think the utilities is one of the sector groups.

Mr. HEDLUND. I want to be careful. I think I said I was not aware of any.

Mrs. MALONEY. OK.

Mr. HORN. I think one of the groups we would like to know if they are doing anything with you is the Nuclear Regulatory Commission.

Mr. HEDLUND. Yes.

Mr. HORN. Are they involved in this with you?

Mr. HEDLUND. Yes. In fact, we are submitting a formal response to them, I believe, next week on preparedness of the nuclear plant.

Mrs. MALONEY. That's great. Would you like to comment on that?

Mr. WILLEMSSEN. Yes. Mr. Koskinen, among the 30 or so sector groups he's established, he has also established power and oil and gas groups. So they have been, in the last couple of months, more aggressively reaching out. We are anxiously awaiting seeing their actual strategy for how they are going to deal with these particular sectors and in making assessments based on data, not on talk, on where these sectors stand and what needs to be done from here on out.

Mr. HORN. Mr. Rhodes.

Mr. RHODES. Let me make one clarifying point on the Nuclear Regulatory Commission and their ability to regulate and oversee. Their oversight is only of those safety-critical systems that are in the reactor. So the things that are in the pile and control radiation transport across the pile and things like that, those systems, the majority of which are analog and not digital—because you have to be able to prove pathway and things like that when you are building a reactor—so the controlling systems that control power, the turbines or the central process or things like that will not fall under NRC regulation.

Mr. HORN. Are any of the systems date related?

Mr. RHODES. Yes. Some are embedded as well. And there is also an interrelationship between the nuclear reactor and the fossil-hydro grid. If the fossil-hydro grid fails, then the reactor has to shut down because that's the way the law is. You can't have the reactor run by itself.

Mr. HORN. Do you think we ought to take a look—special look at it, since the Nuclear Regulatory Commission doesn't have a look on that?

Mr. RHODES. I think it would be valuable to try and take a look at the power grid. It's an old line, but it's hard to have the telecommunications meltdown without electricity.

Mr. HORN. When we go to Chicago, we might look at it there. Thank you for bringing that up.

Mrs. MALONEY. I would like to ask, finally, Mr. Willemssen, in your comments you said earlier that the FAA was not up to compliance. Do you believe they will be at compliance when it's time?

Mr. WILLEMSSEN. I believe that to be doubtful, that FAA will make it in time for the mission-critical systems.

Mrs. MALONEY. And you mentioned there were four agencies that were not in compliance. What are those four agencies?

Mr. WILLEMSSEN. I think the five agencies who had not assessed all of their mission-critical systems with the—I can get that for the record. One thing to keep in mind also, Congresswoman Maloney, is the new quarterly reports will be coming in at the end of this week, and therefore we may want to wait on answering that question until we take a look at the new quarterly reports. The information I provided was based on the last quarterly reports.

Mrs. MALONEY. I understand that. But I would just like to know what the five are just because it's—from your memory, what can you remember?

Mr. WILLEMSSEN. Among those—Keith maybe can help me out here, too, if I can't remember—it included, I believe, the Department of Defense. I believe it also included the Department of Health and Human Services. The Department of Agriculture did

not have all its telecommunications assessed. And I believe the Department of Transportation may have been another one.

Mrs. MALONEY. Thank you very much. I found this incredibly informative, and I appreciate all of your efforts and your testimony today. I particularly thank the chairman.

Mr. HORN. Thank you. And I thank my colleague, and she has been so immensely helpful over the last 3 or 4 years, even though her party is not in power. You can see the good things that we do for you, Carolyn, when we are in power. So she has done a great job. We are glad to be in her home city and home district. Does Manhattan stretch from here to your apartment up there?

Mrs. MALONEY. It sure does.

Mr. HORN. At 193.

Mrs. MALONEY. 192.

Mr. HORN. 192nd. My gosh, that's long—your district is longer than mine is. But we all have about 600,000 people. You have got a lot of commuters that vote early and often, as my Irish ancestors would say.

We want to thank you all for coming. It was very helpful, and it stimulated some more things as we looked.

Let me thank the staff that prepared this hearing. To my immediate left and your right is J. Russell George, staff director and chief counsel for the subcommittee. I want you to know he's a native New Yorker, so New York is not forgotten in the high aspects of this subcommittee.

Matthew Ebert, our clerk, and Megen Davis. I think most of them are behind me. Mason Alinger, Mark Brasher, our director of policy matters. And Brian Cohen, our minority professional staff. And then Vicky Stallsworth is our court reporter. And you will probably have arthritis once you are done with us, but thank you very much for coming up, Vicky, and doing such a fine job. You always do.

So with that, this hearing is adjourned.

[Whereupon, at 12:30 p.m., the subcommittee was adjourned.]

OVERSIGHT OF THE YEAR 2000 PROBLEM: LESSONS TO BE LEARNED FROM STATE AND LOCAL EXPERIENCES

MONDAY, AUGUST 17, 1998

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON GOVERNMENT MANAGEMENT,
INFORMATION, AND TECHNOLOGY,
COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT,
Mesquite, TX.

The subcommittee met, pursuant to notice, at 2 p.m., in room C–135, Eastfield College Campus Center, 3737 Motley Drive, Mesquite, TX, Hon. Stephen Horn (chairman of the subcommittee) presiding.

Present: Representatives Horn and Sessions.

Also present: Representative Brady.

Staff present: J. Russell George, staff director and chief counsel; and Matthew Ebert, clerk.

Mr. HORN. The Subcommittee on Government Management, Information, and Technology will come to order. I am Stephen Horn, Representative from the Long Beach area of southern California. With me today is one of the most active Members of Congress, who I will turn the meeting over to after I finish my opening statement, but your local Member of Congress has just done a superb job, and we are glad to have you there. He is the vice chairman of this committee.

This is the most active committee in the Senate and in the House of Representatives. We hold roughly 60 hearings a year on different matters. We have held more than one or two or three or six hearings, on this so-called Y2K problem, which is the year 2000. And Pete Sessions has been very active in that. He has been very active in our organization of the government to make it smarter and smarter. Kevin Brady, I know you were working with him on the European Parliament Delegation. He is our host this year, and we have major problems with Europe, and he is a very active member just as Pete is in terms of caring about the public interest, showing up, doing his work. In Congress there are two types of people: There are the workhorses, and then there are the show horses. The show horses frankly don't get much done. They are just sort of self-emergency seekers. The workhorses get to be known by all their colleagues, people that do the kind of intensive work you have to do ahead of any particular hearing or any particular issue.

We are nearing the point where it is no longer a requirement at the beginning of a speech or a hearing to explain the mechanics of

the year 2000 problem, commonly known as Y2K. We know that the year 2000 computing problem affects just about every aspect of Federal, State and local government operations. It also affects the way private sector organizations conduct business, and it could affect the lives of many individuals, including those in this room.

Over 2 years ago, in April 1996, this subcommittee held the first congressional hearing on the year 2000 problem. And since that time we have held numerous hearings to assess the status of the Federal Government Y2K fixes. Today's hearing is the second in a series of field hearings on the year 2000 problem that will focus on non-Federal entities. This is being done in the context of the recent action of the Speaker of the House, Newt Gingrich, who named the Government Management Subcommittee along with the Subcommittee on the Technology of the House, to be the House Task Force on the Year 2000, the equivalent of what the Senate Task Force is, which is chaired by Senator Bennett of Utah. I am the chairman of this one, Mrs. Morella is the co-chairman, and we have merged both committees because we have been in it for 2½ years. The Senate was in it for a few months.

The chief objective of this task force is to inspire action. No one organization, city, State or even country can solve the year 2000 problem alone. You are a pretty young crowd, but some of you might remember the 60's, and in the 60's we had huge mainframe computers that could fill a room like this, but which had very little storage capacity. And somebody said, "Hey, wait a minute, why are we using four digits every time we put a year into the data base? Why don't we just say '67, not 1967." So they did it. They saved millions and millions of digits of space bytes in the computers of the time. Now your personal computer would have as much capacity as the one we all dealt with in the 1960's. And they knew it would be a problem when we got to the year 2000, because what would happen is 00, and the computer wouldn't know if it was 1900 or 2000, and it would sort of go haywire at that point.

So some of the Federal Government was awake, very little of it, and the Social Security Administration, which has always been one of the best run operations in Washington for the last 70 years. They started on making the corrections in 1989. The Department of Transportation, an excellent worker in programmer data, said to her boss, "Hey, we have got a problem here. Guess what, in Transportation comes FAA, Federal Aviation Administration." Well, the old boy network just sort of laughed at it. She was right, they were wrong. The result is, they are dragging their feet, and now they have got a new administrator there, a woman administrator who comes with a superb reputation as a manager and representative.

And that is what this is all about. It isn't something for detectives to solve. You need people that know what they are doing and computing to solve them. But the problem, they haven't met the task on time. We have two horrendous cases, the IRS, $4 billion wasted on developing a computer system; the Federal Aviation Administration, $4 billion wasted. And I held special hearings on both of them, and I said, "Why can't you people tell us at the $4 million point or the $40 million or the $400 million? Why does it always go to $4 billion?" And some of us walked in the room 6 years ago when we came into Congress. We knew right away FAA was going

to be another failure. It took them a few more years. We asked if they had ever gone to (inaudible). "Oh, no, huh-uh, we haven't." You know, the attitude was, "If we haven't done it, it hasn't happened." Lufthansa is so far ahead of them, they don't know what's hit them. Now FAA is playing catch-up.

The IRS, under a first-rate new commissioner, the first time we have ever had a chief executive type in that job, he is turning that agency around. And so some progress is being made, as you note on that chart. Overall, we gave the administration in our last quarterly analysis an F. Now, the President did appoint the individual to coordinate that effort, and that is happening, and the new reports are about to come out, and we will go through them and grade them as we have for the past 2½ years.

So the chief objective, as I note it, of this task force is to inspire action primarily in the executive branch, but also around the country. And that is why we are going into probably the 10 to 15 largest cities over the next 2 or 3 months, to bring together the leaders in a community. In many places you find they won't even talk to each other. I found that out 30 years ago in Seattle in voting. Two leaders just didn't even know each other. Now, a lot of that has changed in 30 or 40 years, but in the neighborhood, of course, predominant in most urban cities. But we need to get the people who have similar problems in the same room sharing experiences and ideas, and I think this is a good example in Dallas, to bring some of the people together.

We will be in New Orleans tomorrow, later this month, and September. We will be in Indianapolis, Cleveland, Chicago, and we were in New York just a few days ago. So we found this experience for us a great learning experience, and we hope the issue of rapport will help others in this country deal with some of these issues.

Now, the data exchanges and interdependencies exist at all levels of government and throughout the private sector. A single failure in the chain could have severe repercussions. For example, State disability determination systems provide data on whether an individual qualifies for disability benefits, how long he or she should receive benefits and how much the beneficiary should receive. The Social Security Administration uses this data base to approve the disbursement of the disability payment. The Department of the Treasury, however, cuts the check and sends it to the local bank, generally by electronic transfer, which we encourage, avoids fraud, theft, all the rest of it. The local bank deposits the check into the individual's account electronically. And, of course, all of this is made possible through the uninterrupted supply of power by utility companies throughout the Nation. The bottom line is, if any one of these entities fails, a deserving individual will not receive the payment. That is the government aspect. But if any of our grid fails, and you will recall the midwest situation a few years before, the New York situation where a few things just tripped up the grid, and it doesn't matter if it is high grid or solar or wind or whatever you want, that is what we are interested in, also. Because what has happened in the General Motors strike in Flint, MI, is a drop in the bucket compared to the economic losses in this society should something go wrong with those grids because the utilities involved and the other—some are public, some are private, and

they simply haven't done the job, and we will know that in a few more months, so I think it's very important to hear from the utilities everywhere we go.

So multiply this situation by the millions of people, both on benefits or by light and power, and we have almost the whole society affected by this. Accordingly, the testimony we receive today will help our understanding of the extent of the problem in Texas and at various local levels, and we are delighted to have the witness panel with us. I will now turn the rest of the meeting over to your Congressman, Honorable Pete Sessions, and I will be able to ask questions more freely, which is what I prefer to do. So, Mr. Sessions, it is all yours for an opening statement if you would like, and Mr. Brady for an opening statement if he would like.

Mr. SESSIONS [presiding]. Thank you, Mr. Chairman. I want to thank you for coming to Mesquite, TX, which is a proud suburb of Dallas. We are Dallas Cowboy fans here, sir, so I hope to put some pressure on the teams in California. My chairman is from California.

Mr. HORN. Do we have a team out there? They keep leaving stadiums in their path.

Mr. SESSIONS. Mr. Chairman, today we were allowed to be at Eastfield College as a result of Roger Pool and his fine staff at this institute of higher learning, and I would like to publicly thank them and their staff for allowing us to be in this wonderful room today. And I would also like to publicly thank my colleague, Kevin Brady, who sits to my left, who is here today to be a part of what we are doing.

Mr. Chairman, I would like to briefly go through two things that are of interest to me when dealing with the year 2000. And the first one is that on July 13th, I testified before the Texas House Appropriations Subcommittee on major information systems. And during that testimony I had an opportunity to speak with members of the Texas House of Representatives about the interaction of the Federal Government as the Federal Government related to the State of Texas and to hear from them the problems that they were encountering. And, as you and I know, it is consistent feedback that we hear from all across the country; that is, that local and Federal Government—local and State government have disappointed the Federal Government, have taken their time, and they have been slow to react, not only fixing the problem, but also to make sure that the interaction between data bases, whether they be law enforcement or whether they be related to welfare.

They want to make sure that this work is done in time to warn people who are at risk or in need of what the Federal Government does is taken care of properly. And so I would like to say that I consider you being here today is another opportunity for our panel to be able to clearly annunciate where they are headed and also to reinforce why they want the Federal Government to get their work done properly.

The second area that I would like to talk about deals with, on March 20th, 1997, our subcommittee heard testimony regarding the year 2000 problem, and it was a joint committee meeting between the Subcommittee on Technology of the Committee on Science of which Congressman Brady and I also serve. And at that

hearing a witness named Vito Peraino, who is a lawyer from the great State of California, testified that the year 2000 problem may present the biggest litigation wave our country has ever seen. Prudent companies are now acting to take steps to avoid liabilities. Some will respond properly and others will not. The liability consequences of punitive and compensatory damages have brought about a large year 2000 legal industry waiting line to file suits.

Some speculate that the great potential for very sizable legal damages could ultimately exceed the total cost for actually fixing the year 2000 problem. And to the extent to which the U.S. Judicial System handles the myriad of cases that are likely to arrive as a result of this problem will also be a huge challenge, not only to the Congress, but to the judiciary.

When a vendor provides a product to a customer, contract law provides that customer with a remedy if the product does not function as it was intended. There is little doubt that when the year 2000 problem hits that products which rely on dates and lines of codes will not be functioning as they were intended to function. This hypothetical problem raises questions of liability for an incredibly wide variety of products and software, including vendors of hardware or software to their purchasers, service providers to their customers, banks to their depositors and borrowers, insurance providers to their insured, airlines to their passengers, corporations to their shareholders, and stockbrokers to their accounts. The list could go on and on.

Anyone with a computer hookup to anything outside of their office or their home likely will come into conflict with this problem. The question is, to what extent they will be affected and who will be responsible. Every contract lawyer in the world will be arguing about whether the millennium bug is a force majeure. Black's Law Dictionary defines force majeure as a reason a contract cannot be performed as causes which are outside the control of the parties and could not be avoided by the exercise of due care. If the millennium bug is considered a force majeure, then damages will be borne by the end user of the technology affected rather than the manufacturer of the hardware or the programmer of the software.

The answer is not likely to be so easy to answer, however. That is why it is so important that whatever we do do, we attempt very diligently up front to understand and solve the problem. So with less than 18 months before our deadline, a deadline that I would once again reinforce will not be moved, one of my subcommittee colleagues, Congressman David Dreier from California, has introduced the Y2K Liability and Anti-Trust Reform Act of 1998. You have got to be a Member of Congress to get all this down. And what this will do is it is expected to spur America's private-sector companies to fix problems related to this transition problem without the threat of a lawsuit.

In essence, the bill would stop trial lawyers from launching massive class action lawsuits against computer companies who are trying, in good faith, to fix their customers' year 2000 problems. H.R. 4240 limits the financial liabilities of companies that meet goals for avoiding Y2K failures and provides a targeted anti-trust exemption to encourage corporate cooperation or discussion among corporations solely for solving this problem. I am a co-sponsor of this bill,

and I want to applaud Congressman Dreier for addressing this problem.

But as we seek liability protections for businesses, we must provide equal consumer protections as well. The House Banking Committee, on which I serve, has had several oversight hearings on the year 2000 problems about complex efforts that banks must meet during financial examinations by bank regulators. I will also note that in the audience today we have one of Mesquite's finest bankers who is in attendance today, and I am sure, as I am talking about this issue, he knows this very well.

The banking industry has already experienced some dealings with liability issues with protections and offering liability insurance policies as well as regulations imposed on them by current law. But a key question which has yet to be definitively answered is whether current laws such as the Electronic Funds Transfer Act or the Truth in Lending Act are adequate to deal with problems that could arise.

Mr. Chairman, what I talk about today are two issues which I hope will be addressed by many members of our panels, and they deal essentially with two issues. No. 1, are they able and how are they going to solve their problems that will affect this region of Texas. And second, how are they looking to the Federal Government to be able to solve their problems quickly to where they can be in compliance. And second, what are those things that they might see that are out there that perhaps we have not thought of that we need to contemplate as we talk about liability or legal issues related to the year 2000 bug.

I would now like to call on my colleague, Mr. Kevin Brady, from Woodlands, which is the 8th District of Texas for any opening statement he may have.

[The prepared statement of Hon. Pete Sessions follows:]

PETE SESSIONS
5TH DISTRICT, TEXAS

RESULTS CAUCUS
CHAIRMAN

COMMITTEE ON BANKING AND FINANCIAL SERVICES
SUBCOMMITTEES:
CAPITAL MARKETS, SECURITIES, AND GOVERNMENT SPONSORED ENTERPRISES
HOUSING AND COMMUNITY OPPORTUNITY

COMMITTEE ON SCIENCE
SUBCOMMITTEE:
BASIC RESEARCH

Congress of the United States
House of Representatives

SPEAKER'S TASK FORCE FOR A DRUG FREE AMERICA

COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT
SUBCOMMITTEES:
VICE CHAIRMAN,
GOVERNMENT MANAGEMENT, INFORMATION AND TECHNOLOGY
CIVIL SERVICE
POSTAL SERVICE
NATIONAL ECONOMIC GROWTH, NATURAL RESOURCES AND REGULATORY AFFAIRS

Remarks of Vice Chairman Pete Sessions (TX-05),
Field Hearing of the Subcommittee on Government Management, Information and Technology

"Oversight of the Year 2000 Problem:
Lessons to be Learned from State and Local Experiences"

Monday, August 17, 1998, at 2:00pm
in Room C-135 Campus Center
Eastfield College
3737 Motley Drive
Mesquite, Texas 75150

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I'd like to thank you, Chairman Horn and Congressman Brady for taking the time to be here today to talk about a very important issue that is familiar to you both -- the Year 2000 computer problem.

As Vice Chairman of the Government Management, Information and Technology Subcommittee, I have been part of Chairman Horn's point team to highlight the problems and potential solutions surrounding the Year 2000 glitch. With the broadest oversight over all branches of the federal government, this Subcommittee is uniquely capable of bringing the full scope of the problem to the American people.

As most of us know, computers and electronic systems will have difficulty adjusting to the dates beginning on January 1, 2000. This Y2K problem is caused by a long-time custom in electronic industries to use 2-digit dates. For example, 1970 was simply '70; 1990 was '90; and 1998 is '98. That system, however, does not work when we get to January 1, 2000. At that time, many machines will think it is January 1, 1900. As a result, computer programs may go haywire and billions of dollars may be lost, services brought to a halt, and confusion will reign on a grand scale.

It seems to me that we are looking for the technological, "silver bullet" solution to the Year 2000 problem. I get letters and visits from many in the now burgeoning year 2000 industry describing the silver bullet. But, we have to realize that it's not there. We have to approach this problem with a process that methodically goes about addressing the problems in line after line of code. Sure it's complicated, but it is not complex. My best advice is that the Year 2000 problem is a computer problem that must be resolved through proper and prudent management. You should not rest your hope on a miracle from your Information Technology staff.

On July 13,1998, I testified before the Texas House Appropriations Subcommittee on Major Information Systems to offer a federal government management perspective on the Y2K problem. During the hearing, I listened to several witnesses who gave a comprehensive view of Texas' working relationship with various state counties and the federal government in dealing with the Year 2000 problem. It was clear from the hearing that Texas and its counties have found the federal government to be slow in answering questions, proposing solutions and providing information to the states that would be essential to maintain a seamless interface with federal government agencies,

should a Y2K problem arise.

If federal agencies don't develop a greater sense of urgency about the process of solving the problem rather than looking for the silver bullet, and if senior agency management fails to order immediate aggressive action, the federal government will be risking the ability to deliver vital services or functions that are critical to the health, safety, and welfare of the American public.

No matter how hard everyone tries, no one can solve the problems associated with every computer system. The new millennium will put our global reliance on high technology to the greatest stress test imaginable. So, what more can we in Congress do? We will certainly continue to hold hearings on the Y2K issue, and get the word out.

On March 20, 1997, our Subcommittee on Government Management held a joint hearing with the Subcommittee on Technology of the Committee on Science regarding the year 2000 issue. At that hearing, a witness named Vito Peraino testified that "[t]he Year 2000 problem may present the biggest litigation wave our Country has ever seen. Prudent companies are acting now to take steps to avoid liabilities. Others will fail to act and will be sued." The liability consequences of punitive and compensatory damages have brought about a large Year 2000 legal industry waiting to file suits.

Some speculate that the great potential for very sizable legal damages could ultimately exceed the total cost for actually fixing the Year 2000 problem. The extent to which the United States Judicial system handles the myriad of cases that are likely to arise as a result of this problem will be among our greatest tests.

When a vendor provides a product to you, contract law provides you with a remedy if the product does not function as it was intended. There is little doubt that, when the year 2000 problem hits, the products which rely on dates in lines of code will not be functioning as they were intended to function. This hypothetical raises questions of liability for an incredibly wide variety of products and services including:

- Vendors of hardware or software to their purchasers;
- Service providers to their customers;
- Banks to their depositors and borrowers;
- Insurance providers to their insured;

- Airlines to their passengers;
- Corporations to their shareholders;
- Stockbrokers to their accounts.

The list could go on. Anyone with a computer hooked up to anything outside their office or home will be affected by this problem. The question is to what extent will they be affected, and who will be responsible. Every contract lawyer in the world will be arguing about whether the millennium bug is a "force majeure." Black's Law Dictionary defines force majeure, a reason a contract can't be performed, as "causes which are outside the control of the parties and could not be avoided by [the] exercise of due care." If the millennium bug is considered a force majeure, then damages will be borne by the end user of the technology affected, rather than the manufacturer of the hardware or the programmer of the software.

The answer is not likely to be so easy, however. That's why it's so important that we do whatever we can to solve the problem. So, with less than 18 months left before our deadline, a deadline that can't be moved, one of my Subcommittee colleagues, Congressman David Dreier from California has introduced The Y2K Liability and Anti-Trust Reform Act of 1998 to spur America's private-sector companies to fix computer problems related to the transition to the Year 2000 without the threat of a lawsuit.

In essence, the bill would stop trial lawyers from launching massive class action lawsuits against computer companies trying, in good faith, to fix their customers' Y2K problems. H.R. 4240 limits the financial liability of companies that meet goals for avoiding Y2K failures and provides a targeted anti-trust exemption to encourage corporate cooperation in solving problems. I applaud Congressman Dreier for addressing this important component of the Year 2000 issue.

But as we seek liability protections for businesses, we must provide equal consumer protections as well. The House Banking Committee, on which I serve, has held several oversight hearings on the Y2K problem and the compliance efforts that banks must meet during financial examinations by bank regulators.

The banking industry already has some experience in dealing with liability issues with protections offered in liability insurance policies, as well as regulations imposed on them by current law. But a key question which has yet to be definitively answered is

whether current laws, such as the Electronic Funds Transfer Act or the Truth in Lending Act, are adequate to deal with problems that could arise.

Some banks are now finding that their liability policies specifically exclude problems associated with Y2K. In September, the Banking Committee will hold a hearing to address the liability issue as it relates to the financial services sector.

In addition to this Subcommittee's focus on Y2K, I have developed a website that can be used as a source of information for anyone who needs direction or advice in the area of Y2K. Included is a list of Internet links to a world of Y2K information that is both informative and helpful. Also on the website is information published by federal agencies and distributed to interested parties throughout my district and the country. The website address is www.house.gov/sessions/y2k (Refer to Chart).

I would also like to take this opportunity to congratulate Governor Bush who, in November 1997, sent a letter to Texas state agencies urging them to assure him and the citizens of the state of Texas that agency systems are prepared for the Year 2000. Each regulatory agency was asked to evaluate its legal authority to pursue Y2K compliance efforts with its regulated industries.

In fact, from Friday, August 7 through August 14, 1998, Governor Bush and several Texas agencies and associations sponsored a series of informational meetings about the Y2K issue throughout the state. The "Texas Year 2000 Road Show" is one of the reasons why Texas is rated among the top states which have dealt with this problem early and forthrightly. I am proud of Texas' commitment to resolving the issue.

Mr. Chairman, thank you again for being here today. I know you and the members of the Subcommittee have worked very hard to get our arms around this problem. I am glad to be a part of this important hearing, and I look forward to hearing from this impressive group of witnesses.

Mr. BRADY. Thank you very much, Pete. And I need to point out, since it wasn't pointed out by Congressman Sessions, we don't have a football team either.

Mr. SESSIONS. But you do have a baseball team.

Mr. BRADY. We do. I want to thank each of you for being here today on this issue, the panelists for being here as well. You are an important part of the solution, and I want to comment on that in a minute. Chairman Horn, thank you for taking time to be here and to be traveling throughout the country and Texas to hear some of our people who are on the ground trying to find a solution to the Y2K problem both for this subcommittee and this field hearing.

Congressman Sessions, not only am I proud to be a Congressman with him this year, but he is co-founder of the Results Caucus, which I am not big on joining caucuses, but this is one that I did readily because its goal is to hold the Federal Government accountable for its mission, for its goals, for the way it spends its money and for the relationships we have with State and local governments. And it is really the Results Act that has as well brought this issue to light and help compliment with all Congress is trying to do led by this subcommittee.

I serve on the Science Subcommittee and on the Technology Subcommittee, so we deal with this issue as well. From the first meeting we held in that committee to each of the three committees that I serve on, Congress has focused on this issue. Every agency has been asked "Where are you in this process? What progress are you making? What is it going to take to get ready on New Year's Eve 1999?" And we are putting a great deal of pressure on our agencies, to do what it takes now to be ready at that point.

I am amazed visiting with the private sector local government. Well, I am stunned by the cost, by the effort, by the energy it takes an organization to fix this problem and do it right, and I think we have learned a great deal from you here today. Our goal is to determine what progress you are making, what obstacles you are running into, what solutions you are finding, and more importantly, what we can do as a Federal Government to ensure that we are ready on New Years Eve 1999. Having served in the city council level and the State legislature here in Texas and now in Congress, I see our relationships as customers, bureau customers and we need to be ready to make sure we don't disrupt your service, that our share of goals continue on that date. Today's hearing is important, so thanks for having me here and thank you for being here.

Mr. SESSIONS. What a novel idea to hold the Federal Government accountable for what they do. I like that. If I can now have the panel stand before me, and I am going to do what we call swearing you in. So if you will stand and raise your right hands.

[Witnesses sworn.]

Mr. SESSIONS. Thank you. If you will please have a seat. Let the record reflect that each of the five participants who are before us today on this panel have answered in the affirmative.

Mr. Chairman, today we are very pleased to have on panel one five people who will be giving testimony unless I didn't count right. Our first panel will consist of Joel Willemssen, Director, Accounting and Information Management Division, U.S. General Accounting Office; Shannon Porterfield, who is the year 2000 project direc-

tor for the State of Texas; Judith Shaw, assistant director, Information Services, city of Dallas; and Ron Lewis, who is assistant city manager, city of Lubbock, who I had the opportunity to ride over here with today, so I got more than an earful. Mr. Lewis, I am glad you are here with us; and Michelle Brand, who is purchasing and telecommunications coordinator for the city of Mesquite, TX. We welcome each one of you. Mr. Willemssen, we will have you start, please, sir.

STATEMENTS OF JOEL WILLEMSSEN, DIRECTOR, ACCOUNTING AND INFORMATION MANAGEMENT DIVISION, U.S. GENERAL ACCOUNTING OFFICE; SHANNON PORTERFIELD, YEAR 2000 PROJECT DIRECTOR, STATE OF TEXAS; JUDITH SHAW, ASSISTANT DIRECTOR, INFORMATION SERVICES, CITY OF DALLAS, TX; RON LEWIS, ASSISTANT CITY MANAGER, CITY OF LUBBOCK, TX; AND MICHELLE BRAND, PURCHASING AND TELECOMMUNICATIONS COORDINATOR, CITY OF MESQUITE, TX

Mr. WILLEMSSEN. Thank you, Vice Chairman, Mr. Chairman, and Congressman Brady for inviting us to testify here today on the Y2K or year 2000 issue. As requested, I am going to briefly summarize our statement and touch on where we think the Federal Government is currently at, what the issues are facing State and local governments, and then briefly address the most critical issue, that being one of data exchanges.

Regarding first, the Federal Government. Overall, the 24 major Federal agencies are making slow progress in fixing their systems. For example, in May 1997 they only reported that about 21 percent of mission critical systems of these agencies are year 2000 compliant. A year later, in May 1998, agencies were reporting about 40 percent compliance. As we testified before Chairman Horn a couple of months ago, at that kind of rate of progress, Federal agencies are not going to make it in time. One example to point out is FAA.

Since testifying before Chairman Horn in February, FAA has made progress in managing its year 2000 program and has completed critical steps in defining which systems to fix and how to fix them. However, with less than 17 months to go, FAA must still correct, test and implement many of its mission critical systems. It is doubtful that FAA can adequately do this in the time remaining. Therefore, it is imperative that FAA determine how to ensure continuity of critical operations and develop necessary contingency plans in the likely event of some systems failures.

State and local governments also face a major risk of year 2000-induced failures to many vital services they provide such as benefits payments, transportation and public safety. Recent surveys of State year 2000 efforts have indicated that much remains to be completed. For example, a July 1998 survey of the State year 2000 readiness conducted by the National Association of State Information Resource Executives found only about one-third of the States were reporting that 50 percent or more of their critical systems had been completely assessed, remediated and tested.

In another recent survey done by the Department of Agriculture only three States were reporting the software, hardware and telecom that support the food stamp program were year 2000 com-

pliant. To effectively manage their year 2000 program State and local governments must perform the same types of activities as the Federal Government. Such activities would include priority setting, progress reporting and contingency planning. For example, according to the Texas Year 2000 Project Office's Internet site, the project office has set up a mechanism for State agencies and universities to use to report on their progress and also actively monitor the progress of the State's highest priority agencies, those that affect public health and safety and the economic well-being of the State of Texas.

In May 1998 the Texas project office stated that it was cautiously optimistic that most mission critical functions will not be disrupted by the year 2000 problem. However, the project office added that this does not mean that agencies and universities will complete their projects on time and on budget. The project office reported at that time that 3 priority agencies were on target, 12 priority agencies were in the watch category, and four priority agencies were considered at risk.

Beyond the challenges that the Federal, State and local governments face in identifying and correcting and testing their own systems, they must also be very concerned about the year 2000 readiness of their business partners. One of the principle issues involved in this is the data exchange issue. We recently reported on the data exchange issue and what kind of actions have been taken at all levels to address it. What we found is that there are thousands of data exchanges between the Federal Government, and State and local entities. Federal agencies, for example, were reporting that their mission critical systems alone had almost half a million data exchanges with other Federal agencies, States, local governments and the private sector.

To successfully address the data exchange issue, it is not enough just to inventory and assess those exchanges, but you also have to contact your data exchange partners, understand what kind of format you are going to exchange the data in, reach agreement as to what changes are necessary, and test those agreements. What we found is this is a very time-consuming, resource intensive activity.

As I pointed out to Chairman Horn a few days ago and as he had mentioned in his opening statement, the Social Security Administration is way ahead on this effort. But even they found out that the data exchange issue was one that took a lot of effort in order to correct. And it is imperative that it is corrected, because no matter how good an individual system fixes its own systems, if it hasn't dealt with the data exchange issue, then all of that good work may go for naught. And therefore, where we are left right now is not much time left, but a tremendous amount of work to be done just on this one issue. And it remains to be seen whether we have enough time to get it all fixed in time. So what I would again like to emphasize is the need for priority setting and making sure that we address those most important data exchanges at the State, local and Federal Government level.

That concludes the summary of my statement. And after the panel is done, I'll be pleased to address any questions that you have. Thank you.

[NOTE.—Two U.S. General Accounting Office reports entitled, "Year 2000 Computing Crisis: A Testing Guide," June 1998, GAO/AIMD–10.1.21, and "Year 2000 Computing Crisis: Business Continuity and Contingency Planning," August 1998, GAO/AIMD–10.1.19, are retained in subcommittee files.]

[The prepared statement of Mr. Willemssen follows:]

United States General Accounting Office

GAO

Testimony

Before the Subcommittee on Government Management, Information and Technology, Committee on Government Reform and Oversight, House of Representatives

For Release on Delivery
Expected at
2 p.m.
Monday,
August 17, 1998

YEAR 2000 COMPUTING CRISIS

Strong Leadership and Partnerships Needed to Address Risk of Major Disruptions

Statement of Joel C. Willemssen
Director, Civil Agencies Information Systems
Accounting and Information Management Division

GAO/T-AIMD-98-266

Mr. Chairman and Members of the Subcommittee:

Thank you for inviting us to participate in today's hearing on the Year 2000 problem. According to the report of the President's Commission on Critical Infrastructure Protection, the United States--with close to half of all computer capacity and 60 percent of Internet assets--is the world's most advanced and most dependent user of information technology.[1] Should these systems--which perform functions and services critical to our nation--suffer disruption, it could create a widespread crisis. Accordingly, the upcoming change of century is a sweeping and urgent challenge for public- and private-sector organizations alike.

Because of its urgent nature and the potentially devastating impact it could have on critical government operations, in February 1997 we designated the Year 2000 problem as a high-risk area for the federal government.[2] Since that time, we have issued over 50 reports and testimony statements detailing specific findings and recommendations related to the Year 2000 readiness of a wide range of federal agencies.[3] We have also

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[1]Critical Foundations: Protecting America's Infrastructures (President's Commission on Critical Infrastructure Protection, October 1997).

[2]High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997).

[3]A list of these publications is included as an attachment to this statement.

issued guidance to help organizations successfully address the issue.[4]

Today I will briefly discuss the Year 2000 risks facing the nation; highlight our major concerns with the federal government's progress in correcting its systems; identify state and local government Year 2000 issues; and discuss critical Year 2000 data exchange issues.

RISK OF YEAR 2000 DISRUPTION TO THE PUBLIC IS HIGH

The public faces a high risk that critical services provided by the government and the private sector could be severely disrupted by the Year 2000 computing crisis. Financial transactions could be delayed, flights grounded, power lost, and national defense affected. Moreover, America's infrastructures are a complex array of public and private enterprises with many interdependencies at all levels. These many interdependencies among governments and within key economic sectors could cause a single failure to have adverse repercussions. Key economic sectors that could be seriously affected if their systems are not Year 2000 compliant include information and telecommunications;

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[4]Year 2000 Computing Crisis: An Assessment Guide (GAO/AIMD-10.1.14, September 1997), which addresses the key tasks needed to complete each phase of a Year 2000 program (awareness, assessment, renovation, validation, and implementation); Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, August 1998), which describes the tasks needed to ensure the continuity of agency operations; and Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, Exposure Draft, June 1998), which discusses the need to plan and conduct Year 2000 tests in a structured and disciplined fashion.

banking and finance; health, safety, and emergency services; transportation; power and water; and manufacturing and small business.

The information and telecommunications sector is especially important. In testimony in June, we reported that the Year 2000 readiness of the telecommunications sector is one of the most crucial concerns to our nation because telecommunications are critical to the operations of nearly every public- and private-sector organization.[5] For example, the information and telecommunications sector (1) enables the electronic transfer of funds, the distribution of electrical power, and the control of gas and oil pipeline systems; (2) is essential to the service economy, manufacturing, and efficient delivery of raw materials and finished goods; and (3) is basic to responsive emergency services. Reliable telecommunications services are made possible by a complex web of highly interconnected networks supported by national and local carriers and service providers, equipment manufacturers and suppliers, and customers.

In addition to the risks associated with the nation's key economic sectors, one of the largest, and largely unknown, risks relates to the global nature of the problem. With the advent of electronic communication and international commerce, the United States and the rest of the world have become critically dependent on computers. However, there are indications of Year 2000 readiness problems in the international arena. For example,

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[5]Year 2000 Computing Crisis: Telecommunications Readiness Critical, Yet Overall Status Largely Unknown (GAO/T-AIMD-98-212, June 16, 1998).

in a June 1998 informal World Bank survey of foreign readiness, only 18 of 127 countries (14 percent) had a national Year 2000 program; 28 countries (22 percent) reported working on the problem; and 16 countries (13 percent) reported only awareness of the problem. No conclusive data were received from the remaining 65 countries surveyed (51 percent).

The following are examples of some of the major disruptions the public and private sectors could experience if the Year 2000 problem is not corrected.

- Unless the Federal Aviation Administration (FAA) takes much more decisive action, there could be grounded or delayed flights, degraded safety, customer inconvenience, and increased airline costs.[6]

- Aircraft and other military equipment could be grounded because the computer systems used to schedule maintenance and track supplies may not work. Further, the Department of Defense could incur shortages of vital items needed to sustain military operations and readiness.[7]

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[6]FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998).

[7]Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998).

- Medical devices and scientific laboratory equipment may experience problems beginning January 1, 2000, if the computer systems, software applications, or embedded chips used in these devices contain two-digit fields for year representation

- According to the Basle Committee on Banking Supervision--an international committee of banking supervisory authorities--failure to address the Year 2000 issue would cause banking institutions to experience operational problems or even bankruptcy.

Recognizing the seriousness of the Year 2000 problem, on February 4, 1998 the President signed an executive order that established the President's Council on Year 2000 Conversion led by an Assistant to the President and comprising of one representative from each of the executive departments and from other federal agencies as may be determined by the Chair. The Chair of the Council was tasked with the following Year 2000 roles: (1) overseeing the activities of agencies; (2) acting as chief spokesperson in national and international forums; (3) providing policy coordination of executive branch activities with state, local, and tribal governments; and (4) promoting appropriate federal roles with respect to private-sector activities.

MUCH WORK REMAINS TO CORRECT THE FEDERAL GOVERNMENT'S YEAR 2000 PROBLEM

Addressing the Year 2000 problem in time will be a tremendous challenge for the federal government. Many of the federal government's computer systems were originally designed and developed 20 to 25 years ago, are poorly documented, and use a wide variety of computer languages, many of which are obsolete. Some applications include thousands, tens of thousands, or even millions of lines of code, each of which must be examined for date-format problems.

The federal government also depends on the telecommunications infrastructure to deliver a wide range of services. For example, the route of an electronic Medicare payment may traverse several networks--those operated by the Department of Health and Human Services, the Department of the Treasury's computer systems and networks, and the Federal Reserve's Fedwire electronic funds transfer system. In addition, the year 2000 could cause problems for the many facilities used by the federal government that were built or renovated within the last 20 years and contain embedded computer systems to control, monitor, or assist in operations. For example, building security systems, elevators, and air conditioning and heating equipment could malfunction or cease to operate.

Agencies cannot afford to neglect any of these issues. If they do, the impact of Year 2000 failures could be widespread, costly, and potentially disruptive to vital government

operations worldwide. Nevertheless, overall, the government's 24 major departments and agencies are making slow progress in fixing their systems. In May 1997, the Office of Management and Budget (OMB) reported that about 21 percent of the mission-critical systems (1,598 of 7,649) for these departments and agencies were Year 2000 compliant.[8] A year later, in May 1998, these departments and agencies reported that 2,914 of the 7,336 mission-critical systems in their current inventories, or about 40 percent, were compliant. Unless progress improves dramatically, a substantial number of mission-critical systems will not be compliant in time.

In addition to slow governmentwide progress in fixing systems, our reviews of federal agency Year 2000 programs have found uneven progress. Some agencies are significantly behind schedule and are at high risk that they will not fix their systems in time. Other agencies have made progress, although risks continue and a great deal of work remains. The following are examples of the results of some of our recent reviews.

- Earlier this month, we testified[9] about the Federal Aviation Administration's (FAA) progress in implementing a series of recommendations we had made earlier this year

[8]The Social Security Administration's (SSA) mission-critical systems were not included in these totals because SSA did not report in May 1997 on a system basis. Rather, SSA reported at that time, and again in August 1997, on portions of systems that were compliant. For example, SSA reported on the status of 20,000-plus modules rather than 200-plus systems.

[9]GAO/T-AIMD-98-251, August 6, 1998.

to assist FAA in completing overdue awareness and assessment activities.[10] These recommendations included assessing how the major FAA components and the aviation industry would be affected if Year 2000 problems were not corrected in time and completing inventories of all information systems, including data interfaces. Officials at both FAA and the Department of Transportation agreed with these recommendations, and the agency has made progress in implementing them. In our August testimony, we reported[11] that FAA had made progress in managing its Year 2000 problem and had completed critical steps in defining which systems needed to be corrected and how to accomplish this. However, with less than 17 months to go, FAA must still correct, test, and implement many of its mission-critical systems. It is doubtful that FAA can adequately do all of this in the time remaining. Accordingly, FAA must determine how to ensure continuity of critical operations in the likely event of some systems' failures.

- In October 1997, we reported that while SSA had made significant progress in assessing and renovating mission-critical mainframe software, certain areas of risk in its Year 2000 program remained.[12] Accordingly, we made several recommendations to address these risk areas, which included the Year 2000 compliance of the systems

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[10]Year 2000 Computing Crisis: FAA Must Act Quickly to Prevent Systems Failures (GAO/T-AIMD-98-63, February 4, 1998) and FAA Computer Systems: Limited Progress on Year 2000 Issue Increases Risk Dramatically (GAO/AIMD-98-45, January 30, 1998).

[11]GAO/T-AIMD-98-251, August 6, 1998.

[12]Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997).

used by the 54 state Disability Determination Services[13] that help administer the disability programs. SSA agreed with these recommendations and, in July 1998, we reported that actions to implement these recommendations had either been taken or were underway.[14] Further, we found that SSA has maintained its place as a federal leader in addressing Year 2000 issues and has made significant progress in achieving systems compliance. However, essential tasks remain. For example, many of the states' Disability Determination Service systems still had to be renovated, tested, and deemed Year 2000 compliant.

- Our work has shown that much likewise remains to be done in the Department of Defense and the military services.[15] For example, our recent report on the Navy found that while positive actions have been taken, remediation progress had been slow and the Navy was behind schedule in completing the early phases of its Year 2000 program.[16] Further, the Navy had not been effectively overseeing and managing its Year 2000 efforts and lacked complete and reliable information on its systems and

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[13]These include the systems in all 50 states, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

[14]Social Security Administration: Subcommittee Questions Concerning Information Technology Challenges Facing the Commissioner (GAO/AIMD-98-235R, July 10, 1998).

[15]Defense Computers: Year 2000 Computer Problems Put Navy Operations At Risk (GAO/AIMD-98-150, June 30, 1998), Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program (GAO/AIMD-98-53, May 29, 1998), GAO/AIMD-98-72, April 30, 1998, and Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998).

[16]GAO/AIMD-98-150, June 30, 1998.

on the status and cost of its remediation activities. We have recommended improvements to the Department of Defense and the military services' Year 2000 programs with which they have concurred.

In addition to these examples, our reviews have shown that many agencies had not adequately acted to establish priorities, solidify data exchange agreements, or develop contingency plans. Likewise, more attention needs to be devoted to (1) ensuring that the government has a complete and accurate picture of Year 2000 progress, (2) setting governmentwide priorities, (3) ensuring that the government's critical core business processes are adequately tested, (4) recruiting and retaining information technology personnel with the appropriate skills for Year 2000-related work, and (5) assessing the nation's Year 2000 risks, including those posed by key economic sectors. I would like to highlight some of these vulnerabilities, and our recommendations made in April 1998 for addressing them.[17]

- First, governmentwide priorities in fixing systems have not yet been established. These governmentwide priorities need to be based on such criteria as the potential for adverse health and safety effects, adverse financial effects on American citizens, detrimental effects on national security, and adverse economic consequences. Further, while individual agencies have been identifying mission-critical systems, this

[17]Year 2000 Computing Crisis: Potential for Widespread Disruption Calls for Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998).

has not always been done on the basis of a determination of the agency's most critical operations. If priorities are not clearly set, the government may well end up wasting limited time and resources in fixing systems that have little bearing on the most vital government operations. Other entities have recognized the need to set priorities. For example, Canada has established 48 national priorities covering areas such as national defense, food production, safety, and income security.

- Second, business continuity and contingency planning across the government has been inadequate. In their May 1998 quarterly reports to OMB, only four agencies reported that they had drafted contingency plans for their core business processes. Without such plans, when unpredicted failures occur, agencies will not have well-defined responses and may not have enough time to develop and test alternatives. Federal agencies depend on data provided by their business partners as well as services provided by the public infrastructure (e.g., power, water, transportation, and voice and data telecommunications). One weak link anywhere in the chain of critical dependencies can cause major disruptions to business operations. Given these interdependencies, it is imperative that contingency plans be developed for all critical core business processes and supporting systems, regardless of whether these systems are owned by the agency. Our recently issued guidance aims to help agencies ensure such continuity of operations through contingency planning.[18]

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[18]GAO/AIMD-10.1.19, August 1998.

- Third, OMB's assessment of the current status of federal Year 2000 progress is predominantly based on agency reports that have not been consistently reviewed or verified. Without independent reviews, OMB and the President's Council on Year 2000 Conversion have little assurance that they are receiving accurate information. In fact, we have found cases in which agencies' systems compliance status as reported to OMB has been inaccurate. For example, the DOD Inspector General estimated that almost three quarters of DOD's mission-critical systems reported as compliant in November 1997 had not been certified as compliant by DOD components.[19] In May 1998, the Department of Agriculture reported 15 systems as compliant, even though these were replacement systems that were still under development or were planned for development.[20] (The department plans to remove these systems from compliant status in its next quarterly report.)

- Fourth, end-to-end testing responsibilities have not yet been defined. To ensure that their mission-critical systems can reliably exchange data with other systems and that they are protected from errors that can be introduced by external systems, agencies must perform end-to-end testing for their critical core business processes. The purpose of end-to-end testing is to verify that a defined set of interrelated systems, which collectively support an organizational core business area or function, will work

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[19] Year 2000 Certification of Mission-Critical DOD Information Technology Systems (DOD Office of the Inspector General, Report No. 98-147, June 5, 1998).

[20] Year 2000 Computing Crisis: USDA Faces Tremendous Challenges in Ensuring That Vital Public Services Are Not Disrupted (GAO/T-AIMD-98-167, May 14, 1998).

as intended in an operational environment. In the case of the year 2000, many systems in the end-to-end chain will have been modified or replaced. As a result, the scope and complexity of testing—and its importance—is dramatically increased, as is the difficulty of isolating, identifying, and correcting problems. Consequently, agencies must work early and continually with their data exchange partners to plan and execute effective end-to-end tests. So far, lead agencies have not been designated to take responsibility for ensuring that end-to-end testing of processes and supporting systems is performed across boundaries, and that independent verification and validation of such testing is ensured. We have set forth a structured approach to testing in our recently released exposure draft.[21]

In our April 1998 report on governmentwide Year 2000 progress, we made a number of recommendations to the Chair of the President's Council on Year 2000 Conversion aimed at addressing these problems. These included

- establishing governmentwide priorities and ensuring that agencies set agencywide priorities,

- developing a comprehensive picture of the nation's Year 2000 readiness,

[21]GAO/AIMD-10.1.21, Exposure Draft, June 1998.

- requiring agencies to develop contingency plans for all critical core business processes,

- requiring agencies to develop an independent verification strategy to involve inspectors general or other independent organizations in reviewing Year 2000 progress, and

- designating lead agencies responsible for ensuring that end-to-end operational testing of processes and supporting systems is performed.

We are encouraged by actions the Council is taking in response to some of our recommendations. For example, OMB and the Chief Information Officers Council adopted our guide providing information on business continuity and contingency planning issues common to most large enterprises as a model for federal agencies.[22] However, as we recently testified before this Subcommittee, some actions have not been initiated–principally with respect to setting national priorities and end-to-end testing.[23]

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[22]GAO/AIMD-10.1.19, August 1998.

[23]Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO/T-AIMD-98-205, June 10, 1998).

STATE AND LOCAL GOVERNMENTS FACE SIGNIFICANT YEAR 2000 RISKS

State and local governments also face a major risk of Year 2000-induced failures to the many vital services--such as benefits payments, transportation, and public safety--that they provide. For example,

- food stamps and other types of payments may not be made or could be made for an incorrect amount,

- date-dependent signal timing patterns could be incorrectly implemented at highway intersections, and safety severely compromised, if traffic signal systems run by state and local governments do not process four-digit years correctly, and

- criminal records (i.e., prisoner release or parole eligibility determinations) may be adversely affected by the Year 2000 problem.

Recent surveys of state Year 2000 efforts have indicated that much remains to be completed. For example, a July 1998 survey of state Year 2000 readiness conducted by the National Association of State Information Resource Executives, Inc., found that only

about one third of the states reported that 50 percent or more of their critical systems[24] had been completely assessed, remediated, and tested.

In a June 1998 survey conducted by the Department of Agriculture's Food and Nutrition Service, only 3 and 14 states,[25] respectively, reported that the software, hardware, and telecommunications that support the Food Stamp Program, and the Women, Infants, and Children program, were Year 2000 compliant. Although all but one of the states reported that they would be Year 2000 compliant by January 1, 2000, many of the states reported that their systems are not due to be compliant until after March 1999 (the federal government's Year 2000 implementation goal). Indeed, 4 and 5 states, respectively, reported that the software, hardware, and telecommunications supporting the Food Stamp Program, and the Women, Infants, and Children program would not be Year 2000 compliant until the last quarter of calendar year 1999, which puts them at high risk of failure due to the need for extensive testing.

To effectively manage their Year 2000 projects and mitigate their Year 2000 risks, state and local governments must perform the same types of activities as the federal government. Such activities would include priority setting, progress reporting, and

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[24]Critical systems were defined as "systems that effect public safety, public health, and financial and personnel aspects of government services."

[25]The Food and Nutrition Service included the District of Columbia, Guam, Puerto Rico, and the Virgin Islands in its survey. The Food and Nutrition Service did not verify the information provided by the states.

contingency planning. For example, according to the Texas Year 2000 Project Office's Internet World Wide Web site, the project office has set up a mechanism for state agencies and universities to use to report on their progress and actively monitors the progress of the state's highest priority agencies (those that affect public health and safety and the economic well-being of the State of Texas).

In May 1998, the Texas project office stated that it was "cautiously optimistic that most Mission Critical functions will not be disrupted by the Year 2000 problem." However, the project office added that "this does not mean that agencies and universities will complete their projects on time and on budget." The project office reported[26] that 3 priority agencies were "on target",[27] 12 priority agencies were in the "watch" category,[28] and 4 priority agencies "at risk".[29]

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[26]Based on March 1998 data.

[27]According to the Texas Year 2000 Project Office, "on target" means that the project office has confidence that Year 2000 remediation is complete or on schedule for completion well before problems would occur or that adequate planning is in place to ensure that the state will not be impacted by any failures.

[28]According to the Texas Year 2000 Project Office, "watch" means that Year 2000 remediation was not complete and the schedule for remediation is not robust or that certain risks must be managed successfully in order to complete the project on time. Agencies or universities may also be classified in the "watch" category because of the importance of their Year 2000 projects to the overall operation of Texas' state government.

[29]According to the Texas Year 2000 Project Office, the "at risk" agencies are similar to the "watch" agencies but are a greater risk to manage and because of their special importance to the people of Texas, the consequences of failure are especially acute.

The Texas Year 2000 Project Office has also issued a business contingency planning guide to its agencies and universities, and directed that agencies and universities meet certain milestones as it relates to business contingency planning. For example, by the end of this month, agencies and universities are to begin the contingency planning process and develop Year 2000 contingency planning assessments which would identify areas that may be at risk. In addition, by January 31, 1999, agencies and universities are to develop detailed business contingency plans.

Texas' Office of the State Auditor recently reported[30] on the state's efforts to remediate its embedded systems,[31] which, if not corrected, could disrupt critical state services. The State Auditor found that many state entities had not finished their embedded systems inventories and, therefore, it is not likely that they will complete their embedded systems repairs before the Year 2000. In addition, the report noted that (1) many entities lacked contingency plans in case their embedded systems fail, (2) several entities cited a lack of funds as a barrier to embedded systems repair efforts, and (3) no entity is responsible for coordinating and reporting on statewide embedded systems repair efforts. To address these concerns, the Office of the State Auditor also made recommendations, such as the

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[30]A Review of Oversight for the State's Embedded Systems Year 2000 Repair Efforts (SAO Report No. 98-056, August 10, 1998).

[31]Embedded systems are special-purpose computers built into other devices. They are used in, for example, security systems, prison control units, and certain medical equipment.

Texas Year 2000 Project Office including embedded systems in its Year 2000 contingency plan requirements.

Audits of other states by their audit organizations have identified other significant Year 2000 concerns. For example, (1) Illinois' Office of the Auditor General reported that significant future efforts were needed to ensure that the year 2000 would not adversely affect state government operations,[32] (2) Vermont's Office of Auditor of Accounts reported that the state faces the risk that critical portions of its Year 2000 compliance efforts could fail,[33] and (3) Florida's Auditor General has issued several reports detailing the need for additional Year 2000 planning at various district school boards and community colleges.[34] State audit offices have also made recommendations, including the need for increased oversight, Year 2000 project plans, contingency plans, and personnel recruitment and retention strategies.

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[32]Bureau of Communications and Computer Services Third Party Review (July 1, 1998).

[33]State Auditor's Report On Vermont's Year 2000 Preparedness For The Period Ending April 1, 1998 (May 5, 1998).

[34]Examples of these reports include, Report on Audit of the Alachua County District School Board For The Fiscal Year Ended June 30, 1997 (Report No. 13219, April 21, 1998) and Operational Audit of the District Board of Trustees Broward Community College For The Period July 1, 1996 through June 30, 1997 (Report No. 13222, April 30, 1998). The Year 2000 work for these reports was performed in early 1998.

FEDERAL/STATE DATA EXCHANGES CRITICAL TO DELIVERY OF SERVICES

To fully address the Year 2000 risks that states and the federal government face, data exchanges must also be confronted–a monumental issue. As computers play an ever-increasing role in our society, exchanging data electronically has become a common method of transferring information among federal, state, and local governments. For example, the Social Security Administration exchanges data files with the states to determine the eligibility of disabled persons for disability benefits. In another example, the National Highway Traffic Safety Administration provides states with information needed for driver registrations. As computer systems are converted to process Year 2000 dates, the associated data exchanges must also be made Year 2000 compliant. If the data exchanges are not Year 2000 compliant, data will not be exchanged or invalid data could cause the receiving computer systems to malfunction or produce inaccurate computations.

Our recent report[35] on actions that have been taken to address Year 2000 issues for electronic data exchanges[36] revealed that federal agencies and the states use thousands of such exchanges to communicate with each other and other entities. For example, federal

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[35]Year 2000 Computing Crisis: Actions Needed on Electronic Data Exchanges (GAO/AIMD-98-124, July 1, 1998).

[36]To perform this review, we developed and sent a data collection instrument to survey 42 federal departments, all states, the District of Columbia, and Puerto Rico.

agencies reported that their mission-critical systems have almost 500,000 data exchanges with other federal agencies, states, local governments, and the private sector.

To successfully remediate their data exchanges, federal agencies and the states must (1) assess information systems to identify data exchanges that are not Year 2000 compliant; (2) contact exchange partners and reach agreement on the date format to be used in the exchange; (3) determine if data bridges and filters are needed and, if so, reach agreement on their development; (4) develop and test such bridges and filters,[37] (5) test and implement new exchange formats; and (6) develop contingency plans and procedures for data exchanges.

At the time of our review, much work remained to ensure that federal and state data exchanges will be Year 2000 compliant. About half of the federal agencies reported during the first quarter of 1998 that they had not yet finished assessing their data exchanges. Moreover, almost half of the federal agencies reported that they had reached agreements on 10 percent or fewer of their exchanges,[38] few federal agencies reported having installed bridges or filters, and only 38 percent of the agencies reported that they had developed contingency plans for data exchanges.

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[37]A bridge is used to convert incoming 2-digit years to 4-digit years or to convert outgoing 4-digit years to 2-digit years. A filter is used to screen and identify incoming noncompliant data to prevent it from corrupting data in the receiving system.

[38]This does not include the status of agreements reported by the Federal Reserve. The Federal Reserve controls the data exchange software used by its partners and does not need to reach agreement with exchange partners on formats.

Further, the status of the data exchange efforts of 15 of the 39 state-level organizations that responded to our survey was not discernable because they were not able to provide us with information on their total number of exchanges and the number assessed. Of the 24 state-level organizations that provided actual or estimated data, they reported, on average, that 47 percent of the exchanges had not been assessed. In addition, similar to the federal agencies, state-level organizations reported having made limited progress in reaching agreements with exchange partners, installing bridges and filters, and developing contingency plans. However, we could draw only limited conclusions on the status of the states actions because data were provided on only a small portion of states' data exchanges.

To strengthen efforts to address data exchanges, we made several recommendations to OMB. In response, OMB agreed that it needed to increase its efforts in this area. For example, OMB noted that federal agencies had provided the General Services Administration with a list of their data exchanges with the states. In addition, as a result of an agreement reached at an April 1998 federal/state data exchange meeting,[39] the states were supposed to verify the accuracy of these initial lists by June 1, 1998.[40] OMB

[39]Initial agreements between the federal government and the states on steps to address Year 2000 data exchange issues were reached at a October 1997 state/federal summit, sponsored by the federal Chief Information Officer Council and National Association of State Information Resource Executives, Inc., and hosted by the Commonwealth of Pennsylvania.

[40]According to the National Association of State Information Resource Executives, Inc., as of early August 1998, 16 states had completed the verification of their federal/state data exchanges and an additional 9 states had completed 80 percent of the verification.

also noted that the General Services Administration is planning to collect and post information on its Internet World Wide Web site on the progress of federal agencies and states in implementing Year 2000 compliant data exchanges.

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In summary, federal, state, and local efforts must increase substantially to ensure that major service disruptions do not occur. Greater leadership and partnerships are essential if government programs are to meet the needs of the public at the turn of the century.

Mr. Chairman, this concludes my statement. I would be happy to respond to any questions that you or other members of the Subcommittee may have at this time.

GAO REPORTS AND TESTIMONY ADDRESSING THE YEAR 2000 CRISIS

FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998)

Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, August 1998)

Internal Revenue Service: Impact of the IRS Restructuring and Reform Act on Year 2000 Efforts (GAO/GGD-98-158R, August 4, 1998)

Social Security Administration: Subcommittee Questions Concerning Information Technology Challenges Facing the Commissioner (GAO/AIMD-98-235R, July 10, 1998)

Year 2000 Computing Crisis: Actions Needed on Electronic Data Exchanges (GAO/AIMD-98-124, July 1, 1998)

Defense Computers: Year 2000 Computer Problems Put Navy Operations At Risk (GAO/AIMD-98-150, June 30, 1998)

Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, Exposure Draft, June 1998)

Year 2000 Computing Crisis: Testing and Other Challenges Confronting Federal Agencies (GAO/T-AIMD-98-218, June 22, 1998)

Year 2000 Computing Crisis: Telecommunications Readiness Critical, Yet Overall Status Largely Unknown (GAO/T-AIMD-98-212, June 16, 1998)

GAO Views on Year 2000 Testing Metrics (GAO/AIMD-98-217R, June 16, 1998)

IRS' Year 2000 Efforts: Business Continuity Planning Needed for Potential Year 2000 System Failures (GAO/GGD-98-138, June 15, 1998)

Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO/T-AIMD-98-205, June 10, 1998)

Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program (GAO/AIMD-98-53, May 29, 1998)

Year 2000 Computing Crisis: USDA Faces Tremendous Challenges in Ensuring That Vital Public Services Are Not Disrupted (GAO/T-AIMD-98-167, May 14, 1998)

Securities Pricing: Actions Needed for Conversion to Decimals (GAO/T-GGD-98-121, May 8, 1998)

Year 2000 Computing Crisis: Continuing Risks of Disruption to Social Security, Medicare, and Treasury Programs (GAO/T-AIMD-98-161, May 7, 1998)

IRS' Year 2000 Efforts: Status and Risks (GAO/T-GGD-98-123, May 7, 1998)

Air Traffic Control: FAA Plans to Replace Its Host Computer System Because Future Availability Cannot Be Assured (GAO/AIMD-98-138R, May 1, 1998)

Year 2000 Computing Crisis: Potential For Widespread Disruption Calls For Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998)

Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998)

Department of the Interior: Year 2000 Computing Crisis Presents Risk of Disruption to Key Operations (GAO/T-AIMD-98-149, April 22, 1998)

Tax Administration: IRS' Fiscal Year 1999 Budget Request and Fiscal Year 1998 Filing Season (GAO/T-GGD/AIMD-98-114, March 31, 1998)

Year 2000 Computing Crisis: Strong Leadership Needed to Avoid Disruption of Essential Services (GAO/T-AIMD-98-117, March 24, 1998)

Year 2000 Computing Crisis: Federal Regulatory Efforts to Ensure Financial Institution Systems Are Year 2000 Compliant (GAO/T-AIMD-98-116, March 24, 1998)

Year 2000 Computing Crisis: Office of Thrift Supervision's Efforts to Ensure Thrift Systems Are Year 2000 Compliant (GAO/T-AIMD-98-102, March 18, 1998)

Year 2000 Computing Crisis: Strong Leadership and Effective Public/Private Cooperation Needed to Avoid Major Disruptions (GAO/T-AIMD-98-101, March 18, 1998)

Post-Hearing Questions on the Federal Deposit Insurance Corporation's Year 2000 (Y2K) Preparedness (AIMD-98-108R, March 18, 1998)

SEC Year 2000 Report: Future Reports Could Provide More Detailed Information (GAO/GGD/AIMD-98-51, March 6, 1998)

Year 2000 Readiness: NRC's Proposed Approach Regarding Nuclear Powerplants (GAO/AIMD-98-90R, March 6, 1998)

Year 2000 Computing Crisis: Federal Deposit Insurance Corporation's Efforts to Ensure Bank Systems Are Year 2000 Compliant (GAO/T-AIMD-98-73, February 10, 1998)

Year 2000 Computing Crisis: FAA Must Act Quickly to Prevent Systems Failures (GAO/T-AIMD-98-63, February 4, 1998)

FAA Computer Systems: Limited Progress on Year 2000 Issue Increases Risk Dramatically (GAO/AIMD-98-45, January 30, 1998)

Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998)

Year 2000 Computing Crisis: Actions Needed to Address Credit Union Systems' Year 2000 Problem (GAO/AIMD-98-48, January 7, 1998)

Veterans Health Administration Facility Systems: Some Progress Made In Ensuring Year 2000 Compliance, But Challenges Remain (GAO/AIMD-98-31R, November 7, 1997)

Year 2000 Computing Crisis: National Credit Union Administration's Efforts to Ensure Credit Union Systems Are Year 2000 Compliant (GAO/T-AIMD-98-20, October 22, 1997)

Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997)

Defense Computers: Technical Support Is Key to Naval Supply Year 2000 Success (GAO/AIMD-98-7R, October 21, 1997)

Defense Computers: LSSC Needs to Confront Significant Year 2000 Issues (GAO/AIMD-97-149, September 26, 1997)

Veterans Affairs Computer Systems: Action Underway Yet Much Work Remains To Resolve Year 2000 Crisis (GAO/T-AIMD-97-174, September 25, 1997)

Year 2000 Computing Crisis: Success Depends Upon Strong Management and Structured Approach, (GAO/T-AIMD-97-173, September 25, 1997)

Year 2000 Computing Crisis: An Assessment Guide (GAO/AIMD-10.1.14, September 1997)

Defense Computers: SSG Needs to Sustain Year 2000 Progress (GAO/AIMD-97-120R, August 19, 1997)

Defense Computers: Improvements to DOD Systems Inventory Needed for Year 2000 Effort (GAO/AIMD-97-112, August 13, 1997)

Defense Computers: Issues Confronting DLA in Addressing Year 2000 Problems (GAO/AIMD-97-106, August 12, 1997)

Defense Computers: DFAS Faces Challenges in Solving the Year 2000 Problem (GAO/AIMD-97-117, August 11, 1997)

Year 2000 Computing Crisis: Time is Running Out for Federal Agencies to Prepare for the New Millennium (GAO/T-AIMD-97-129, July 10, 1997)

Veterans Benefits Computer Systems: Uninterrupted Delivery of Benefits Depends on Timely Correction of Year-2000 Problems (GAO/T-AIMD-97-114, June 26, 1997)

Veterans Benefits Computer Systems: Risks of VBA's Year-2000 Efforts (GAO/AIMD-97-79, May 30, 1997)

Medicare Transaction System: Success Depends Upon Correcting Critical Managerial and Technical Weaknesses (GAO/AIMD-97-78, May 16, 1997)

Medicare Transaction System: Serious Managerial and Technical Weaknesses Threaten Modernization (GAO/T-AIMD-97-91, May 16, 1997)

Year 2000 Computing Crisis: Risk of Serious Disruption to Essential Government Functions Calls for Agency Action Now (GAO/T-AIMD-97-52, February 27, 1997)

Year 2000 Computing Crisis: Strong Leadership Today Needed To Prevent Future Disruption of Government Services (GAO/T-AIMD-97-51, February 24, 1997)

High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997)

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Mr. SESSIONS. Ms. Porterfield, you are next. Please be advised, I am going to step off the podium just for a few minutes. Please give your testimony and continue, and I will be right back.

Ms. PORTERFIELD. Thank you all very much for the opportunity to testify today. I wanted to give you a brief overview of the State's efforts to date. Most agencies and universities in Texas have been aware of the year 2000 issue for several years. In January 1996 the Department of Information Resources published a rule that all hardware and software procurements by State agencies and universities had to be year 2000 compliant. Through the Texas Association of State Systems for Computing and Communications, a year 2000 working group was established that has been meeting on a monthly basis since September 1996. The working group meetings are open to anyone who wants to attend.

In January 1997 the Department of Information Resources engaged IBM to assess the year 2000 readiness of State agencies, not including institions of higher education. IBM delivered their report in March 1997 to DIR with a cost of $207 million to fix State agencies' information technology problems. This information was used as a basis for an additional appropriation to State agencies of $110 million by the 75th legislature of the 1998–1999 biennium. One of the recommendations in the IBM report was to establish the year 2000 project office, which was done in May 1997 under the Department of Information Resources. The office is charged with monitoring the year 2000 efforts of all State agencies and institutions of higher education, of which there are approximately 200. The office is also charged with approving agency requests for reimbursement from the additional $110 million.

As Mr. Willemssen said, the project office is focusing on mission-critical systems being operable in the year 2000. These are systems that impact public health, public safety and revenue collection/distribution. Of the year 2000 plus agencies and institutions of higher education, there are 19 State agencies with mission-critical systems that report their progress to the project office on a monthly basis. The remaining entities report to the project office on a quarterly basis, and all entities report their year 2000 costs on a quarterly basis. Based on the reporting to date, the project office currently believes that most mission-critical systems will be ready for the year 2000.

The Texas House Committee on Appropriations Subcommittee on major information systems established a target date of December 31st, 1998, for all mission-critical systems to be remediated; that is, for all changes in code to be completed. The project office has recently issued reporting guidelines for business contingency plans for any system or related infrastruction component that will not be remediated and tested by that date. From this inventory agencies and institutions of higher education will be required to provide up to three alternatives for continuing services in the event the systems are not ready in a timely manner after December 1998.

The project office also convened two task forces to address other issues for the interface standards for electronic exchanges of data and end-user computing. Interface standards have been developed and a data base has been designed to record by when the interfaces will be year 2000. The National Association of State Information

Resource Executives is working the agencies and institutions of higher education through the project office to facilitate this information exchange between State and Federal agencies as well as local government agencies. Agencies and institutions of higher education have begun communicating with the State's trading partners. The end-user computing task force has written a series of white papers to address specific year 2000 issues with personal computers, servers, networks and the applications and data that reside on them. There is no guarantee, however, as most of us know, that the systems of other entities on which the State's system rely will be timely converted and would not have an adverse effect on the State's systems.

Two issues that are outside the scope of the project office, but are major concerns to every entity are that of embedded systems and readiness of local government. Embedded systems are found in devices and equipment that have microprocessors and/or microcontrollers, use electricity and use date and time for functions and calculations. All entities that have devices and equipment with embedded systems must report to the project office by October 1998. This information will be reported in the aggregate then to the Texas Legislature in November 1998. The project office and the Governor's office are jointly publishing a guidebook for local government entities to address the year 2000. We just had a series of road shows in six cities in 6 days. We ended up in El Paso last Friday to encourage local government to provide a number of mission-critical services to look at their year 2000 problem, to hopefully streamline the process to the extent in the guidebook, and then gave them also a series of resources that they could contact in the future. We have been working with the Texas Admissible League, the Texas Association of Counties, and the Texas Association of Regional Counsels to help spread the word.

Mr. HORN. If you could spare it without objections and interrupting.

Ms. PORTERFIELD. We wanted to provide—the Governor, when he commissioned a guidebook, wanted to provide them with a jump-start, and that's what the government intended to do. It's also to voice our concerns about the provision of critical services by local government such as power and water, and the impact to all citizens of Texas, not just State entities. It also addresses potential areas of litigation related to the year 2000 and the need to address crisis management in their contingency planning/risk management, which needs to focus not only on the physical needs of those in their community, but the human factors that come to play during an extended crisis. Thank you very much.

Mr. HORN. Thank you very much. You did a great job. Ms. Shaw is our next witness. Ms. Shaw is the assistant director of Information Services for the city of Dallas.

Ms. SHAW. Good afternoon. The only really good saving grace about this Y2K problem from our standpoint is that we sort of know the enemy. There really is not a bug or a virus unknown to us. This is something man created. We did this on purpose. And if there is any good side to this, that's what it is. Our attitude toward this has been, if man messed it up then we ought to be able to fix it.

In the city of Dallas, we began a project back in 1996 to work on the year 2000 problem. When you deliver services to over a million people, you knew right away you need more than a year or 2 years to get this done. Back in 1996 we began just identifying what the impact might be to the city of Dallas and the citizens of Dallas. The impact really not only affects them, as we've all talked about, but it is a multiple chain reaction that spreads out to everyone and every home.

We've looked at not only prioritizing the service delivery and prioritizing the mission-critical things, we began also prioritizing by the things that we could fix and the things that we could not fix. There are things that we do not have control over that are outside the grounds of the city of Dallas. Those are the ones that some of the others have already talked about, and that's dealing with the vendors. I think if there is a scary part for us, that it's, the things that we don't have control over. In the city of Dallas most of our operating systems are homegrown. We have built those systems over the years, and we are working very steadily on fixing those systems.

Our goal is to be complete with all of our in-house systems by December 1998. The purpose of that is to give us time in 1999 to fix all those things that we thought we had fixed. The vendors that we have been working with, we have expressed to them that goal, and we have asked them to be in compliance no later than the first quarter of 1999. As everyone else is doing we are looking at the liability issue. We have been sending out vast numbers of letters and asking for responses back, asking people to certify that they are year 2000 compliant. Like everyone else, we also know that they may or may not be affected. It's like us saying, "We have something fixed" and then when we run a test and we find out that it's not fixed. We think the same things are going to happen out there with everyone else.

I think that Congressman Sessions, as he talked about the initiative to put forth some liability issues here, I think that's something all of us in government are certainly going to be happy to see. You don't understand that the next few years we'll be spending all of our tax money and tied up in court. But I think primarily from our standpoint we have really focused on one of the most important things, obviously, the city government. We need to deliver the services, but we also need to be able to collect the revenues that are necessary. We need to be able to pay our pensioners, we need to be able to pay the city employees, we need to be able to do the wire transfers between us and the financial institutions.

I'm happy to say that our primary financial institution along with the city of Dallas is in the test mode right now. We did have to do some conversions in order to be able to do the transfer of funds, the money that we take in, the money that we pay out. We are in the test mode right now. We have completed the programming that was necessary on that. So we feel like we're going to be able to pay our bills. It does not mean that when we start trying to do that with all vendors out there say, we're trying to pay for our uniforms. It doesn't mean they're in compliance. So we're working on those issues also at the same time.

We have made our council rather nervous. We give quarterly reports to the city manager's office, and that report goes to council. We have made them nervous from the standpoint as to how much this is costing us. Believe it or not, the total bill is going to be around $3 million. They think that's way too low, which that's usual for politicians where they're usually trying to get us to cut the costs down. The reason that that cost is seemingly low is that we have redeployed our staff.

We have a fairly large programming staff. We have 40 programmers in-house. We have a department, which does include more than information services, information service, equipment and communication, the department holds 500 employees. So we have a pretty good staff of employees working on this issue. The fact that we have been able to do this programming in-house has saved us a lot of money. The rates on the open market for programmers right now are at a premium. Fortunately, we have in-house some long-term city employees who are sticking with us through this. They're not running out and leaving us making triple the amount of money that they could right now.

Also the fact that we started back in 1996 requiring that purchases be Y2K compliant. That has been of great help in spreading the costs over the years of having to comply with computers. The fact that we began as early as we did, I think, has really been the saving grace for us. We feel like we're in good shape. We feel like that we're going to be ready. Are we going to be 100 percent guaranteed to have everything covered? Probably not because we know there's going to be something, but hopefully that something we will find in that last year of testing. That's our plan.

Mr. HORN. Who is the city manager?

Ms. SHAW. The city manager is John Ware. He left last week. On September 9th the new city manager will be Ted Benavides coming out of the city of Denton.

Mr. HORN. We have had some excellent city managers in Dallas. I know a number of them.

Ms. SHAW. Yes, sir. Having spent 27 years with the city of Dallas, I've worked under several, and they've all been excellent and very supportive of the year 2000 project.

Mr. HORN. Who was the city manager when it started? You started in 1996.

Ms. SHAW. Yes, John Ware.

Mr. HORN. Very good. Our next witness is Mr. Ron Lewis, and he is the assistant city manager from Lubbock, TX.

Mr. LEWIS. Mr. Chairman and members of the subcommittee, thank you for allowing me to appear before you today to discuss what the city of Lubbock, TX, is doing to prepare for the year 2000 problem. My sincere hope is that the information I share with you this afternoon will assist you and the American people to better prepare for problems associated with the year 2000.

I would like to specifically highlight our unique approach to the year 2000 problem and outline our progress regarding business continuation planning. At this point municipalities should be spending the majority of their efforts on this phase on their year 2000 project. I would also like to thank Ms. Porterfield and the State of Texas DIR for including Lubbock in many presentations

throughout the State, both through the hearings during the off session as well as the recent road tour.

Next let me give you some background on Lubbock. Lubbock is located in the south plains of Texas and has an estimated population of 196,000 people. I believe Lubbock to be a progressive municipality in regard to the use of advanced technology to provide cost-effective and high quality services to our citizens. The city of Lubbock, unlike many cities of the same population or larger, owns and operates an electric utility company, Lubbock Power and Light. That utility company serves 65 percent of the electric customers within our municipal limits. Because of this Lubbock is taking a much more businesslike approach when considering the year 2000 problem.

The city of Lubbock has devised a unique approach to creating a year 2000 project. The information technology department has been working on computer hardware, software, telephone and radio systems since 1995. The city manager's office began efforts in January of this year to inventory and prioritize all equipment containing embedded chips. We have found that many municipalities have not broken the project up into manageable parts where there is equal focus on computer technology and embedded chips.

A request for proposal was prepared that solicited qualified vendors to assist us with researching and testing our equipment for year 2000 compliance. We are currently negotiating terms of the contract. Upon City Council approval, the vendor will confirm the embedded chip inventory that we have compiled and will do extensive research to ensure that our equipment is year 2000 compliant. Specific guidelines were given and a major emphasis was placed on utility experience.

We began developing our business continuation plan, as I said, in January of this year. We brought together a team of employees and asked them to identify all business interfaces. This included governmental agencies with which we interact to collect and distribute tax revenue, provide services to through inter-local agreements and private companies that supply us with goods and services as well as companies to whom we supply services.

In March, a group of individuals representing the city of Lubbock, county government, school districts, local media, universities and businesses throughout our community attended a federally funded program, specifically FEMA training. We believe that this training has better prepared our community to handle natural and manmade disasters. We decided to test our preparedness by incorporating the year 2000 problem into an emergency scenario. From training we have established a control group for the upcoming exercise.

We are obtaining a year 2000 drill in September that will help the city of Lubbock better prepare for any problems that may occur. We believe that this will test each city department's contingency plans and improve the community's ability to work together in solving problems.

A small group of trained individuals making up the control group is currently developing scenarios that will be presented to our emergency response team for the upcoming year 2000 drill. They have strict instructions prohibiting them from discussing the de-

tails of the proposed scenarios outside of the group. We provided them with a list of items that might fail due to year 2000 problems or systems that are critical to our city's operations. No department is aware of the scenario that the control group is creating. We believe this will provide for a more realistic exercise.

We realize that there may be occurrences not related to the year 2000 problem that happen on New Year's Eve, including those driving under the influence of alcohol, automobile accidents and inclement weather, to name just a few. Some of these normal problems will be incorporated into the scenarios. The drill is scheduled at night so that we more accurately account for the effect of darkness on our response. This drill will give our elected officials and citizens the opportunity to see how well we perform under simulated circumstances. Depending upon the grade that we receive from the control group, we will schedule additional year 2000 drills.

The drill will be conducted in our Emergency Operations Center. This center is located in an isolated area equipped with work stations, communication devices and televisions wired to the National Weather Service. It is a centralized point of command from which we handle all emergencies and is appropriate for the year 2000 drill.

I believe the most important aspect when preparing for the year 2000 problem is providing open and honest communication with our citizens and our employees on a regular basis. We have experienced some recent power outages due to the extreme heat devastating our area. We learned that quick responsiveness not only to fixing the power related problems, but informing the citizens through the media of what we were doing and how long we expected it to take was a key to numerous examples of positive public opinion and action. We had motorists taking bottled water to police officers working signal lights at intersections when the power was out. The media did a wonderful job of getting the word out that our water supply had possibly been contaminated due to loss of the power. Equally well, the media notified the public when we were certain that the water supply was safe.

A year 2000 newsletter will be distributed through our recreation and senior centers, libraries, municipal facilities and online on our homepage. We have prepared a bilingual English and Spanish insert for our October utility bills that will give some information regarding Lubbock's preparedness for the year 2000 problem and direct customers and citizens to our newsletter and homepage.

We are scheduling meetings with local groups that have a significant interest in undisrupted business such as healthcare providers, utility providers, taxing authorities, financial institutions and area law enforcement agencies.

Thank you for the subcommittee's continued interest in the year 2000 problem. I hope that the information we provided you today will make a valuable contribution to our Nation's successful solving of the year 2000 problem, and I will be happy to answer any questions that you might have.

[The prepared statement of Mr. Lewis follows:]

Subcommittee on Government Management, Information and Technology

Government Reform and Oversight Committee

United States House of Representatives
One Hundred Fifth Congress

August 17, 1998

Testimony of Ron Lewis
Assistant to the City Manager
City of Lubbock, Texas

The City of Lubbock's Business Continuation Plan for Year 2000 computer and embedded chip problem

Mr. Chairman and Members of the Subcommittee:
Thank you for allowing me to appear before you today to discuss what the City of Lubbock, Texas, is doing to prepare for the Year 2000 problem. My sincere hope is that the information that I share with you this afternoon will assist you and the American people to better prepare for problems associated with the Year 2000.

I would like to specifically highlight our unique approach to the Year 2000 problem and outline our progress regarding Business Continuation Planning. At this point, municipalities should be spending the majority of their efforts on this phase of their Year 2000 project.

First let me give you some background on Lubbock.

Lubbock, Texas (estimated population, 196,000)
Lubbock is located in the South Plains of Texas and has an estimated population of 196,000. I believe Lubbock to be a progressive municipality in regard to the use of advanced technology to provide cost-effective and high quality services to our citizens. The City of Lubbock, unlike many cities of the same population or larger, owns and operates an electric utility company, Lubbock Power and Light. Lubbock Power and Light serves sixty-five percent of the electric customers within our municipal limits. Because of this, Lubbock is taking a much more business-like approach when considering the Year 2000 problem.

Lubbock's approach to the Year 2000 problem
The City of Lubbock has devised a unique approach to creating a Year 2000 project. The Information Technology department has been working on computer hardware, software, telephone and radio systems since 1995. The City Manager's Office began efforts in January of this year (1998) to inventory and prioritize all equipment containing embedded chips. We have found that many municipalities have not broken the project up into manageable parts, where there is equal focus on computer technology and embedded chips.

A Request For Proposal (RFP) was prepared that solicited qualified vendors to assist us with researching and testing our equipment for Year 2000 compliance. We are currently negotiating terms of the contract. Upon City Council approval, the vendor will confirm the embedded chip inventory that we compiled and will do extensive research to ensure that our equipment is Year 2000 compliant. Specific guidelines were given, and a major emphasis was placed on Utility experience.

Business Continuation Planning
We began developing our Business Continuation Plan in January of this year (1998). We brought together a team of employees and asked them to identify all business interfaces. This included governmental agencies with which we interact to collect and distribute tax revenue, provide services to through inter-local agreements, and private companies that supply us with goods and services, as well as companies to whom we supply municipal services (i.e. water, wastewater and electricity).

Federal Emergency Management Agency (FEMA) Training
In March, a group of individuals representing the City of Lubbock, county government, school districts, local media, universities and businesses throughout our community attended a federally funded program entitled "FEMA" training. We believe that this training has better prepared our community to handle natural and man-made disasters. We decided to test our preparedness by incorporating the Year 2000 problem into an emergency scenario. From training, we have established a "Control Group" for the upcoming exercise.

"Y2K Drill"
We are planning a Year 2000 Drill in September that will help the City of Lubbock better prepare for any problems that may occur. We believe that this will test each city department's contingency plans and improve the community's ability to work together in solving problems.

A small group of trained individuals making up the "Control Group" is currently developing various scenarios that will be presented to our emergency response team for the upcoming Year 2000 Drill. They have strict instructions prohibiting them from discussing the details of the proposed scenarios outside of the group. We provided them a list of items that may fail due to Year 2000 problems, or systems that are critical to city operations. No department is aware of the scenario that the Control Group is creating - we believe this will provide for a more realistic exercise.

We realize that there may be occurrences not related to the Year 2000 problem that happen on New Years Eve, including those driving under the influence of alcohol, automobile accidents and inclement weather to name but a few. Some of these normal problems will be incorporated into the scenarios. The drill is scheduled at night so that we more accurately account for the effect of darkness on our response. This drill will give our elected officials and citizens the opportunity to see how well we perform under simulated circumstances. Depending upon the grade that we receive from the "Control Group" we will schedule additional "Y2K Drills".

The Emergency Operations Center
This drill will be conducted in our Emergency Operations Center. This center is an isolated emergency center equipped with work stations, communication devices, and televisions wired to the National Weather Service. It is a centralized point of command from which we handle all emergencies and is appropriate for the Year 2000 drill.

Communication is the key to success
I believe the most important aspect when preparing for the Year 2000 problem is providing open and honest communication with our citizens and our employees and a regular basis. We have experienced some recent power outages due to the extreme heat devastating our area. We learned that quick responsiveness not only to fixing the power related problems but informing the citizens through the media of what we were doing and how long we expected it to take was a key to numerous examples of positive public opinion and action. We had motorists taking bottled water to police officers who were directing traffic at major

intersections during the loss of power to the traffic signals. The media did a wonderful job of getting the word out that our water supply had possibly been contaminated. Equally well - the media notified the public when we were certain that the water supply was safe.

A Year 2000 newsletter will be distributed through our recreation and Senior centers, libraries, municipal facilities, and online on our homepage (www.ci.lubbock.tx.us). We have prepared a bilingual (English/Spanish) insert for our October utility bills that will give some information regarding Lubbock's preparedness for the Year 2000 problem and direct customers/citizens to our newsletter and homepage.

We are scheduling meetings with local groups that have a significant interest in undisrupted business, such as healthcare providers, utility providers, taxing authorities, financial institutions and area law enforcement agencies.

Thank you for the subcommittee's continued interest in the Year 2000 problem. I hope that the information we provided you today will make a valuable contribution to our nations successful solving of the Year 2000 problem. I will be happy to answer any questions that you might have.

Mr. HORN. Well, thank you very much, Mr. Lewis. That is very helpful. Michelle Brand is the purchasing and telecommunications coordinator for the city of Mesquite, TX.

Ms. BRAND. Thank you again for the opportunity to be here today as well to represent the city of Mesquite and to share our story with you. We have approximately 1,000 full-time employees with the city of Mesquite, and we have a current population of 113,400. We began our discussion about potential problems with the year 2000 computer glitch in late 1996. And during this time I was assigned the responsibility for compliance for the city in addition to my present responsibilities of overseeing the daily operations of the purchasing division.

As I began this project, I decided that maybe I would just be very smart, try not to reinvent the wheel, and I was going to go out and survey the seven municipalities that we normally identify with in the Dallas/Fort Worth area. So I called all seven, and the results of that survey were that none of them at the time had any type of formalized program to work on the year 2000 problem. And I was very surprised at the time that none of those had developed a formalized program. So I continued to research, and I learned that the State of Texas had organized the year 2000 working group that was spearheaded by the Department of Information Resources. And they sponsored a year 2000 symposium that offered valuable information around legacy computer programs within the State agencies and also offered information about the potential litigation. And it was very informative, and I was glad that I intended, but a lot of the information was not specific to cities and the infrastructure and facilities problem.

At that workshop I also learned about their monthly working group meetings held in Austin, and so I made plans to attend that. The city of Austin, which was part of the group, and Mesquite were the only two cities in attendance. And although the main focus of the year 2000 working group centered on computer application systems, the group had determined a need for information pertaining to infrastructure and facilities, and they formed a committee to research equipment other than computer and hardware and software with embedded chips. I began obtaining information from this group and meetings via the Internet, and that became a valuable source of information for me.

So I came back to the city of Mesquite, and I was armed with all this valuable information and kicked off our program in January. And the first thing that we did is, we immediately changed our purchasing procedures to ensure that all of our future purchases would be compliant. All of our software was purchased through the DIR as they guaranteed compliance. We also changed our contract language and added verbiage to it to ensure that all of the bid specifications and the equipment purchases would require suppliers to be compliant.

I began contacting each city department in an effort to develop our inventory. And this process was pretty difficult in the beginning because a lot of the employees didn't have a clue about what I was talking about, and so we also had to educate the employees as well. It just seemed that every turn in the road just seemed to have an obstacle.

Once the majority of the inventory was complete, we began writing letters to our suppliers. And that was more of a task than I expected, and the responses that we received varied. Many of these suppliers never responded to our request. Some of them were vague and many were still in the process of reviewing their equipment and promised a corporate statement in the future. Several were willing to verbally respond, but would never submit a confirming statement in writing. Information regarding older products were also very difficult to obtain. We discovered that some of these companies were no longer in business or they merged with other companies.

Our first noncompliant issue occurred in December 1997 with credit card processing at the municipal airport. We received a call, a panic call, from the airport asking what to do. And we were advised that they just key in "99" instead of the year 2000 until we could get that problem taken care of, which it had been taken care of since then.

We had numerous letters from suppliers. I just had stacks and stacks promising that their products would be compliant or that upgrades would be covered under the maintenance contracts. And I was not very concerned about the validity of these letters until I attended a recent workshop. In fact, it was one last week, one of the road shows sponsored by the year 2000 project office. And in this workshop we were informed that companies might change their position statements at any time. And that was alarming to us because the letters that we had received from some of the suppliers we felt that with confidence we could depend on and we would move on to the other issues. We were doing our due diligence, contacting the suppliers to get their letters of compliance, and then we heard this alarming news.

Infrastructure issues are a major concern for the city of Mesquite and other cities as well. We do not have the knowledge of how to test embedded systems since this information usually resides with the manufacturers of the equipment. Embedded systems are not designed to be manipulated by the end-users. In most cases specifications on the embedded systems are not generally published, which makes it difficult to ascertain how the codes are generated. We are very dependent on the manufacturers to provide valid information on compliance and to develop any required solutions before the year 2000.

Unlike many cities, we do not have a full-time employee dedicated to this project. We are fortunate to have the support and involvement of our city manager, Ted Barron, and full support of our city council. They're all aware of the potential risks involved and of the importance of identifying our critical systems. We hired no consultants to date to assist in our efforts, although we are now beginning to pursue assistance with the Motorola radio equipment with our employees. It's been extremely difficult to devote staff time to such a large inventory of equipment.

The costs of compliancy, as you well know, can be very substantial, and funding issues could force many cities to delay other needed programs. Budget issues could make it difficult for many smaller communities to make the investments necessary to become compliant.

We are now in the process of developing our contingency plans for the critical systems. We do know that our Emergency Operations Center will be activated and operational on December 31st, 1999, and I'm sure that's where I'll be spending my New Year's Eve. Our goal is to maintain safety to our citizens and to provide the current level of services without disruption. We still have a lot of work to do with the city of Mesquite, and we will continue on throughout the year. And as just like the city of Dallas, a lot of the systems that we think that we've already resolved all the issues on and we really aren't worrying or focusing on will probably discover that some of those still have problems as well.

[The prepared statement of Ms. Brand follows:]

Michele Brand
Purchasing and Telecommunications Coordinator,
City of Mesquite

Year 2000 Congressional Hearing

Monday, August 17, 1998 - 2:00 p.m.
Room C-135 Campus Center
Eastfield College
3737 Motley Drive
Mesquite, TX 75150

My name is Michele Brand and I represent the City of Mesquite, Texas which has a current population of 113,400 and approximately one thousand full-time employees. The City of Mesquite began discussing the potential problems of the Year 2000 computer glitch in late 1996. During this time I was charged with the responsibility of compliance for the City in addition to my present responsibilities of overseeing the daily operation of the Purchasing Division.

Trying not to reinvent the wheel and to possibly share information with other municipalities, I decided to conduct a survey of local municipalities in the Dallas/Fort Worth area. I found that none of these City's had formalized programs to address the Y2K problems. I was quite surprised to discover that no City's were responding to the warnings by the media.

As I continued my research, I learned that the State of Texas had organized a Year 2000 Working Group spearheaded by the Department of Information Resources. They sponsored a Year 2000 Symposium that offered informative information but the workshop centered predominately around legacy computer programs within state agencies and the potential for litigation. Again, no information was specifically pertaining to cities.

At that workshop, I learned about the monthly working group meetings held in Austin and made plans to attend. The City of Austin, which was part of the group, and Mesquite were the only two cities in attendance. Although the main focus of the Year 2000 Working Group centered on computer application systems, the group had determined a need for information pertaining to infrastructure and facilities and had formed a committee to research equipment other than computer hardware and software with embedded chips. I began obtaining information from their group and meetings via the Internet which became an important source of information for my research.

Armed with this initial knowledge, the Purchasing Office began immediate changes in purchasing procedures to ensure that future purchases would be compliant. All software was purchased through the DIR as they guaranteed that it would be compliant. Contract language was added to all bid specifications and equipment purchases requiring them to be Y2K compliant.

I began contacting each department in an effort to develop an inventory. This process was hampered in the beginning stages as many employees had to be educated about the problem. Every turn in the road had an obstacle.

Once the majority of the inventory was complete, we began writing letters to suppliers. It was a more difficult task than expected and the responses received varied. Many of the suppliers never responded to our request for information, some were vague and many were still in the process of reviewing equipment and promised a corporate statement in the future. Several were willing to verbally respond but would never send a confirming statement in writing. Information regarding older products was difficult to obtain. Some of the companies were no longer in business or had merged with other companies.

Our first non-compliant issue occurred in December 1997 with credit card processing at the Municipal Airport. Credit cards were being issued with expiration dates of "00" and the computer equipment could not accept them. Our first contingency plan became in effect as we had to input "99" instead of "00" to process transactions. The equipment has been modified.

I have numerous letters from suppliers with promises of compliance. I was not concerned with the validity of these letters until I attended the recent workshop held at the North Central Texas Council of Government Offices on August 12th. In this workshop, sponsored by the Governor's Office, we were informed that companies might change their position statements at any time. This will require continuous monitoring. We thought we were doing our due-diligence contacting suppliers to get letters of compliance and then we get this alarming information.

Infrastructure issues are a major concern for the City of Mesquite. We do not have the knowledge of how to test embedded systems since this information usually resides with the manufacturer of the equipment. Embedded systems are not designed to be manipulated by the end user. Specifications on embedded systems are not generally published making it difficult to ascertain how codes are generated. We depend on manufacturers to provide valid information on compliance and to develop any required solutions before the year 2000.

Unlike many cities, we do not have a full-time employee dedicated to this project. We are fortunate to have the support and involvement of our compliance efforts from our City Manger, Ted Barron, and the City Council. They are all aware of the potential risks involved and of the importance of identifying our critical systems.

No consultants have been hired to assist in our efforts but due to time constraints, we are pursuing assistance with the Motorola radio equipment inventory and testing. It has been extremely difficult to devote staff time to such a large inventory of equipment.

The costs of compliancy can be substantial. Funding issues could force many City's to delay other needed programs. Budget issues could make it difficult for many smaller communities to make the investments necessary to become compliant.

We are in the process of developing contingency plans for our critical systems. Our Emergency Operations Center will be activated and operational on December 31, 1999. Our goal is to maintain safety of our citizens and to provide the current level of services without disruption. We still have a lot of work to do at the City of Mesquite in preparation of the millenium.

Mr. SESSIONS. Thank you so much. Mr. Brady, do you have any questions?

Mr. BRADY. I am just going to ask Ms. Shaw with the city of Dallas, that $3 million estimation does seem awfully low compared to what other business are having to do with this and that. And my question is (inaudible) and you were fortunate to begin early, and that was smart. Does the $3 million take into account the cost in salaries of the staff, the expenses of buying, you know, the year 2000 compliant computers versus perhaps refurbished? Because in our office, when we did this, we found ourselves, you know, having to up the cost to buy things, or it seemed to be that we hoped were safe as opposed to some other avenues of cost-effective type.

Ms. SHAW. I would say probably, approximately 80 percent of that $3 million is labor staff costs to do the programs. Everything we have is in-house systems that we built, and so now we're going back through those and making them compliant. Also, as we have done other upgrades to those systems over the last several years, they were compliant at the time we were doing something else. Which saved us a lot of time rather than just pushing it all aside. Starting early was probably the biggest benefit to keep the costs down.

We have encouraged our department not to use the year 2000 as an excuse to trade out computers. If a computer breaks down and has to be replaced, it has to be replaced, but we're not doing wholesale change-outs on computers just because of that. So we try to keep the costs down, when we identify that $3 million, is actually what the cost is as it relates to the year 2000. But I think the fact that we changed our stats over 2 years ago. Specifications on computers and software and anything else related say it must be year 2000 compliant. I think it's just an idea of spreading that cost over a period of time. But that $3 million is the total cost for programming that's in there.

Mr. BRADY. Thank you. I was going to ask Ms. Porterfield how she made mention of the testing that is going on with the Social Security Administration and the rights of our people depend upon us being ready to go on that date. How far along are your relationships and data exchanges, progress moving with all the other Federal agencies that Texas interacts with?

Ms. PORTERFIELD. Each agency and university is responsible for their own remediation after it, so each one is contacting their counterparts individually. We have been working with Nasire (phonetic) and so we're not really having any problems at this time. We do have a data base that's being completed probably within the next month, so I could probably give you better information in October. But at this time I think we're in pretty good shape with the ones we've contacted.

Mr. BRADY. Thank you.

Mr. SESSIONS. I'll go ahead. I've got several questions. One for Mr. Lewis, and I thought it was not testimony that was on the record. Mr. Chairman, we had an opportunity to speak as we were driving over here.

Can you give us a tangible example about how to avoid replacing a system realizing that many municipalities—and the same would be true of Mesquite, and I'm sure of Dallas—that many municipali-

ties do not have the funds to replace all of its noncompliant systems that they currently use? How are you dealing with this?

Mr. LEWIS. (Inaudible) create a solution in solving the year 2000 problems. They're in the process of purchasing a centralized computer system to control all the signal light intersections (inaudible). I guess I need to tell you that I worked in traffic engineering, as I told you in the car earlier, for 7 years. I'm a little more familiar with that area. And if you have any customer complaints about that, I don't work in this area. However, the new system that we're purchasing in Lubbock will not be available until the year 2001. So what we had to do in the meantime was say "How do we fix this problem?"

Our technicians and engineers in that department worked closely together to determined that they could splice 2 years together. There's not an exact match for the year 2000 since our system was put in in 1992 that matches day and date exactly because of the leap year that throws it off. So what the engineers have done is splice the 2 years, run up to February 28th, and then we'll be running through basically the 29th, so traffic will probably work better on that day actually. At least, that's what the citizens tell me.

And then on March 1st the second year that's been spliced together will be input into the computer. So, in essence, fool the computer on thinking that it's another year. This could be a possible problem considering the litigation on trafficking, traffic signal accidents and stuff or accidents at signal light intersections. However, we had to have a solution in short-term since our long-term solution is past the date that we needed that. And I think this is a creative way that our captive engineering people, both technicians and engineers working together to solve the problem, and we think that all of our departments have those people who are capable and can figure out the shortcuts and the cheats, if you will, on how to make systems work.

Mr. SESSIONS. Ms. Brand, you carefully enumerated that it's difficult not only for vendors to acknowledge potential problems that are on their system, but also—and this is the real question—talking about it forthrightly among your peers and colleagues in any municipality. I think each one of you presented this evidence, this testimony. What needs to be done to have more information given? What do you see as a role that a municipality could have in discussing this openly with the citizens because you want them to spot problems and to avoid the fear factor? What more needs to be done to enlighten people?

Ms. BRAND. In regards to?

Mr. SESSIONS. Well, you have systems in Mesquite, failures of traffic lights, water pumps, hospital, the way you deal with things. How do you think you will go about or Mesquite will go about or other municipalities letting citizens know? Do you think you will tell them exactly where the systems are that can fail or just simply saying "Watch out"? And if you see something that doesn't look right, is there specific information that you could give us that would be available to citizens?

Ms. BRAND. I think it's important to spread the word in the media. We do have a city publication that's mailed to every household each month, and we have had articles there explaining our

progress. And I think it's important to continue to let them know what we are doing and that we just can't replace every system, we can't maybe possibly upgrade every system. We will continue to let them know what's going on on our traffic controllers.

I guess our system is a little bit older, and it's not a central computerized system, and they're actually controlled at each site. And so our traffic engineer division has developed a program to basically roll the clocks, the internal clocks in each one back 28 years. It's our understanding that every 28 years the calendar is the same, and so that's what we're going to do. We have about 100 of those traffic controllers, and they're actually already on schedule going around to each one and rolling those clocks back. And then we still have a contingency plan in case we have failure that evening to take care of that problem. And I just think it's important to just expose the problems and issues to the citizens and then guarantee them that you are taking care of those problems the best way that you can, and that it might not mean necessarily replacement.

Mr. SESSIONS. Ms. Shaw, do you have any insight from Dallas about how you are responding or dealing with this?

Ms. SHAW. We don't really have any set plan laid out yet. We have talked about it just sort of in general terms of taking advantage of, obviously, the media interest that there will be. The fact that our council members have town hall meetings planned for 1999 draws the media. We'll be doing our testing of the systems, and we'll have an opportunity to speak at town hall meetings.

I do think that there's a consensus among all of us that the more information we give to the citizens, the better off we'll all be. If they are, as you said, made aware of the issue and what things to look for. I think having a general one number to report those things to is probably a good idea. Here in Dallas we have a new No. 311 that citizens use to report any type of services that are nonemergency. We used that number this summer to report the heat problems. I would anticipate that that would be the number that we'll use during this period of time, to have citizens call. So, we won't have to have a separate number. We'll use a familiar number to them. And then internally have a reporting mechanism. I'm sure that will be within our own department, to collect all that data and make sure that it's responded to immediately.

Mr. SESSIONS. Systematic plan at least where internally you know what you are doing, and then try and give that to people via the media?

Ms. SHAW. Yes, sir.

Mr. SESSIONS. We are trying on our side when we were holding this hearing to talk about a lot of things, Social Security, FAA and military oriented, and I am pleased that you have come out here today to let us know in your way about the traffic lights and water pumps.

Ms. SHAW. And I'm pleased to say our traffic light situation is fixed. We fixed that approximately 3 months ago. We have had the chips in and tested those for trafficking.

Mr. SESSIONS. A little bit at a time. Mr. Chairman.

Mr. HORN. Let's just get a few issues. We might have touched on some of them. I was interested that many of you discussed your

plans and the progress you made to ensure you are ready on time. I commend you for moving that into 1998. Some of you will then have all of 1999 to pick up some of the pieces, which we know will be there no matter how good we try. The subcommittee's oversite on the Y2K problem has led to the conclusion that not all the systems in the Federal Government will be ready. And Mr. Willemssen has noted in his testimony it is important to prepare for the "what if's" scenario, and some of you have mentioned contingency plans. Why don't I just go down the line. Can you give me an example of some of the contingency plans you seek from the State level, Ms. Porterfield?

Ms. PORTERFIELD. At this time we're asking for contingency plans on information technology systems. Those contingencies could range from having a number of people on staff to prepare things manually to just, you know, not using automation at all.

What we're concerned about is including that assistance in our contingency planning. And as we get our reports in October, we're anticipating doing what we're calling brainstorming contingency planning with the agencies and universities that are impacted since our universities have much more facilities and infrastructure than our State agencies do. And how we're going to be sure that not only is our information technology going to be ready, but our systems going to be ready. And I really can't give you an answer on a contingency planning for systems at this time.

Mr. HORN. Let me give you an example of an area of paying the employees so they stick around and don't just leave to go somewhere. City services collapse that way. Have you thought about how you would do that if the machines are out?

Ms. PORTERFIELD. The contingency I note for like the employees' retirement system, the teachers' retirement system, they've been working with the controller's office to ensure that if, for some reason, the systems that generate the tapes aren't ready, that they'll run the last month's tape and then reconcile and work out the differences at a later time. So in terms of payroll and retirements benefits, we feel pretty confident that we'll be able to provide those.

Mr. HORN. Any other areas such as that? You probably have someone who says you have to pay your vendors in so many days or you owe them? What do you do in that situation?

Ms. PORTERFIELD. Yes, sir. Again, it's up to the controller. The State treasurer has recently merged with the controller's office, and so all of that is housed under one entity, and they are on our priority list. They're a major agency that impacts—one of the major agencies, revenue collection institutions in the State. One of the things that we're considering is asking the controller's office to include in their sales tax audits to include the year 2000 as part of their sales tax audits so that we can be sure that the revenue that we're relying on will be there.

Mr. HORN. Ms. Shaw, anything to add to that? Either the payroll or the vendors or what else are you thinking for a contingency plan?

Ms. SHAW. Obviously, like everyone else, we'll be burning a lot of midnight oil trying to do a lot of things manually. One of the things that I would anticipate we would do would be to redeploy the staff because we are such a large entity. We have over 13,000

employees, so we would be drawing a lot of people from all over who have maybe not previously or maybe have previously worked, say, in the controller's office by coming back into there to manually do the checks.

Mr. HORN. And you just write the amount?

Ms. SHAW. Yes. There was a mention about using the last month's payroll. We also talked about the same thing. For instance, if current records were not available, we would go with the last month's payroll, run it exactly the same for a period of time up until the point we were able to get back on track. Obviously, we'd go back and adjust the payroll amount, and, hopefully, in a short period of time. We have just completed a new disaster recovery audit. And, obviously, that will take us through all types of disaster, whether it be Y2K or others. We're updating that now to give us a better idea of what will be happening in the event of an emergency.

Mr. HORN. Mr. Lewis.

Mr. LEWIS. Payroll is an issue for me. I want to make sure I'm paid. I want to have a job. My city managers agreed with me on Monday, the larger group of all the city managers, and I said "I feel so strongly about this, I think we should let the military and pay the enlisted men first and the officers last." They said "It's a problem." What we considered is, we have a very sophisticated financial system, and we can't fake it out by using the previous month. They'll say "You've already been paid for that, you can't do it again." So what we have to do is project for the future. We anticipate that we may have to project two to three pay periods. We pay every 2 to 3 weeks. So two to three pay periods covers some time. And then manually print those checks, put them in a vault with our chief accountant so she'll feel good about them, and then give her plenty of water and utility. She does our checks manually because most of our employees do use electronic deposits. And if my electronic transfer to my bank from my car doesn't work, I'm not real concerned about that.

Mr. HORN. Any other areas you're working on?

Mr. LEWIS. Well, our electric utility company.

Mr. HORN. You have a municipal utility?

Mr. LEWIS. Yes. And we generate electricity, if not just distribute, in our municipality. So we're in competition with private, independently owned utility companies as well. Like I said, we serve 65 percent of the customer base in the Lubbock city limits. If we're not able to produce that electricity and sell it to those customers or receive revenue from them by billing, we'll lose 14 cents in our tax rating, and we currently are at 68 cents. So you can see that we have to increase the 72 cents on tax rate, and that's not acceptable. That's why we own the utility company, and our citizens must continue, and our council, to own that.

Our concern with electric is we will have capacity to generate all of our local needs for every month because our capacity drops so greatly, and we do not purchase significant power within the limits. We're going to do a plant apparently that will be on line by next summer, and that will be able to meet all of our needs. Luckily Texas Tech University is a big user of electricity, and they'll be

off during that week. Between Christmas and New Year's the staff and faculty and council members as well except for maintenance.

Our concern with electricity is that we rely heavily on national gas supplies. So national gas supplies are disrupted, and so are we. And that will help the privately owned duty because they rely on that for our area, too. That's why we don't have (inaudible) have close to Lubbock. So we're concerned that we keep our utilities going, and we have to work up the chain through several levels of suppliers.

We recently went into an agreement with some other cities in the State of Texas as a collective to get a better purchasing price for fuel and an option for two distribution lines, one that runs east and west and one north and south for our natural gas. And we would hope that since we're almost at about the cross point, the cross area of that, that we'll be able to go ahead and access the gas or perhaps entities or beyond (inaudible) might not be able to. We hope that everyone can (inaudible).

Mr. HORN. Well, to what degree does Lubbock tie it into the Texas-Mexico grid? Are you all a part of that?

Mr. LEWIS. We're not in the city of Lubbock. Southwest Public Service is an independently owned utility. And we do, as I say, during the summer months purchase a significant portion of our power, possibly 50 percent from them. So the winter months and with the increase of passing generation, we'll be able to meet our own demand with our own means, and we'll work together, of course, in selling power to one another when we need it.

Mr. HORN. Is there an overall State agreement on this to various fire departments that cooperate——

Mr. LEWIS. Not that I'm aware of. You know, there's a federally owned State legislation being considered in the last session, of course, in the State of Texas and many other States that deal with electric new information and structure. And that is a concern for us because we have 1999 session in Texas coming up that we have to deal with that. (Inaudible) it allowed initially all utilities to opt into it over a many-year period. So we can still stand alone and we feel confident through the year 2000.

Mr. HORN. Do you see any other real problems facing you that you need a cooperative relationship with other entities?

Mr. LEWIS. Well, in our area, yes, because we're not in the metroplex like many of these people. We're isolated in West Texas. That's good and that's bad. And the case of being good is we have to work close with our other entities as I mentioned in my testimony. The health-care provider is our good one. We provide (inaudible) health science center and the other hospitals that have gravitated to Lubbock because of that high level of service and technology in medicine. So we're going to be meeting with these groups soon. Amanda Johnson is a young lady that has been assisting me with this, and she was on the road tour the first part of (inaudible). And she called me on Wednesday and said "What are we doing with that interface plan" and I said "Nothing." She said "Pull it out, get it going." And so unfortunately, I'm losing her to law school, but she expects to litigate the year 2000 problems when she graduates.

Mr. HORN. Training the beast from within. Ms. Brand.

Ms. BRAND. We're just beginning to start discussing our contingency plans and each department is working on that, and I do not have that information. But I can tell you that in our discussion about contingency plans and development of them, the first question that was asked was "What about payroll checks?" And so I shared with them the situation that Lubbock was going to do. I think, they have 3 months of payroll checks stored in a vault, and I offered to keep all of our payroll checks for all the city employees, but they informed me that we probably would actually manually type up all of our checks since we have only 1,000 employees as opposed to some of those other cities with thousands of employees, but we still haven't developed any firm plans.

Mr. HORN. But they are coming ahead of you, you think?

Ms. BRAND. Yes.

Mr. HORN. Embedded chips. Let's start with you, Ms. Brand, and go backward. What are we doing there in terms of finding (inaudible) elevators or different alarm systems, security systems. I don't know if you have that problem. What do you see there?

Ms. BRAND. Well, we do have many elevators and security systems in a lot of our infrastructure. And we're depending on our employees that we consider experts in that area to assist us. We're writing the vendors, we're hiring companies to come out and test and just continuing to search. In our vehicles, I learned the other day at the workshop that some of the DPS vehicles have 21 embedded chips in them, and our question is "How do we test that"?

Mr. HORN. Has anyone talked to the manufacturers at either your level or the county or the State level? And can we get any help from them as to what we can do about it if we did find one? And are they prepared with a chip that will solve that problem?

Ms. BRAND. I've not heard of a chip that will solve any of the problems. I have heard one prior story with the Cherokee and the State, the Cherokee, the Jeep Cherokee that malfunctioned when it was put in a testing mode, but I've not experienced that with any of our vehicles. And we have written the manufacturers, and we have not received a response from them.

Mr. HORN. Interesting. Mr. Lewis, embedded chips.

Mr. LEWIS. When our fleet services manager attended a meeting, there were dealers and manufacturers as well present, and Ford and GMC both assured them that they'll be compliant. That doesn't mean that they are currently, but that they will by the date they need.

What we found out earlier on our process and discovery was that there is a machine that's a diagnostic machine that we need to purchase. It was an upgrade to an existing machine, but you have to buy a whole piece of equipment. In order to diagnose those vehicles problems and repair them, we had to purchase a new piece of equipment that cost approximately $20,000, and that does the diagnostic work as well as has the ability to clash out the problems, to upgrade the vehicles resolving the chip. So we feel good about that.

I asked my fleet services manager the other day, I said "Can we have that in the budget for next year?" He said "We already have it this year. We felt it was so important to get it on that we did it earlier." He works for the finance director. So that's pretty dif-

ficult to believe that they want to spend money early, but this is the case where you have to because it's too late, and we all know when that is.

As far as the restaurant embedded systems, we did the process of discovery by going to our first line supervisors and our technicians and actually deal with the equipment and they're very familiar. And we asked them to compile a list. We then went back and prioritized those lists, and that's what we've worked on in taking that to our (inaudible) asked for contracts or proposal on that. We expect to spend $200,000 on the research phase of that. And then we intend, we expect to spend probably $100,000 more for some assistance with establishing a testing methodology. Of course, they already have, we just need to pay for it. And then train our technicians that know what the equipment is and to go test it. And we already have our electric utility, our traffic engineering, our water treatment people testing the equipment as well as our fleet with the new diagnostic machine. So we feel good about that.

We also have, as with the buildings and gas pumps and all that, we are discovering that we can do some things manually like with the gas system for the vehicles. You can pump the gas if you override the computer and manually operate it. You have to have either employees riding down the amount of gallons putting in each vehicle, you have to have an attendant there much like a service station in the past. We don't think that's too much of an inconvenience to the short-term. If we purchase the right software, that will allow us to manage our fuel system.

Mr. HORN. Ms. Shaw.

Ms. SHAW. Similar, we have obviously written lots of letters, made lots of contacts with the vendors we do business with. In order to initially identify where those chips might be, we have a representative in each city's department that's responsible for meeting with the rest of department. Then once a quarter, those representatives get together. It's all kind of fed into one report. Obviously, you like to think that you have all those identified the first time that you meet and that's it. But we found that each quarter when you come back, someone always comes up with one more, one more. So we think it's real important to continue these meetings. They've been going on for 2 years now, and we expect them to go on clear through probably the first quarter in the year 2000.

In many cases we've identified chips, for instance, the lights, traffic control. Simply by talking with the vendors who supplied that, we found out that it was not compliant. We made a request to get those chips in. We've now received them, they're installed, they've been tested, and we know that they work. That's an easy one.

Mr. HORN. Have you found the manufacturers where these chips are to be cooperative with you in this effort?

Ms. SHAW. In our case, very much, sir, they're very cooperative. Our fear is, the ones we don't know about. Even when we don't think we have a problem, when we think things are compliant, we've gone ahead and written letters and asked them, in some cases, tell us how they tested. Internally we verify testing for many of them. So when the department tests and tell us they've tested, we make them go back through the testing procedure with us be-

cause we do have the expertise in-house to look at that. And then on a random basis we go out and test ourselves. We established a special testing group that goes out and checks those.

Mr. HORN. That is very interesting. Ms. Porterfield, you have got a statewide perspective on this. Where are we on things like embedded chip identification, cooperation in the manufacturers, replacement, et cetera?

Ms. PORTERFIELD. We are very concerned about (inaudible) at the State level. In fact, probably more concerned about (inaudible) than we are about information technology. The embedded systems was a focus in a recent State auditor's report. And we're expecting there to be quite a bit of focus on that in the next legislative session. All of our agencies and universities again have to replace any of their equipment and infrastructure out of current appropriation. And what we're finding is that a number of them may feel like they shouldn't test systems because they won't have the appropriations to replace those systems in the event that they fail and they can't bring them back up.

So what we're doing from the project office standpoint is gathering that information, we're asking them to inventory their embedded systems on a spreadsheet, provide us with that information. If they feel like they're going to need emergency appropriations during the 1999 sessions, to let us know, as well as the systems will have to be fixed in the 2000–2001 biennium.

From the project office's prospective, though, we talk on a monthly basis with about 22 other State's project offices. We recently attended a national Governor's association conference that Mr. Toskin (phonetic) gave a presentation, and we asked him if we could have one of his staff join in on his monthly conference calls, to which he agreed. And so we're going to include the Federal Government in our monthly conference calls. But collectively, we have started addressing embedded systems through these monthly conference calls. We're trying to get embedded systems coordinators from environmental, transportation and correction together on our own little set of monthly conference calls.

What the State of Texas is going to try to do is to organize a national conference specifically for correctional embedded systems coordinators because the biggest question right now is they're finding embedded systems that they don't know what to inventory and they don't know how to test them. And so we're trying to bring some representatives, embedded systems experts in to focus specifically on corrections. Especially the State of Texas has quite a number of correctional facilities.

Mr. HORN. Mr. Willemssen, you are our expert witness at all these hearings on behalf of the General Accounting Office, which is part of our legislative branch. What is your reaction from what you have heard on some of these issues?

Mr. WILLEMSSEN. Well, one, I would say on the embedded chips issue, it's imperative to point out because there are hundreds of millions of these chips all over the place. It's not realistic to think that each of the localities or States can fix all of those. So we continue to go back to our favorite line. We have to focus on priorities, and from the standpoint of the organizations represented here, infrastructure concerns should be paramount—power, water, and

telecommunications. I haven't heard water and waste water mentioned too much here. As it pertains to embedded chips, that would be one area that I'd be particularly interested in focusing on if I were in the shoes of the individuals here.

Mr. HORN. In emergency facilities and hospitals and so forth?

Mr. WILLEMSSEN. Exactly. And there is some good work being done at the Federal level in the area of biomedical devices. I think you see the Veteran's Health Administration is out front on that. They've got some good data that they hope to make public fairly soon on vendors' complaints of what is compliant and what isn't. So we hope to see that out pretty soon.

The other thing that was mentioned, that was touched on, here on embedded chips is, it's not only difficult to test embedded chips, in some cases it's essentially impossible. The way around that is you have to work as closely as you can with the original manufacturer and the engineering specs, to understand how that chip was put together. And then taking that one step further, if that manufacturer is unwilling to provide that kind of information, especially if you get close to the turn of the century, we've got to look at using competitive pressures and seeing if we have other vendors who are willing to supply goods. You've got to use some of that competitive pressure. I predict that you're going to see more and more of that as we get near the turn of the century, that more vendors and more manufacturers are going to be boasting that our products are compliant, and we'll certify to that, and hopefully that will shift the tide here to one where many manufacturers don't want to share information to where more and more may share information.

Speaking a little more locally, there's one item here that was mentioned that I think could serve as a nationwide practice, and that's what I never really heard before, what the city of Lubbock is planning in terms of this September and really alerting the citizens who are there, and doing a real test scenario of what could happen in the year 2000. I think that's something that should be surfaced at a national level, something that could be used in other communities. It's again not to raise the paranoia level, but it's good to have some level of concern right now rather than a high level of panic at the end of 1999. I think that kind of scenario that Mr. Lewis laid out stretched that balance.

Mr. HORN. Just for the record at this point, Mr. Lewis, how will that work? Will you pick a day in September?

Mr. LEWIS. Yes, but I can't tell you that. Yes, we have. Some of the key management staff knows about it, and it's all available. It's in the middle of the week. It's going to be after 8 o'clock, so we're going to mess up prime television.

Mr. HORN. 8 a.m. or 8 p.m.?

Mr. LEWIS. 8 p.m. (Inaudible) managing directors and make sure that they're available to the Emergency Operation Center on that evening. And then we'll not actually be employing people out in the field to do the manual switching electric switches and doing the water, but we'll soon lay those dispatches from the office, and then our control group will grade us on how well we do. This is the same members of the control group that work together in Ennisberg apparently earlier this year in March, that's the training. So they did

lots of scenarios. They were called the bad guys and girls of the group, and they made everybody's lives miserable.

Last week one of the police officers who attended the training and is the key person in this control group attended the hearings of the State road tour in Lubbock, and I figured that he learned some new things to taunt us with. So I think we're going to get a good test, and we hope to do subsequent followups on that. And hopefully in the meetings we'll see how they work. Initially, we won't do that. We're going to be making them play the role that they are designed to play in this, which is being in a central location in the same building, two floors up. We'll have the person who's responsible for public information going up and down to give them the information as it is available.

And one of the members, actually two of the members from the control group, one from the written paper and one from the television station. So we have a full community line of cooperation in this planning effort and recovery effort. And I think a large part of that is because of the tornado experience in 1970. We had one radio station that had to generate that time to go on the air the whole time after that. And that was the key method used to communicate to police and emergency people where things work, and it was over the radio just like you and I can turn on if we have a radio with batteries nowadays.

Mr. HORN. That is an excellent suggestion. Along the line of your discussions with Mr. Toskin, the present coordinator here, has there been a talk of an exchange in the structure and organization where what all of you are picking up and dealing with manufacturers at the State level and city level, the national level, we don't have to repeat that all, and we could share it? Is that being discussed with the Federal Government on this?

Ms. PORTERFIELD. We plan to use the data bases if we can, but different agencies are working to provide veterans administration, biomedical devices and (inaudible) so we use that information. A number of entities have asked me "Can we share that kind of information?" As a project office director, my concern is that are you willing to take on the risks or the liabilities of using the information someone else is giving you to expedite your process because especially with embedded chips if they're integrated into a system, just because that one chip works in one place, it may not work throughout the system. So we wrestle with that, everyone's looking for shortcuts, they're looking for shortcuts in contingency planning as well. Can we take your contingency plan and use that? We're recommending that they don't. So if you have some ideas, I would be more happy to take those back.

Mr. HORN. Well, if you can do this piece by piece, let's say, Dallas County. What is the county?

Ms. SHAW. City of Dallas?

Mr. HORN. City of Dallas. What about the county (inaudible)? It seems to me you all could decide if you would get use out of each other's doing, you escalate that up. The State of Texas is going to have 250 counties, as I remember.

Ms. PORTERFIELD. 254.

Mr. HORN. 254. Anyhow, that seems to be another thing that could be done is the county. Some of them are very small, and they obviously need some help.

Ms. PORTERFIELD. Yes, sir. One of the things that we would try to do is the guidebook, again, to give them resources, give them websites of cities and year 2000 efforts. There are a number of counties, though, like I said, that are very small, may not have a dedicated information technology staff. It might be the county secretary. The county government seems to be—the city government seems to be a little ahead of the county government.

The one reason, again, that we did the guidebook is because there's no one entity responsible for local government, and anything that we do with local government is a cooperative effort. The road shows were outside the scope of the project office, but the government's office, and the project office felt like it was important enough to get the message out to cities and counties that we go ahead and do that. So we're happy to exchange information with them to the extent possible, we'll take information. I try to provide a clear in-house to the extent that I can. I only have five analysts on my staff, but at least I can provide them the names of people with other cities and other counties so that they can network together.

Mr. HORN. Yes. Ms. Shaw.

Ms. SHAW. If I can make a comment, about the things some of the manufacturers are doing right now for instance. Motorola publishes on the Internet a list of their most popular radio systems and their radio styles, and they will indicate on there by their style number if it is year 2000 compliant or not, and that's very helpful.

It occurred to me that we might have used that in sharing information ourselves, for instance, the State sponsors some type of Internet website. For instance, if I listed all the areas where I found embedded chips, it might send a message to someone else "Hey, let me check and see what Dallas found, let's go look at ours." That type of sharing information, I can see would be helpful to all of us. Basically, I think that would take a sponsoring agency.

Mr. HORN. Can you give me an idea of what organizing figure you think?

Ms. SHAW. State of Texas.

Mr. SESSIONS. Or, it may be a vendor.

Ms. SHAW. Right. A vendor would be a good——

Mr. SESSIONS. Sometime ago in a prior life I was responsible for 911 in Texas, and there are common—plant was a common equipment, if you could find a vendor that's common in (inaudible).

Mr. HORN. I just have one or two more questions, and counsel will look and see if we have anything else. We might send you a letter afterwards and just put it in the record at this point if we miss something. But what I wanted to get to is the recruitment of people, and this gets broader in the year 2000. That is going to be over right or wrong, whatever happens.

One of the things that concerns me we have before Congress both the Senate and the House legislation to permit more visas to bring programmers from abroad. Frankly, I was outraged by this. And my solution would be, and I mentioned this to President Poole of this fine campus, that in my case I called out the chancellor of the

overall California system. We have about 570 community colleges in the State. And the president hit a couple of key ones, and I said "What are you people doing?" I mean, you should be sitting down with Silicon Valley, and we got Silicon Valley there, but so does Dallas. You have got a number of computer firms here where we spend a lot of our year in Washington, DC. We are looking across the Fairfax County and Silicon Valley east. And it seems to me the community colleges in particular whose purpose was to provide not just a liberal arts education, but a vocational arts education and occupational courses based on the industry and the community. And it just seems to me we should have both universities, but particularly communities and colleges working with the computer operations and industry in the State and helping to train people. These are $40,000 and $50,000 jobs. These are, you know, something that not too many people have in this society.

And I guess at the State level, I would ask you, Ms. Porterfield, to what degree is the State trying to say to either community colleges or colleges generally "You have a role here, and why are we importing thousands of people that are educated abroad when we could still bring a lot of people that haven't got a decent vocational education into work, in particular states?" Now, this is the long-run picture of "Do we have the computers to still be No. 1 in the world?" What is your thinking on this? Has there been any discussion with the Governor? Do we have a secretary of education in this State or public instruction?

Ms. PORTERFIELD. The institutions of higher education have their own boards——

Mr. HORN. Right.

Ms. PORTERFIELD [continuing]. And presidents. So in terms of dealing with them, if you go through the Governor——

Mr. HORN. The Governor appoints those boards and is probably president of one or two of them.

Ms. PORTERFIELD. The representative is with me here today. We haven't addressed that specifically with community colleges about providing for computer programmers in the future. (Inaudible) community colleges in everything that was sent out to our State agencies and universities on the year 2000. The community colleges are again outside of the scope of the project office, so unfortunately I really can't address that for you.

Mr. HORN. I just want to plant the seed here because we, again, when you let $50,000 jobs go by and we don't do it, and then suddenly we are in a panic and we are bringing in people from abroad, and that is what gets to me because I just know a heck of a lot of talented people. And if we started getting some decent technical courses in high schools of America, working your way through community colleges, they would have a good future ahead of them.

The other thing, having been a university president, I know that the State never has enough money to get you the latest sort of computer generation so you can use it to educate the people you are turning out and bachelor of science and engineering, whatever it is, computer engineering. The money is never there. And if they realized in Silicon Valleys of this country that they can come to the table with equipment that you practice on and work on, that is two generations ahead of what most States have in their college labora-

tories right now. I don't know about community colleges, but you never have enough money for that type of equipment. And if they see an end product that helps them, I would think they would come to the table, and it's, you know, the capital cost of doing business.

I remember having taken typing in high school, the best course I ever took as far as I am concerned, and Royal gave the school all of their typewriters. Guess what I bought? When I was a student, I wanted to buy my typewriter, I bought a Royal. And somebody else might have Smith Corona Marchers (phonetic) or something. That is where it is mutually important to do this.

Ms. PORTERFIELD. I think that it's also important—we've wrestled with that in our State agencies who sometimes are not on the leading edge of technology of losing people to the private sector that want to go and work on computer technology and get out of the old mainframe programming. So I think that you're right. I think that you're looking at the newer technology providing for the schools would be a good idea. If I could also go ahead and make a pitch, I would also like to see that we pay enough to keep our subject matter experts so that when we get ready to test those programs and changes that we have the expertise to do that as well.

Mr. HORN. Our first witness is the Gardner Group when we started this awareness session 2½ years ago, pointed out to us that people will start panicking in 1999, and the industry will be hurriedly buying off your people. One top executive in the Federal Government told me a couple of months ago he was losing people right and left after he trained them because private industries, States, other entities, nonprofits all said "Where are we going to turn to get these people that we need to understand this?"

For example, the teaching of Cobol, which I remember rather vividly in the 60's, those people have generally retired from the Federal Government. And now the first home management, which is the old Civil Service Commission, has given a waiver. You can bring them back out of retirement, they get a very good contract. And I don't know if Dallas, Ms. Shaw, had Cobol in some of their programs. The Pentagon is filled with them. They don't even know what they got, they don't even know the instructions. They can't find them on a lot of things. So they need the skills of these people to try and detangle how this machine runs. It's sort of just magic. You put it in at one end, it comes out at the other. The people did all that 30 years ago and retired. So I take it probably the retirement structure of the city of Dallas was that they thought about it, there was no use of going out and making a fast buck when it was not in their long-range interest.

Ms. SHAW. We had utilized a lot of retirees, the people who actually wrote the programs years ago. We also had gotten a ruling from our attorney's office as far as paying overtime, paying overtime to exempt employees. We had some favorable rulings, I think, from our attorneys about ways to do that. Some programmers were exempt and some were not depending on what level they were at. But many of them don't mind working the long hours if they get paid extra, but if you give them extra time off, where are they going to take it in the next 2 years? (Inaudible) So we've done that.

Mr. HORN. I bet their spouses thought that way, too.

Ms. SHAW. And also using a service incentive plan that we've had in service or a performance incentive plan that we've had in place for a long time. What we've done is sort of celebrate that plan in order to give them a bonus, and encourage them to stick with us a little bit longer, at the end of each quarter. And then at the end, after the first quarter, the year 2000, it would be a bigger bonus for those who stuck it out. So we think that's going to work. We have had a lot of turnovers early on in the process, and we've kind of slowed that down, and we think that needs some help.

Mr. HORN. My last question is, do any of you have a thought that were too dumb on my part to answer and elicit it that you think should be added to the dialog that we haven't touched? Do you have any further thoughts, Ms. Brand? Mr. Lewis, do you have any further thoughts?

Mr. LEWIS. I can go on with more than you want to hear today with examples, but I think you've heard a couple. We have more examples. People will look to people in the organization who are the problem solvers. They're going to find people to solve these problems. It may not be by fixing the hardware and software. It may be by dealing without them. (Inaudible) and our traffic signals. Those are really a wonderful, convenient tool. If they don't work, we have to dig a hole in the ground, and that's slow, and that's not something we're accustomed to doing all the time now, but we have to go back to that. So default is manual labor once again.

Mr. HORN. Well, you are absolutely right. Most organizations finally find out what the people think when they bring in outside consultants. And if the bosses just walk around and keep an ear open and wouldn't fire people if they told them the bad news, why, these organizations would work better. So I commend you for that. Anything else, Ms. Shaw?

Ms. SHAW. (Inaudible). Many people will be changing out computers and changing out software this next year to try to solve the problem. In some cases that's going to be a good way to go. A lot of the manufacturers are going to be flooding the market with computers and software, and the reason they're so cheap is they're not year 2000 compliant. So you're going to see a lot of that out there. And if you want to play games and let the kids learn, it's great. But as far as business, we need to be sure we ask them and make sure they're compliant.

Mr. HORN. Well, you need it in writing. I wouldn't trust one of them. I have seen this 20 years ago in terms of what people say computers will do, and they don't. And you just have to grin and bear it if you haven't been very careful in tying them down with the retribution legally by saying "We guarantee this product," and then you need to run some tests on it to make sure. Anything else, Ms. Porterfield?

Ms. PORTERFIELD. You brought up earlier about litigation, implications of litigation. Two of the things that we're looking at, and we're about to go into sessions in January 1999. What we want to do is train our—at least provide some kind of training for the staffers, to make them aware of the impact of legislation on the year 2000 projects being completed. Not necessarily year 2000 specific legislations, but any legislations that could impact an agency's abil-

ity to complete the year 2000 mark. We spoke about that to Mr. Toskin at the National Governors Association Conference. It was brought up "What are we going to do about welfare reform, and how is that going to impact the State agencies being able to complete all their year 2000 projects. So that might be something in terms of legislation and litigation that we might want to consider if the State agencies can't complete their year 2000 efforts, what kind of exposure does that leave for the States?

The other thing is that our attorney general's office is working for the general council for the Department of Information Resources on pursuing alternative dispute resolutions and mediation instead of litigation. And so we're going to be looking at that in the future since the focus really needs to be on getting the job done, not necessarily on how much we're going to recover if someone else doesn't get it done.

Mr. HORN. Any other thoughts? Thank you, Mr. Chairman.

Mr. SESSIONS. I find each one of you very exciting, and I will tell you I think you are an asset to your individual organizations. And I intend to followup with each one of your organizations, at the highest level of your organizations, not only to thank for your performance here today, but also to let them know that what you are doing, if they will share that, it will be very helpful to each and every one of us.

What we are attempting to do is to make sure we talk about this issue so that we don't scare people, so that we are forthright in discussing those issues so that they are aware of them and people can utilize their brain to try and think through it. I think you all are fine examples of what we are attempting to do, and I want to thank you for your time and for your testimony today. Mr. Brady, anything further?

Mr. BRADY. I was just going to ask Ms. Porterfield, on a quarterly basis, would the city be able to report back their testing and relationship with the Federal Government? If you see information of interest, if you could make sure this subcommittee and members of the Texas delegation receive a copy of that progress or lack thereof. Perhaps we could be of assistance, communications with which can be a big key to solving this problem in the State of Texas, its size, getting some agencies reporting to you monthly, if not quarterly, it could reveal quite a bit of information that could be helpful.

Ms. PORTERFIELD. Yes, sir. I'll be happy to do that.

Mr. SESSIONS. I have also given testimony down in Austin and advised Chairman Cubiac (phonetic) that if they were having problems with the Federal Government in that regard, they could come through me because we have the ability to work with that.

I would like to thank this first panel and appreciate your time and your interest in what we are doing for the citizens of Texas in this country. Thank you. We will wait for just a minute and let this first panel clear out, and we will go to panel No. 2.

Mr. SESSIONS. You are here today to take an oath. So if you will please rise, raise your right hands.

[Witnesses sworn.]

Mr. SESSIONS. Would you please be seated? For purposes of the record, it should be noted that both persons on the panel have an-

swered in the affirmative. Today we have on panel two Mr. Eric Schmitt, who is the communications support manager for Texas Utilities, Mr. John Mauldin, who is a partner with Profuture Financial Group. I appreciate both of you being here with us this afternoon. You have had an opportunity to hear panel one, and you are still awake and alive, and so we are very excited about you being here. Mr. Schmitt, if you will please lead.

STATEMENTS OF ERIC SCHMITT, COMMUNICATIONS SUPPORT MANAGER, TEXAS UTILITIES; AND JOHN MAULDIN, PARTNER, PROFUTURES FINANCIAL GROUP

Mr. SCHMITT. Thank you. Good afternoon, and thank you, Chairman Horn, Vice-Chairman Sessions, and Congressman Brady for allowing me to come before you to address the house subcommittee. I also would like to thank Vice-Chairman Sessions for allowing us to be in his district and to welcome all of you to our service area.

I am the communications support manager and a member of the year 2000 project management office for Texas Utilities. Texas Utilities Co. is an investor-owned holding company for energy service companies engaged in domestic and international electric and natural gas utility services, energy marketing, telecommunications, and other energy-related services. TU Electric/Long Star Gas, Texas Utilities' principal subsidiary, is an electric and gas utility serving approximately 2.9 million customers or a total population of 6 million people, about one-third the population of Texas.

TU Electric/Lone Star Gas provides essential services, which are critical to economic growth and prosperity of Texas. We understand that uninterrupted electric and gas service is vital to our customers, and we are focused on maintaining quality service and reliability 24 hours a day, 7 days a week. Consequently, we take the year 2000 issue very seriously and have been working steadily since mid-1996. The overall objective of our program is to prevent business interruptions as a consequence of year 2000.

A program management office at Texas Utilities, sponsored by a corporate executive, is coordinating all aspects of the year 2000 response to make sure the company is year 2000 compliant. Our program ensures that the required changes will be made and verified so that the company and its customers make a seamless transition into the next millennium. The program management office is responsible for all aspects of the Texas Utilities' year 2000 program. The year 2000 program manager directs the activities of a management team composed of information technology, procurement, quality assurance, and communications managers. The team meets monthly to status the project and reports routinely to senior management.

Our year 2000 program is separated into three major projects: Information technology or I/T corporate applications, I/T infrastructure and non-I/T equipment and applications. I would like to address each of these projects individually.

First, the corporate applications project, initiated in mid-1996, addresses mainframe and client server applications. These applications, typically referred to as legacy systems, have been used throughout Texas Utilities and include customer, employee, financial, procurement, warehousing, and many other information sys-

tems. The number of mainframe applications we are examining is approximately 300, containing about 113 million lines of code. This code is composed of 291 software products purchased from 94 different vendors. Additionally, this project is evaluating approximately 300 client server applications. About 25 full-time programmers and analysts are currently working on this project. This group of people evaluates, tests, converts—if necessary—and retests our various application modules before returning them to production as compliant products. The group is also responsible for determining vendor-supplied application compliance.

Project planning and assessment were completed in August 1996. Software conversion, as appropriate, began in September 1996 and is still in progress with an estimated completion date of December of this year. Testing is also in progress and will continue through 1998 with full integrated testing and implementation in 1999. Overall, the project is on schedule and about 25 percent of the inventoried applications are compliant.

Our second project, I/T infrastructure, covers all hardware supported by the information technology function and the desktop applications, which are defined within the I/T standards. The hardware is comprised of mainframe computers, servers, desktop and laptop PC's, network systems, and telecommunications equipment. Software includes both operating systems and desktop applications. Approximately 23,000 items have been inventoried, including 100 pieces considered mainframe equipment, approximately 250 servers, and roughly 11,000 PC's. Thirty-five full-time technicians and analysts are dedicated to this project.

Initial equipment assessments have indicated that a relatively low percentage of this hardware is noncompliant. A detailed assessment phase is in progress, which involves obtaining compliance certifications from manufacturers and, in some cases, doing component assessment tests. Assessment activities are scheduled for completion by the end of this summer, and work on infrastructure should be complete by the end of this year. Integrated testing of corporate application systems and infrastructure is planned in 1999.

Our third project, non-I/T equipment and applications, addresses hardware and software not supported by the I/T organization. These systems include items that have traditionally been procured, developed and maintained by individual business unit organizations. Typically heavily dependent on microprocessor based technology, these systems cover a variety of products such as power plant control and monitoring systems, gas and electrical distribution networks, and our transmission system. Also being addressed by this project are protective devices, security systems, building facilities such as elevator HVAC systems and lighting and business unit developed applications. Inventory, which is currently at about 11,000 items, and assessment activities have been in progress since last year, most conversion work is anticipated to be complete later this year. Equipment outage schedules will impact assessment and conversion, causing some work to extend into 1999.

We have tested a number of systems, and so far have found very few instances where a system functionally was affected. We are

continuing to test mission critical systems and have an objective to complete as much of this critical work as possible in 1998.

In summary, Texas Utilities has an extensive, thorough year 2000 program initiated over 2 years ago, involving well over 100 engineers, technicians and managers working full-time and part-time, with an estimated overall project cost of between $28 and $31 million. We have an aggressive schedule that allows for sufficient time for testing and implementation. More than 90 percent of inventory and assessment activities are complete and about 25 percent of our testing. So far no significant problems have surfaced, but a large amount of work is in front of us. We are confident that we will be ready for January 1, 2000. This concludes my statement.

[The prepared statement of Mr. Schmitt follows:]

Eric Schmitt
Communications Support Manager,
Texas Utilities

Year 2000 Congressional Hearing

Monday, August 17, 1998 - 2:00 p.m.
Room C-135 Campus Center
Eastfield College
3737 Motley Drive
Mesquite, TX 75150

Good afternoon and thank you Chairman Horn, Vice-Chairman Sessions and Congressman Brady for allowing me to come before you today to address the House Subcommittee. I also would like to thank Vice Chairman Sessions for allowing us to be in his district and to welcome all of you to our service area. My name is Eric Schmitt, and I am the Communications Support Manager and a member of the Year 2000 Project Management Office for Texas Utilities. My address is 1601 Bryan Street, Dallas, Texas, 75201. Texas Utilities Company is an investor-owned holding company for energy service companies engaged in domestic and international electric and natural gas utility services, energy marketing, telecommunications, and other energy-related services. **TU Electric/Lone Star Gas**, Texas Utilities' principal SUBSIDIARY is an electric and gas utility serving approximately 2.9 million customers, or a total population of 6 million people -- about one-third the population of Texas.

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In summary: Texas Utilities' has an extensive, thorough Year 2000 Program, initiated over two years ago, involving well over 100 engineers, technicians and managers working full-time and part-time, with an estimated overall project cost of between $28 and $31 million. We have an aggressive schedule that allows for sufficient time for testing and implementation. More than 90 percent of inventory and assessment activities are complete and about 25 percent of our testing. So far, no significant problems have surfaced, but a large amount of work is in front of us. We are confident that we will be ready for January 1, 2000.

Mr. MAULDIN. Mr. Chairman, Vice-Chairman and distinguished members of the subcommittee. My name is John Mauldin. I am a partner in ProFutures Financial Group, Inc., a money management firm with over 3,000 clients. I appreciate the opportunity to testify before this committee on vital issues of full disclosures of the year 2000 issues. As background, I began to research the implications of the year 2000 problems on investments and the economy in early 1997. I am now of the opinion that there is a high likelihood of a recession and other economic problems stemming directly from the year 2000 crisis.

We do not know the full extent of the financial implications of the year 2000 problem. In my opinion, it is not a given that the recession has to be a severe one if, and I make that a big if, industry and governments worldwide decide to make a full court press on tackling the issue in the approximately 500 days remaining until January 1, 2000. However, the efforts so far, from what evidence we have, is it is possible that the economic consequences could be severe. Part of the problem, I believe, in keeping the effort from reaching maximum efficiency is the lack of full disclosure by industry and government, and the fear of legal liability upon the part of industry and business.

In my opinion, it is imperative that Congress enact legislation on this topic prior to adjournment in October. It is no longer a question of whether the year 2000 problem will cause a problem to the U.S. economy, but simply to what extent. To delay needed legislation is to potentially increase the severity of the problem. Delay would mean the loss of significant amounts of moneys to investors and businesses. And frankly, if such legislation is carried over to the 106th Congress, it might be too late.

There are three separate issues in which properly constructed legislation would be of major benefit. No. 1. The first issue is a matter of legal accountability to shareholders. Investors have not been given anywhere near adequate disclosure of Y2K issues by public companies. The last round of filings were characteristically marked by legalistic obfuscation, denials, happy talk and/or simply ignoring the issue altogether.

In response and to their credit the SEC has issued new guidelines which go a long way toward full disclosure. Briefly the SEC, in an interpretive ruling, requires companies to detail: A, the company's state of readiness; B, the cost to address the company's year 2000 issues; C, the risks of the company's year 2000 issues; and D, the company's contingency plans.

In my opinion, and what I believe will be the opinion of many investment advisors, this is not enough. The issue is simple. Shareholders are the owners of the company. They deserve full and complete disclosure of all material facts about a company in order to be informed investors. And while companies can and do state that the amount of money they are spending on Y2K issues is not material, the costs of not being compliant are far more significant than the money spent to fix the problem. The SEC ruling leaves open the possibility for companies to not disclose issues or to selectively decide what to disclose and how to spin their disclosures.

Further, there seems to be the suggestions from some quarters as to the appropriateness of the SEC interpretive ruling, leaving

open the possibility that confrontational companies can decide the risks of complying outweigh the risks of not complying.

Companies should not only be required to disclose the material as outlined above, but should also file quarterly progress reports, assessments of risk from their vendors and customers and an analysis of any particular litigation issues facing the company.

These requirements should have the force of law. They should apply across the board to all publicly held companies. If the company feels that it is compliant and has no year 2000 issues, it should say so rather than being allowed to not file. This is not a draconian as it may sound. We routinely require companies to post financial data to investors all manner of material deemed relevant for an informed investor. I can think of no matter more crucial to the survivability of a company than the state of its year 2000 compliance. The byword for disclosure should be more rather than less, sooner rather than later, to borrow a popular phrase.

No. 2, I have attended and/or spoken at numerous Y2K conferences. I routinely get conference brochures on legal forums, touting the potential litigation possibilities surrounding the year 2000 issue. In light of the fact that companies seem to be swimming into shark-infested year 2000 legal waters, I can understand the reluctance they have to reveal their true compliance status or to share information with their vendors, customers and/or industry peers about Y2K issues.

The litigation costs of the year 2000 problem routinely are estimated by respected authorities to be almost double the actual costs of fixing the computers, in the neighborhood of $1 trillion. The fear for becoming prey for litigation happy lawyers is a significant drag upon society's efforts to fix the year 2000 problem.

To that end legislation, which limits the liability of companies for truthful disclosures about Y2K issues, is needed. It is not enough to suggest that disclaimers would be sufficient. Few legal authorities would counsel their clients that they would have no exposure if they use disclaimers. In fact, the opposite might be true.

In the light of the nature of that crisis, we must recognize the urgent need for full and unfettered cooperation between business. This can only happen if the fear of litigation is removed. And the simple fact is that full disclosure and industry-wide cooperation will, in fact, increase the likelihood of compliance and Y2K readiness. Our concern must focus on getting through the year 2000 with the least possible economic consequences rather than allowing a legal free-for-all. Congressman Dreier's H.R. 4455 is a start toward accomplishing this, but we must go further along the lines of H.R. 4240, also sponsored by Congressman Dreier. I understand the theoretical need for compromise, finding a middle ground, and the normal political process, but this is not a normal problem. It requires the full measure of disclosure and protection afforded in the latter bill.

And finally, government must be more forthcoming. This committee is to be congratulated on its efforts to publicize the state of readiness of the various government agencies, but we must go further. We must level with the American people. If an agency is not going to be ready in time, it must begin now to explain what its contingency plans are for delivering its services.. This is especially

true for those agencies and programs which perform vital functions or services such as the FAA, Medicare or Social Security.

And that disclosure must be at all levels of government. We all know that the level of readiness varies widely among the States. Some of the States, as you heard in your testimony, are simply just not going to be ready (inaudible). It certainly appears today that they're not. Those people in that State deserve to know what's going on. But these States are in many cases responsible for the delivery of federally mandated or funded services. The American people have a right to know what the true situation is.

We need legislation to mandate full disclosure with no wiggle room or bureaucratic unrevealing legal language, the acronym for which is BULL. This includes information collected by the various regulatory agencies on banks, financial services firms, utilities and other public regulated entities. These basic infrastructure services are key to our ability to function as a country. We need to know what to expect from these sectors as soon as possible.

For instance, the fed must begin releasing the names of banks that are behind in their compliance program. Depositors and businessmen which depend upon these banks for their operations must know as far in advance as possible of potential problems. Waiting until January 2000 to find out your bank cannot keep a loan commitment is not acceptable. While I am aware that this will place a severe handicap on banks that are not compliant and are not expected to be, I think it is more appropriate for the bank to suffer the consequences of their bad management than for depositors, creditors and taxpayers to suffer losses or hardships.

Further, the potential for damage to the banking system as a result of nondisclosure is severe. In a recent poll 38 percent of executives surveyed indicated that they are likely to take significant sums out of their bank accounts due to their concerns over the Y2K compliance of their banks. If this survey is truly reflective of the sentiment of 38 percent of the American people, then this is a huge warning flag for our country. There is not enough cash available for even a small portion of the populace to have what would be considered a significant sum available for supposed contingencies, let alone 38 percent.

If a significant portion of the populace expressed their concern over the banking system by withdrawing extra cash, it could not only create a physical cash shortage, but would have a perhaps severe deflationary effect upon the economy as banks would have less money available for loans and might have to actually call in loans in order to meet margin requirements. The precedent for this is most recently seen in Texas during the S&L crisis as banks called in good loans in order to meet margin requirements, severely impacting many profitable local businesses. If this were to happen nationwide over a period of several months, it could create an intense demand for short-term cash, raising short-term rates above long-term rates or what is known as an inverted yield curve, which has been one of the most reliable predictors of recession.

Absent full and complete disclosure by the banks and the fed, it would not be an irrational thing for individuals to withdraw some extra insurance cash. Indeed, the poll indicates that significant numbers of sophisticated consumers are considering doing so. I be-

lieve it is incumbent upon Congress to mandate full disclosure by all depository institutions so that such a crisis may be avoided. If consumers are confident that they will have immediate and complete access to their cash, a cash run of the type described above is significantly less likely. Absent legislation, it is possible that we could push the U.S. economy into a level of recession that is completely unnecessary and avoidable with full disclosure.

Each of these issues must be dealt with in order to avoid serious problems. The first two issues, full disclosure of public corporations, and limiting liability for Y2K related disclosures must happen before Congress adjourns for the fall elections. The requirement for government disclosures, especially for banks, must happen soon thereafter. But government disclosure must happen soon. It should be a major priority. There is no reason or excuse for not being completely open about the extent of the year 2000 problem and plans of government agencies.

The American businessman, investors and consumers have a right to full disclosure. We need to know what we are facing as soon as possible so we can make plans to deal with whatever is going to happen. I expect the large majority of businesses to be ready. I expect the core infrastructure of this country will emerge with relatively few casualties. But it seems likely there will be some problems. Some of them are likely to be severe to the people dealing with them. We need to know now what the problems are so we can decide how to best deal with them. And this requires full disclosure from everyone. Thank you.

[The prepared statement of Mr. Mauldin follows:]

Mr. Chairman and Distinguished Members of the Subcommittee:

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Part of the problem, I believe, in keeping the effort from reaching maximum efficiency is the lack of full disclosure by industry and government and the fear of legal liability upon the part of industry and business.

In my opinion, it is imperative that Congress enact legislation on this topic prior to adjournment in October. It is no longer a question of whether the Year 2000 problem will cause a problem to the US economy, but simply to what extent. To delay needed legislation is to potentially increase the severity of the problem. Delay would mean the loss of significant amounts of money to investors and businesses. And frankly, if such legislation is carried over to the 106th Congress, it might be too late.

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Further, there seems to be the suggestions from some quarters as to the appropriateness of the SEC interpretive ruling, leaving open the possibility that confrontational companies can decide the risks of complying outweigh the risks of not complying.

Companies should not only be required to disclose the material as outlined above, but should also file quarterly progress reports, assessments of risk from their vendors and customers and an analysis of any particular litigation issues facing the company.

These requirements should have the force of law. They should apply across the board to all publicly held companies. If the company feels that it is compliant and has no Year 2000 issues, it should say so, rather than being allowed to not file. This is not as draconian as it may sound. We routinely require companies to post financial data and to provide to investors all manner of material deemed relevant for an informed investor. I can think of no matter more crucial to the survivability of a company than the state of its Year 2000 compliance.

The byword for disclosure should be more rather than less, sooner rather than later, to borrow a popular phrase.

#2. I have attended and or spoken at numerous Y2K conferences. I routinely get conference brochures on legal forums, touting the potential litigation possibilities surrounding the Year 2000 issue. In light of the fact that companies seem to be swimming into shark infested Year 2000 legal waters, I can understand the reluctance they have to reveal their true compliance status or to share information with their vendors, customers and/or industry peers about Y2K issues.

The litigation costs of the Year 2000 problem routinely are estimated by respected authorities to be almost double the actual costs of fixing the computers, in the neighborhood of $1 trillion dollars. The fear of becoming prey for litigation happy lawyers is a significant drag upon society's efforts to fix the Year 2000 problem.

To that end, legislation which limits the liability of companies for truthful disclosures about Y2K issues is needed. It is not enough to suggest that disclaimers would be sufficient. Few legal authorities would counsel their clients that they would have no exposure if they use

disclaimers. In fact, the opposite might be true.

In the light of the nature of this crisis, we must recognize the urgent need for full and unfettered cooperation between businesses. This can only happen if the fear of fear of litigation is removed. And the simple fact is that full disclosure and industry-wide cooperation will in fact increase the likelihood of compliance and Y2K readiness. Our concern must focus on getting through the Year 2000 with the least possible economic consequences rather than allowing a legal free-for-all. Congressman Dreier's HR 4455 is a start toward accomplishing this, but we must go further along the lines of HR 4240, also sponsored by Congressman Dreier. I understand the theoretical need for compromise, finding a middle ground, and the normal political process, but this is not a normal problem. It requires the full measure of disclosure and protection afforded in the latter bill.

#3. And finally, government must be more forth-coming. This committee is to be congratulated on its efforts to publicize the state of readiness of the various government agencies. But we must go further. We must level with the American people. If an agency is not going to be ready in time, it must begin now to explain what its contingency plans are for delivering its services. This is especially true for those agencies and programs which perform vital functions or services such as the FAA, medicare or Social Security.

And that disclosure must be at all levels of government. We all know that the level of readiness varies widely among the states. But these states are in many cases responsible for the delivery of federally mandated or funded services. The American people have a right to know what the true situation is.

We need legislation to mandate full disclosure with no wiggle room or Bureaucratic Unrevealing Legal Language (the acronym for which is BULL).

This includes information collected by the various regulatory agencies on banks, financial services firms, utilities and other public regulated entities. These basic infra-structure services are key to our ability to function as a country. We need to know what to expect from these sectors as soon as possible.

For instance, the Fed must begin releasing the names of banks which are behind in their compliance program. Depositors and businessmen which depend upon these banks for their operations must know as far in advance as possible of potential problems. Waiting until January of 2000 to find out your bank cannot keep a loan commitment is not acceptable. While I am aware that this will place a severe handicap on banks which are not compliant and are not expected to be, I think it is more appropriate for the bank to suffer the consequences of their bad management than for depositors, creditors and taxpayers to suffer losses or hardships.

Further, the potential for damage to the banking system as a result of non-disclosure is severe. In a recent poll, 38% of executives surveyed indicated they are likely to take significant sums out of their banks accounts due to their concerns over the Y2K compliance of their banks. If this survey is truly reflective of the sentiment of 38% of the American people, then this is a

huge warning flag for our country. There is not enough cash available for even a small portion of the populace to have what would be considered a significant sum available for supposed contingencies, let alone 38%.

If a significant portion of the populace expressed their concern over the banking system by withdrawing extra cash it could not only create a physical cash shortage, but would have a (perhaps severe) deflationary effect upon the economy as banks would have less money available for loans and might actually have to call in loans in order to meet margin requirements. The precedent for this is most recently seen in Texas during the S&L crisis as banks called in good loans in order to meet margin requirements, severely impacting many profitable local businesses. If this were to happen nationwide over a period of several months, it could create an intense demand for short term cash, raising short term rates above long term rates, or what is known as an inverted yield curve, which has been one of the most reliable economic predictors of recession.

Absent full and complete disclosure by the banks and the Fed, it would not be an irrational thing for individuals to withdraw some extra "insurance" cash. Indeed , the poll indicates that significant numbers of sophisticated consumers are considering doing so. I believe it is incumbent upon Congress to mandate full disclosure by all depository institutions so that such a crisis may be avoided. If a consumers are confident that they will have immediate and complete access to their cash, a "cash run" of the type described above is significantly less likely. Absent legislation, it is possible that we could push the US economy into a level of recession that is completely unnecessary and avoidable with full disclosure.

Each of these issues must be dealt with in order to avoid serious problems. The first two issues, full disclosure of public corporations, and limiting liability for Y2K related disclosures must happen before Congress adjourns for the fall elections. The requirement for government disclosures, especially for banks, must happen soon thereafter. But government disclosure MUST happen soon. It should be a major priority. There is no reason or excuse for not being completely open about the extent of the Year 2000 problem and plans of government agencies.

The American businessman, investors and consumers have a right to full disclosure. We need to know what we are facing as soon as possible so we can make plans to deal with whatever is going to happen. I expect the large majority of businesses to be ready. I expect the core infrastructure of this country will emerge with relatively few casualties. But it seems likely there will be some problems. Some of them are likely to be severe to the people dealing them. We need to know now what the problems are so we can decide how to best deal with them. And this requires full disclosure from everyone.

ProFutures, Inc.

SPECIAL REPORT

July 10, 1998

The Year 2000 Computer Problem:

Our Latest Analysis After Extensive Research And Interviews With Well-Known Experts In This Field

by
Gary D. Halbert
&
John F. Mauldin

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Introduction

by Gary Halbert

I first began to alert you about the Year 2000 computer problem, ***"Y2K,"*** or what some call the ***"Millennium Bug,"*** in late 1996. I have written about it numerous times in my newsletters, and we sent you our first **Special Report** including an extensive interview with my long-time friend and nationally known Y2K banking expert, Michael Curtiss, in January of this year. As I have maintained from the beginning, the Year 2000 computer problem is a very serious matter which will affect each and every one of us in various ways.

Since most older computers were programmed to read the year date as only two digits ('98 for 1998, for example), some will go bonkers when they begin to register '00 for the year 2000. They may think '00 is the year 1900 and simply shut down, causing widespread problems around the world. It is not as if this problem just cropped up in the last few years; in fact, computer programmers have known about this problem for thirty years or more. A massive effort is underway to reprogram old computers or replace them, as we will discuss in this Report. **The question is, will enough of the old computers be fixed in time to avert serious disruptions in the economy?**

It seems that every few days, there are reports in the media claiming that a new "fix" for the problem has been discovered. Yet, it is unlikely that any such "fix" would solve the problem for every computer platform and programming language. In addition, the "bug" is contained not only in software, but in many types of *chips* that make the computers run. In today's high tech world, these "embedded chips" go far beyond what we generally consider to be computers. Machinery, automobiles, business equipment, pacemakers, many of the appliances in your home contain and many other things we use have embedded chips that may stop working properly if they were made without considering the Year 2000 situation. Again, the question is, will enough of these problems be discovered and fixed in time to avert some serious disruptions in the economy?

The more immediate problem is that as information on Y2K has become more widely available, dozens of self-proclaimed experts have appeared in the print media and even more so on the Internet with all sorts of predictions of gloom-and-doom. Their common theme is that computers around the world, both in business and in governments, are going to crash in the last half of 1999 as we approach the end of the century. This, they promise, will lead to an economic catastrophe, the collapse of the banking system, the inability of governments to provide basic services and entitlement checks, societal chaos and riots and send Western civilization into a new "Dark Ages."

What we have to keep in mind is that many of these people have been predicting just such a crisis for decades. When I first entered the investment industry in 1975, some of the same people were predicting just such a crisis; only in those years, inflation was the culprit that was going to turn the United States into a "banana republic." A few years later, these same people promised that the nuclear arms race would be the crisis that set all of their gloom and doom forecasts into play. In more recent years, it has been the ballooning government deficits that were the demon.

Yet as you well know, none of these widely forecasted crises came to pass. The gloom and doom crowd is, however, very persistent. Despite the virtual end of inflation, the demise of the Soviet Union and the plunge in government deficits around the world, the gloom-and-doomers just can't give up. Now they have seized the Year 2000 computer problem as the next "sure thing" to pancake the U.S. and world economies and lead to a financial collapse and social chaos.

I suppose that some of these people really do fear the worst as a result of Y2K. But let me assure you that a lot of money is being made by promoting this latest crisis scenario, just as with previous crises promoted over the last 23 years that I know of personally. Unfortunately, hundreds of thousands of unknowing people are reading all the hype that appears in the "crisis" newsletters and on the Internet, and there is a near panic going on among a certain subset of the population.

We Have Spent A Bundle To Bring You The Real Story

For much of last year, there were no high-profile spokespersons to counter the gloom-and-doomers. In fact, the really knowledgeable experts have until recently been - as they should have been - totally immersed in solving the problem. They have not been, for the most part, speaking publicly, writing newsletters or chocking their Web sites with reams of seemingly credible articles designed to scare people. They have been working to avert the problem, God bless them.

As all the hype began to really gain momentum last year I gave my long-time partner, **John Mauldin**, the following assignment:

> **Go out and find out the real story on Y2K. Spend whatever you need to spend. Travel wherever you need to go. Attend whatever Y2K conferences you need to. Find out who the real experts are. Talk to them, interview them and come back with a realistic assessment of the Y2K problem so we can tell our clients.**

John loves to travel, attend conferences, talk to knowledgeable people and he was already very well informed on the Y2K problem. Carrying out my assignment was/is right up his alley. Since that time, John has traveled all over the country. He has attended numerous Y2K and related conferences where all sorts of experts and computer gurus gather. He has met extensively with and/or interviewed over 60 bona fide Y2K experts and hands-on technicians. John has since become somewhat of a Y2K expert himself and has been asked to speak at several upcoming conferences on the subject of how Y2K may affect the economy and the various investment markets.

What follows in this Special Report is a summary of the information John and I and our other sources have gathered. I must tell you, there is a tremendous amount of information available if one simply has the time and money to find it. **Putting it all together in a Report less than 100 pages or more in length has not been easy.** If this Report seems to jump around somewhat, it is because there is so much information to consider. What we have tried to do is give you the highlights.

The most important aspect of this Report is that we bring you reassuring evidence that there is a "middle ground" position on the likely effects of the Year 2000 problem. Y2K will not be nearly as bad as the gloom-and-doomers would have us believe, nor will it be a non-event as the naive forecasters seem to believe. As usual, the truth is not at either extreme.

At the end of John's assessment section which follows, I will offer my conclusions about Y2K at this point in time (beginning on page 24). I will also remind you of our new Web site, **www.2000wave.com**, where we have posted more extensive information and several of the interviews we have conducted, and will continue to post more information as it becomes available. Read on and stop often to think about it. We certainly have and will continue to.

Y2K: The Digital Recession

by John F. Mauldin

There is, in the opinion of many observers, a real reason to be concerned about the Year 2000 problem (Y2K) precipitating an economic recession and a bear market in stocks. In the following material, I will discuss the reasoning behind these concerns. I will also discuss what investors can do to take action to limit the losses from a Y2K induced downturn, and potentially profit from what I have coined **"The Digital Recession."**

Let's first of all put these concerns into a context.

At one end of the spectrum, Federal Reserve Governor Fred Kelly recently stated to a Congressional committee that the Fed's studies conclude that the Y2K problem is only a minor problem and will only affect the economy by a negative one/tenth of one percent. Notwithstanding the fact that the Fed has not been able to accurately predict the economy two years in advance even in normal times, it stretches one's imagination as to how they think they can predict with such a certainty only a small Y2K effect, especially when no one really knows the extent of the problem. In any event, the Fed's position is that the Y2K problem will have very little negative effect on the economy and presumably, our lives.

At the other end of the spectrum, there are dozens of alarmists who predict that Y2K will result in an economic and financial disaster which will result in worldwide chaos and the end of Western civilization as we know it. They predict a crisis which will affect virtually every area of our lives ranging from business and banking, to the food and water supply, to electricity and transportation, to health care and hospitals, and on and on. They believe that the government will virtually shut down and, in particular, won't be able to deliver welfare, Social Security and other entitlement payments.

These people believe you should quit your job, sell your home in the city, move to selected rural locations, take your money out of banks and financial institutions, liquidate your investments and stockpile food, guns, ammunition, batteries, survival goods and cash in the form of small bills, coins and gold. [Remember, some of these people have been saying virtually the same things for the last 20-25 years. Y2K is merely their *latest* crisis.]

As Gary Halbert has written previously, there is no question that Y2K is a serious problem. ***However, as I will discuss in this Report, we do <u>not</u> agree with either of the assessments above.*** The US and the rest of the world will survive the Y2K problem, but not without some serious disruptions and delays. **And not without a potentially severe recession.**

There are things we can all do to minimize the effects the Y2K problem will have on us. First among them is being well informed, which is our primary intent in this Report and others to follow. Second, we also believe there are things you can do to actually benefit from the coming computer problem, especially in the area of your business and your investments.

In this Report, I will summarize for you the findings of the hundreds of hours I have spent researching and analyzing the Y2K problem and the dozens of interviews I have conducted with bona-fide experts in this field. The information which follows is what I have concluded and believe <u>today</u> (summer 1998), and I emphasize that things are changing rapidly.

The Doomsday vs. Pollyanna Camps

As noted above, there are two widely divided camps when it comes to assessing how bad the Y2K problem will be. Some believe it will be a mere hiccup that will hardly be felt, while others believe it will be the end of Western civilization as we know it. For this discussion, I will refer to them as the ***Pollyanna*** and the ***Doomsday*** camps. Simply put, the crux of the argument from both camps on the edge of the Y2K debate is that *the division of labor is either the problem or the solution*. Keep that thought in mind as you read what follows.

Those who see an Apocalypse rightly point out that society is very inter-connected, and we so depend upon each other, that a major breakdown of the division of labor will either severely impair or collapse society. For example, if the banking system were to collapse, or if the utilities were to shut down, etc., we would clearly sink into an economic and social crisis that could take years, if not decades, from which to recover.

Their argument is that the systems are *so* complex, and time is *so* short, and there is so much ***more*** to do than can possibly be done, that there is ***no way*** the problem can be fixed in time. Even if *most* companies and services get their act together, the Doomsday camp contends that we are so interdependent that *most* is not good enough to keep economic civilization -- by today's standards -- intact. They argue that we depend on each other for food, power, jobs, basic goods, etc., etc. and a breakdown in the delivery systems which bring these necessities to our communities and to our doors would be a disaster of Biblical proportions, especially in the cities.

The Pollyanna camp replies that it is *precisely* the division of labor which will save us. Since it is in everyone's self-interest to make sure their jobs and businesses are secure and that their systems work, it seems reasonable to assume that the vast majority of people will do whatever it takes to be ready for January 1, 2000. For systems that are not ready, there will be work-arounds, contingency plans or "whatever it takes" in order to assure that customers are serviced and life goes on. Eventually, the systems will get fixed or replaced and things will get back to what we think of as normal. (Of course, the definition of "normal" today is radically different than 25 years ago.)

The Pollyanna camp further argues that if certain systems do break down, while inconvenient, it is not a prescription for disaster. If one company cannot deliver the goods, then we go to another one. Even if random utilities go down, it will only be for a relatively short time (hours, days, a month in the odd site) that someone would be without electricity. Plane schedules may become inconvenient, but they will run, etc., etc. While all these things are inconvenient, they are not the end of the world. In addition, many have pointed out that we are not as dependent upon software as we might think. For most people, computers are a convenience and not a necessity.

The Middle Ground: Disruptions, Delays & A Recession

The reality, as usual, is very likely somewhere in the middle. Yet since the two camps are at such extremes, the middle is a large territory. Even the middle could range from, at the far end, a serious recession, to at the other end, only some minor disruptions.

We are in the middle of the middle camp: we don't expect a breakdown of society, but neither do we believe Y2K will be a mere economic hiccup or non-event. Y2K is a serious problem, a recession is very likely, and it will affect every one of us in different ways.

I agree for the most part with **Dr. Ed Yardeni** (Chief Economist at Deutsche Bank) and others that there is a real likelihood of a potentially serious recession. I am calling this the **Digital Recession** (two digits, '00), because ***the Y2K problem will be the trigger that brings this recession about***. While there are other problems (Asian flu, etc.) which could produce a recession, the US economy is so strong that it might withstand these threats. But the Millennium Bug is not your run-of-the-mill problem, and it will most likely be serious enough to move us into a recession.

On what basis do I make this prediction? What both camps do (and what I do as well), is examine a wide variety of facts, data, assumptions, historical trends, etc. and try to extrapolate them into the future. I must admit that it is much easier to extrapolate to a negative hypothesis in this situation than a positive one. This is because so much of the data is either not re-assuring or simply down-right negative. Let me give you some examples along this line:

SEC Filings on Y2K Not Encouraging

1. ***Triaxsys Research*** (888-320-8882) released a study on April 21, 1998 which analyzed the required SEC filings of the 250 largest corporations including their Y2K status. The study revealed that 60% of the companies that supplied the pertinent information were still in the initial "assessment" phase. Further, the majority of the companies started late on Y2K and have not made that much progress. Of the $33 billion dollars they expect to spend on the problem, only 20% has been spent so far, which suggests they are only 20% completed. 45% of companies stated that they may suffer "adverse material impacts" due to incomplete Year 2000 projects. Over half the companies supplied *legalese*, boilerplate language, refusing to give investors very much to go on.

Experts Most Worried About Government Readiness

2. At a Y2K conference in late April, I did an informal survey of approximately 20 companies exhibiting at the conference. These were companies which sold software solutions and/or services for Y2K problems. My presumption was that because they deal with hundreds of companies on an intimate basis, they would be in a position to have a realistic idea as to what is really happening. And while any one person might have a bias as to the particular types of companies they service, I thought that a survey to the entire group would yield some insight. I asked three questions:

A. What percentage of the mission critical software of the largest US companies will be ready by January, 2000?

B. What percentage of the mission critical software of all US companies will be ready by January, 2000?

C. What percentage of the mission critical software of government entities will be ready by January, 2000?

The average answers were: A. 90% B. 75% C. 40%

It is interesting to note that even though most of the people I questioned acknowledged the lateness of large corporations getting into action (confirmed in the Triaxsys study), they still expected most large corporations to be 90% ready. These are the people who are actually doing the work for these corporations. The scary part is that they think only 40% of government software will be ready. Most of the people I interviewed, quite frankly, rolled their eyes when asked about

government preparedness. Bringing the overall number up to 40% was a significant number of people who said 50%, but were clearly trying to be generous or hopeful. Among those who actually do computer and related work for government agencies, the numbers were generally lower than 40%.

I conducted the same survey in early July at another conference. The overall numbers from the exhibitors were slightly lower, but expectations from the larger software companies which actually deal with the largest corporations were slightly higher and more optimistic. I conclude that the April above numbers are still a reasonable measure of sentiment among Y2K software vendors. Further testimony to this analysis is the fact that assessment software is still the largest selling item among the various Y2K fixes. By now we would have hoped it would be testing software!

Many Companies Just Beginning To Assess The Y2K Problem

3. At this same conference, a speaker asked some 350 people from a wide variety of companies where they were on Y2K preparedness. Over 80% raised their hands when asked if they were either just beginning their Y2K program or were in the initial "assessment" phase. Of course, you would expect a larger than normal number of companies just beginning to work on the problem to be at a conference of this type, but 80% was a little unnerving, even for the speaker. Only a few hands, less than five that I could see, were in the testing phase. We all hoped there would be more.

There are three basic phases to achieving Y2K compliance: assessment, conversion-remediation (actually changing the code) and testing. According to the experts, testing should be allotted the most time, but clearly, there are going to be a number of programs put back into service without adequate testing time.

Are There Sufficient Resources To Finish The Job on Time?

4. Nationally known Y2K expert, Bill Ulrich, has stated that one of his major concerns is the lack of resources available to finish the job in time. When companies begin to panic, they will go to outside consulting services for the code changes. Many computer consulting companies have begun stockpiling programmers, like temporary agencies, and are just waiting for a crush of Y2K related business. These "factories" (although they do not like to be called that, I am told) are currently operating at about 50% of capacity, on average. However, Ulrich notes that if you add up all the spare capacity among programmers, and then look at the amount of work to be done, there is only enough capacity to handle about 20-25% of the problem.

I confirmed this with a senior manager at one of the largest Y2K software consulting firms, with over 20 different software factories worldwide doing Y2K conversion. They are indeed operating well below capacity. When asked if he agreed with Ulrich, he thought it was not as bad, but said if there is not a rush within the next six months, it could get bad quickly.

Studies Give Federal Government Bad Grades on Y2K

5. There are numerous studies showing how unprepared the various government agencies are. The general consensus is that state and local governments are the worst, but hard facts are very difficult to come by. Congressman Steve Horn's House Subcommittee on Government Management, Information, and Technology is as close to a watchdog as we have. Congressman Horn's latest grades (as of June 2, 1998) are not encouraging. There are 10 agencies with grades of "D" or "F," many of which affect the average citizen such as the Departments of Health and Human

Services (Medicare, Medicaid, welfare), Agriculture food stamps), Transportation (planes and air traffic control), Defense, Education, State, Energy and Justice. These are agencies which are not expected to be ready until 2000 or after. Many others will not have their software ready for testing (the most critical phase) until late in 1999. In a recent Office of Management and Budget report, the various agencies decided that almost 10% of the programs they had originally classified as "mission critical" (must be fixed) are now no longer mission critical. In any event, only 35% of these programs were ready as of March 4th, up from only 29% last November. At this rate, they will be lucky to get to 70% ready by late 1999, and that would be with little or no testing time.

[Now, of course, of the roughly 7800 mission critical programs, many are undoubtedly from the Departments of Commerce, Education and Labor. Some are probably from those 'socially necessary' agencies like the National Endowment for the Arts, etc. It is so tempting to ask how *anything* could be mission critical at those agencies, but that is a another story for another report!]

So what agencies are the most at risk? Horn's congressional report says the five that are most at risk are the Departments of Education, Transportation, Health and Human Services (HHS), Energy and the US Agency for International Development. There are also problems at the Federal Emergency Management Agency, the Treasury and there are serious concerns about the Defense Department. The report does note that the IRS seems to be coming along well on Y2K, in spite of all the skeptics. I interviewed a senior official at the IRS who says they will be ready for Y2K, and that interview is posted on our new Web site (see address below). It seems ironic that the one agency which may end up compliant is the agency which TAKES our money! Wouldn't you know it?

The FAA, which had less than 7% of its software ready in March has 40 old IBM 3083 computers, which IBM has repeatedly told them (as early as 1996) are at serious risk in a year 2000 environment. IBM has told the FAA they will not maintain them after 1/1/2000. It is altogether unclear what parts of HHS are at risk. Since most of the welfare checks are sent out by the states, it is not clear which services are in jeopardy and what, if any, contingency plans have been developed.

Of all the many criticisms which can be leveled at the various government agencies, the most damning, in my opinion, is the one of silence and stonewalling. For public agencies to not be crystal clear as to their real status and what risks we are facing if they can't function or provide services, is inexcusable. It is time for our government leaders to get tough, demand results and replace government workers who cannot or will not be forthcoming as to the real extent of the problem.

Among all of their concerns, the Doomsday camp points first and foremost to the government's lack of preparedness for Y2K. And they are correct. **However, there are contingency plans being discussed privately and behind the scenes in all key government agencies to make sure that the checks and critical services keep coming.** Some of the ideas I've heard don't sound pretty or efficient, and they won't work perfectly by any means. Nonetheless, I believe that the large majority of people receiving government checks or services will continue to get them, although not without some delays. Remember, these people are *VOTERS*, and the bureaucrats will do everything in their power not to upset or panic them!

The Rest of the World Seems Worse Off Than The U.S.

6. What little news we do get from around the world is not encouraging. It appears that the rest of the world is behind the US in getting ready for the year 2000. This is especially disconcerting

due to the growing importance of international trade to the US economy. Japanese banks, in particular, judging from the relative amounts of money and personnel they are budgeting, seem to be at risk. Most European institutions are openly stating that they will not get serious about Y2K until after the changeover to the new European currency, which happens next year and is supposedly even a bigger computer problem for them than Y2K.

Asia is imploding economically, which not only puts a severe deflationary drag on the world, but also means they have less money to fix their computers and problem software. The presumption is that they will concentrate on saving their economy and deal seriously with Y2K at some later point. Since it is widely believed that the Asian economies will get worse before they get better, the assessment of their Y2K problem is not a pretty sight.

Every Industry Has Problems

Despite the generally discouraging information above, among the many experts, etc. who are really involved in the actual Y2K process, **I found very few who are pushing the panic button.** But almost universally, there is a lot of caution and the assumption that there will be both business and service failures. The degree of problems they anticipate varies by industry and the person being interviewed, but they all agree there will be problems. No one I have talked to who actually has a professional background in Information Technology (IT) believes Y2K will be a non-event.

What follows is a summary of the broad themes and areas of general agreement among the experts I have spoken with and/or interviewed:

1. Generally, large businesses will have at least 80-90% of their software ready in time for testing. Smaller businesses that are dependent on computers are less likely to be ready for the Year 2000. On the other hand, the smaller the business, the more likely they can figure out ways to work around the problem until it is solved.

2. There is broad consensus among the experts and consultants that there will be numerous business failures across industry lines. The most common number cited for business failures is **10%**. If you recall, in our January Special Report on Y2K, Michael Curtiss used that same number, 10%, for the percentage of banks he expects to see fail or be forced into mergers.

Capers Jones, the highly respected chairman and founder of Software Productivity Research, is the author of the book, "The Year 2000 Software Problem: Quantifying the Costs and Assessing the Consequences." He has also conducted a study entitled "The Economic Impact of the Year 2000 Computer Software Problem," which projects the following failure rates:

**** 1% of very large companies could fail, which would mean that five Fortune 500 companies could go under.**

**** 5-7% of mid-size companies could fail. There are 30,000 such companies, employing between 1,000 and 10,000 employees. This projection means that between 1,500 and 2,100 of these companies may not survive.**

**** 3% of very small companies, those with less than 100 employees, could fail. Since there are about six million companies that fit this description, Jones' projection would mean that potentially 180,000 companies could go down.**

However, since a significant portion of small businesses fail even during the best of times, this last number may not be as significant as it appears. In 1997, for example, even in a booming economy, small business failures hit a record high.

The impact on large businesses could even be greater than anticipated by Jones. George Colony of the R&D firm, Forrester Research, recently divided the Fortune 1000 into three groups:

"A" companies will fix their critical computing systems in time. They will thrive because of Y2K. This category accounts for 35% of the Fortune 1000.

"B" companies will experience failures of some of their critical computing systems. Most but not all will manage to survive Y2K. 50% of the Fortune 1000 will fall into this group.

"C" companies will not repair their critical computers in time. Most will fail. 15% of the Fortune 1000 could end up in this trash heap.

If one only takes Colony's "C" companies into consideration as possible business failures, he is projecting that 150 of Fortune 1000 companies may not survive the Y2K problem. That does not include those falling in the "B" category that do not make it. Therefore, between the plethora of small business failures projected by Jones and the widespread big company failures cited by Colony, the 10% failure rate noted earlier may actually be on the low side. Of course, it all depends on how much progress is made in the next year. [I should thank Jim Lord from the Westergaard web site (Y2Ktimebomb.com) for bringing these projections to my attention.]

3. Government entities are way behind in developing Y2K contingency plans. While many are beginning to act, etc. it is highly likely that a number of government agencies will not be up to normal service delivery standards. Although many agency heads, notably the FAA, are stating publicly that they will be ready, the Office of Management and Budget's (OMB) findings and Congressman Horn's findings are in serious disagreement with such optimistic assessments.

4. Other associated Y2K problems such as those from embedded chips or supply chains are just now being investigated by the majority of businesses, with time rapidly diminishing for fixes. An example of a supply chain problem is when a manufacturer is compliant, but one or more of its suppliers are not and can't deliver. There will be supply chain problems, especially from international sources, which may dwarf the actual company software problems.

5. Businesses and governments overseas, with few exceptions, are further behind than those in the US. American companies which depend on imports or exports for their livelihood could face severe problems. It can take anywhere from 10 to 20 companies and agencies (shipping companies, banking and credit facilities, insurers, government agencies, etc., etc.) to cooperate in delivering a product from a factory in country A to a destination in country B. If any one of them has a problem, the whole process slows down or stops until the problem is found and solved.

Manufacturing in the United States is highly dependent upon international resources. While most of us have the perception that the United States has abundant raw materials and could operate independent of the rest of the world, if need be, the actual facts are more sobering.

The following table is from the U.S. Geological Survey. This chart is about our dependence

on foreign strategic metals and minerals. We import over 50% of our oil. And there are numerous other minerals and chemicals of which we import more than 50% of our consumption. If I had the space, I could show charts demonstrating dependence upon various countries for manufacturing equipment, machine tools, supplies, etc., etc.

In short, the manufacturing and business capacity of this country is highly sensitive to imports and the ability to efficiently move materials and products.

PERCENT IMPORTED	VARIOUS MINERALS & METALS	USED IN:
100%	ARSENIC	WOOD PRESERVATIVES, GLASS MANUFACTURING AGRICULTURAL, CHEMICALS
100%	BAUXITE & ALUMINA	ALUMINUM PRODUCTION, ABRASIVES, CHEMICALS REFRACTORIES
100%	COLUMBIUM	STEELMAKING, SUPERALLOYS
100%	GRAPHITE	REFRACTORIES, BRAKE LININGS, LUBRICANTS, FOUNDRY DRESSINGS
100%	MANGANESE	STEELMAKING
100%	MICA, SHEET	ELECTRONICS & ELECTRICAL EQUIP
100%	STRONTIUM	TELEVISION PICTURE TUBES, FERRITE MAGNETS, PYROTECHNICS
100%	THALLIUM	SUPERCONDUCTOR MATERIALS, ELECTRONICS, ALLOYS, GLASS
100%	THORIUM	CERAMICS, CARBON ARC LAMPS, ALLOYS, WELDING ELECTRODES
99%	FLUORSPAR	HYDROFLUORIC ACID, ALUMINUM FLUORIDE, STEELMAKING
80%	TIN, TUNGSTEN, COBALT, TANTALUM, CHROMIUM	VARIOUS PRODUCTS

All of this will be compounded as international telecommunications services are severely impacted in some countries. The State Department released a survey in March, 1998 on the Y2K preparedness of the telecommunications companies in 113 countries. 26% were either unaware or had not yet begun to address the Y2K problem. Another 29% admitted they were having problems getting compliant and declined to project that they would be ready by December, 1999. British Telecom has already said they expect big problems in Africa and are working on the situation. As we get closer, more announcements of this type will most certainly be forthcoming.

Will companies take steps to insure their supply lines? You would certainly think so. Will there be disruptions in spite of the best laid plans? It seems quite likely there will be. The more companies which begin to develop contingency plans, the less overall effect there will be on the world economy. But as of this date, there are indications that world trade will be impacted, perhaps severely, by the Y2K problem. **The bottom line: even if one conceded that every computer and**

chip in the US could be fixed on time, the impact from the international problem alone could be enough to trigger a recession.

What The Experts Think Is Likely To Happen

Here is a consensus from the professionals that I have read or talked with from around the country. Let me emphasize that this view will probably change as time passes and more updated information is available. These are some likely scenarios for various segments of our economy, based on current information:

1. Electric Utilities: The consensus is that the power grid will not go down, but we will see some random utility service disruptions, including blackouts and brownouts. It is impossible to know where the outages will occur, but it is likely they will be for a short duration if they do occur. There is a huge number of talented people working long hours to make sure we get basic services. While the odd embedded chip or software glitch will probably occur, they should be fixed quickly or worked around. ***The utility industry is, by design, set up to deal with crisis situations. The grid system is, by design, set up to deal with the power failure of one or more generation plants.*** There are some very knowledgeable people who believe the Y2K effect on utilities will be minimal, but there are enough who think it will have a more serious impact to cause some concern, but not alarm.

2. Telecommunications: There is no central authority with a comprehensive overview of the telecommunications situation in the US; however, information that is available is mostly reassuring. All the major carriers are working on the problem. All plan to be compliant by the end of 1998, and the head of the FCC says he is informed that equipment manufacturers are on schedule to be ready. He does note, however, that the FCC has little power to force companies to become compliant, and he questions if some companies are making as much progress as they report. The good news is that with the current deregulated environment, competition will go a long way toward forcing these companies to be compliant in time.

3. The Banking System & The Markets: It appears the US financial system of banks, S&Ls, credit unions, etc. and the various clearing exchanges and investment markets will be functional, although not without some delays and some failures as discussed earlier. We should be able to write checks, make investments and do business, although it will probably be at a slower pace than we do it today for some period of time. Bank wire transfers of funds may be slower as well.

I should note that many major mutual fund companies appear to be in good shape. **Vanguard**, for example, has posted its statement that it is compliant on its Web site. Coincidentally, I talked to the outside consultant in charge of that effort and he confirmed that Vanguard is in compliance. **Fidelity Investments** has not made such an announcement, but they are now exhibiting at Y2K technical conferences and offering their internally developed Y2K remediation software. The manager in charge of the product offering told me that Fidelity could not find any Y2K software which would do what they wanted, so they went out and developed their own product and then decided to sell it. He would not categorically state they are compliant now, but he was very upbeat about the effort at Fidelity, and expected they would be compliant well ahead of January, 2000.

The SEC and the NASD are putting serious pressure on all companies in the securities industry to be compliant. Ditto for the various stock and securities exchanges. Regulators over the futures industry are applying similar pressure. Likewise, the banks are being required by the Fed to monitor the Y2K efforts of their largest loan accounts. Actually, this is good for everyone. **While**

the Doomsday camp believes the banks will collapse and the markets will shut down, what I see is a real horse race among banks and financial institutions to see who can be Y2K compliant the earliest!

The Gloom-And-Doomers' Scenario & Gary Halbert's Response

The heart of the gloom-and-doomers' position is that the utility power grid will fail, that telecommunications will falter (no dial tone) and that the banking system will collapse. Clearly, if these events were to occur we would indeed be looking at a crisis scenario. **But based on all the evidence I have gathered, it just is <u>not</u> likely. There is currently no compelling reason to believe these services will fail beyond a point of major inconvenience.** In addressing this issue, Gary Halbert wrote one of our clients the following note:

"The next time you read one of these gloom-and-doom Y2K scenarios, think of it this way. I tell you that the next airliner you get on is going to crash and all aboard will be killed. No question about it. The problem is that you cannot prove me wrong until you take the flight, land safely at your destination and call me to announce that I was an idiot, and that I unnecessarily worried you half to death.

No one can prove categorically that the Y2K fear mongers are wrong. Likewise, no one can prove that only minor problems will result. As you will read in our Special Report [this Report], there is a middle ground on the issue. That's where we are. Y2K is a serious problem that will cause a lot of disruptions and delays, but not a disaster.

Will there be problems? No question. Will the power grid go down? Probably not. Will there be a recession? Absolutely, in our opinion. Could it be a bad one? Maybe. Is your money in banks or at brokers going to disappear? No way. Will the markets close down? Very unlikely. Will it take the stock market down? Hard, in our opinion. Are we planning to make a lot of money in the markets as a result? You bet!

Finally, keep in mind that there are a bunch of self-proclaimed experts who are making a lot of money by scaring people about Y2K. Read them with a grain of salt and keep your hand tightly on your pocketbook!"

Leave it to Gary, as usual, to take a complicated, hotly debated argument and reduce it to an analogy that virtually anyone can understand. As he says, the gloom-and-doomers have elected to take a position which cannot be categorically proven wrong until we get there. We have chosen to rely on more verifiable information.

Y2K Will Be Like The Gas Lines In 1973-74

Based on everything I have learned over the last year, I would use yet another analogy to illustrate what I believe is the most likely scenario for the Y2K problem. Remember the gasoline shortages in the early 1970s? For about a year and a half, we all sat in long lines at the gas stations because of the Arab oil embargo. **I believe that the Y2K problem is going to create similar shortages and delays and disruptions, but across many different industries.**

As you will also remember, we had a recession in 1973-74, partly due to the oil embargo and partly due to other factors. As I will discuss below, the same scenario looks likely for 1999-2000,

when a combination of factors converge to create yet another recession. But before I get into that discussion, let me remind you of the obvious: **we survived the recession of 1973-74, and we will survive the coming recession as well.**

Why A Recession Is Coming

Now that I have explained our position on the Y2K problem, let's look at the reasons why a recession is virtually inevitable in the near future. Recessions happen for a number of reasons, but in general it is a slowdown in the economy resulting from a weakened business environment.

1. There are already signs that a softening in the economy is coming, primarily as the Asian economic crisis begins to have an effect in the US. Several market analysts see this as a cause for a 25% market correction. A market correction of 25%, by itself, doesn't automatically tank the US economy or create a recession. However, over the next 12-18 months several factors are coming together which will almost certainly result in a worldwide recession.

First, the US economy is long overdue for a recession, even in the absence of the Y2K problem and others discussed below. Some of the rest of the industrialized world is already in a mild recession (or worse in the case of Japan), and more nations are headed that direction. The US is the last economic powerhouse, and the current expansion is very old by historical standards. As Gary has written recently, even the very optimistic ***Bank Credit Analyst*** expects a recession soon.

Second, the Asian crisis is far from over. In fact, it continues to worsen and the major financial institutions in Japan and around the region are in serious trouble. The Asian flu is slowly spreading to the rest of the world and will continue to do so for at least the next year.

Third, Y2K will be causing an awful lot of concern by this time next year, and this will exacerbate all of the other problems. Starting in 1999, a general awareness of the full impact of the Y2K problem will finally begin to seep into an investment world convinced that markets only go up. Companies will begin to openly discuss their Y2K progress (as public companies are required to do), government agencies will finally start to talk about their contingency plans, and individuals will start to take this problem seriously. ***At some point, the Y2K problem will be on every front page and a major topic on talk shows. In 1999, it will be as hot a topic as mutual funds and the stock market miracle are today!***

2. As Y2K awareness grows, the investment public will wake up and realize this will be very bad for business. It will hurt productivity and decrease profits. All major corporations will be spending millions of dollars in their efforts to be ready, and this money will come right out of the bottom line (i.e.- earnings decline). Y2K problems that aren't solved in time will have to be dealt with manually (i.e.- lots of bodies) which will increase expenses. Supply chain problems will slow down dozens of industries. I could go on and on with examples of how Y2K will hurt corporate profits, but I think you get the point.

When profits go down, stock values generally follow. Lately, we have seen the market react rapidly and severely to companies which do not meet earnings expectations. In my opinion, increasing numbers of companies will not meet earnings projections or grow enough to justify the forward earnings growth expectations which are the basis for their high P/E valuations. At some point, the market is going to wake up and react. It is entirely within the realm of possibility that a 25% or more correction could occur during this period.

The full reality of the Y2K problem will begin to be felt in mid-to-late 1999 and peak (or maybe the better word is bottom) sometime in 2000. If the experts I have interviewed are correct, and we see 10% of the businesses in the US (and more in the rest of the world) go down or get merged in an unfavorable environment, it strains credibility to think it will not produce a serious recession as things sort out.

3. Confidence will be affected as consumers become more aware of these problems. Since consumer spending accounts for at least two-thirds of GDP, this could be serious. It doesn't take a large drop in consumer spending to produce a recession. If you don't feel as well off, you don't buy a new car or a new washing machine or a new computer without really analyzing your needs. A drop of 5-10% spending would be enough to create a recession.

As investors (and especially baby boomers) watch their retirement funds erode, they are going to pull back, not only on consumption but also from the market. If the market drops 25% or more, investors across the board are going to get nervous and begin to rethink their portfolios. No doubt, brokers and money managers will be advising them to *"hold on, invest for the long-term."* But at some point, the buy-and-hold, New Paradigm mentality will come into question. For many investors, the attitude may become ***"forget the cheese, just get me out of the trap"*** (read: sell).

4. The Federal Reserve is already telling banks to review loans to their major clients in light of Y2K. As we get closer to 2000, it is likely that banks will make fewer loans to businesses that cannot adequately assure lenders they are going to be OK. Regulators are going to start shutting down banks or requiring them to merge at some point in 1999, and especially in 2000, if they are non-compliant. If they have major loans to non-compliant companies which go down, they will have to write-off those loans and find a way to meet their capital requirements. The two ways in which they can do this are to make fewer loans or call in loans from good companies which have cash. Regulators are going to put pressure on banks to maintain reserve margins.

Those of us in Texas remember such a situation in the '80s. Healthy companies had problems because banks made loans to bad companies and thus, had no money to lend to the good ones. In many cases, banks called in their good loans to raise reserves to cover the bad loans. That was true in the 80's in Texas, and it is likely to be the case again, only this time on a national basis.

I am not saying that all lending will dry up or that capital investment will stop. Far from it. There will be a lot of economic activity, even in a recession. But merely a slowdown in banking activity and capital investment will have a negative effect on the economy. Less money means less working capital, less investment, less buying of new equipment, etc., and higher unemployment. This suggests a recession and possibly deflation, a topic we may address in a future report.

5. Finally, government services are going to become problematical and could add momentum to recessionary pressures. Most of the programs which we think of as "federal" are actually administered by the individual states. It is difficult to get a good information on the states' ability deliver important services such as welfare, food stamps, Medicare and unemployment compensation, etc. Government contingency plans are in the works at the federal, state and local level but, as discussed earlier, most agencies are way behind on the Y2K problem.

Also, if the economy goes into a recession, government receipts will go down, unemployment and welfare will go up and deficits will come back, perhaps with a vengeance. Depending upon the state, it might be difficult to get welfare payments or get on the unemployment rolls. Will

government officials work overtime to figure out how to service their constituents? Will people eventually be able to get their checks? Will hospitals and doctors get money? Yes, but it could be a hassle in some regions of the country. This will further slow down productivity and reduce discretionary spending by consumers. All of this contributes to a recession.

The Good News

The good news is that we know exactly when the Year 2000 will arrive, and this is a recession that those of us who understand the Y2K problem can see coming. Most recessions blind-side investors, and sadly, for a lot of people, the same will be the case this time around as the public still isn't taking Y2K seriously. *But it doesn't have to happen for you.* Presumably, you are reading this Report in mid-1998 and have time to react. There are many things you can do to prepare, and there are actually quite a number of opportunities available:

1. Many businesses will greatly increase their market share because of this problem. I have spoken with numerous consultants who say their clients have their Y2K act together and anticipate that their non-compliant competitors will fail or falter. Many companies which know they will be compliant are quietly developing plans to take business away from their non-compliant competitors.

As businesses begin to check their supply chains and find that certain suppliers won't be Y2K compliant in time, they will look for new sources from compliant suppliers. Compliant suppliers will use their foresight as a major marketing tool. For a lot of businesses, the Year 2000 problem is going to produce windfall opportunities for them.

2. The reality is that, at some point, every business is going to realize that there is a problem. I expect we will see a mad scramble in 1999 as companies start looking to see what their problems are and try to correct them. For some, it will be too late. But most will figure out some way to keep delivering their product or service. It may not be pretty. It may not be as profitable or it might even be unprofitable in the short-run, but most companies will find some way to keep things going.

American entrepreneurs have never been content to just sit around and wait for someone else to bring them a solution. And not all entrepreneurial activity is done at the small company level. There are a lot of entrepreneurial employees at large firms. Americans in general are very creative and industrious and do well in crisis mode.

As I said at the beginning, the division of labor is either the problem or the solution, depending upon your view of the world. It is true that we are all interdependent, and to the extent some companies will not be able to provide services, there will be inconveniences and/or disruptions. But the reality is that every business will eventually realize that there is a problem, and most will do everything in their power to solve the problems and continue to operate.

A large part of my problem with the gloom-and-doom proponents is that they assume the worst. And this means they also assume the worst about the American worker, manager and entrepreneur. We can all gripe and complain about various things in the United States, but no country or system has ever produced more for its people.

On an individual basis, we have all dealt with personal or business problems just as difficult as Y2K. Admittedly, we have not all dealt with this exact combination of problems occurring at generally the same time (next 18 months), but I see no reason as to why we will

not rise to meet the challenge. There is nothing about this problem which will get everyone so overwhelmed that they just sit back and give up.

Admittedly, the predictions by some of a significant number of failures among large companies are unsettling, but I look for this to change in the months ahead. Also, when one looks at the predictions for widespread small business failures, it is important to note that small businesses have a high failure rate even during the best of times. In fact, during a booming economy, many questionable new businesses are started only because plentiful capital is available to support even lackluster business plans. As noted earlier, small business failures hit a record in 1997, a boom year. Thus, the Y2K problem will merely serve to accelerate a lot of what would have occurred anyway.

Some employees will be able to use this crisis as a way to increase their visibility and importance to their companies, and many will increase their income as a result. Plus, some entrepreneurs will see new business opportunities in this crisis.

3. While it may seem strange to say this in the good news section, **this is just a recession** we're talking about. It is not as if we never had one before or have somehow (according to the "New Paradigm" crowd) repealed the business cycle and outlawed any new recessions. ***We have survived recessions before and will do so this time.*** The Y2K dilemma may not even be the largest problem that we face during this upcoming generation. For example, the looming Medicare and Social Security crisis has the potential to create a debt scenario that will make our previous budget problems seem minuscule in comparison.

4. Unlike most recessions, we are actually getting some advance notice. We know exactly when January 1, 2000 will arrive, and it will be neither early nor late. Therefore, individuals can do more to protect themselves now and mitigate the personal effects on their lives. As I will discuss below, there are ways to make a profit from a recession and a falling stock market.

5. Given that we are in an increasingly deflationary environment, interest rates should fall further if there is a recession. This means that mortgage rates could be quite low in the middle of 2000. If so, certain types of bond investments should be quite profitable, as I will discuss in more detail later on.

6. As the economy bottoms and the worst of the problems get sorted through sometime in mid-2000, there will be a great buying opportunity for equities and mutual funds, as the market starts up in another great bull run.

Profit Opportunities In The Next Few Years

Look at it like this: We have just seen the greatest bull market in history. Is it likely that we could see the same type of growth in the next ten years? Only the wildest bulls could even suggest that. But if there is a large correction, then there is a lot more room for recovery and growth. If investors properly time this recession, there is the possibility of far more growth in their portfolios and investment profits *because* of the recession than there would be if there was not one.

For example, if the DOW grows to 12000, that is only 33% from where we are today (9000). But if the DOW dropped to 4500 (a 50% correction from 9,000) and then grew to 12,000 that would be a 167% increase. Of course, there is no way today to know when or if the market will drop, or by how much, but let us not forget that the market dropped over 50% in 1973-74.

Of course, the key to making this profit is to not stick to a buy-and-hold dogma. If you just hold on, the market may eventually return to its previous heights, but there will be a large loss to absorb in the meantime. And it may take years to recover. The key is that you must *anticipate* the problems brought on by Y2K if you are to *avoid* the losses. This way you can enjoy the full benefits of the recovery, without suffering major losses.

While exact timing is almost impossible, *relative* timing of this market is not. We contend that the coming recession will be one of the best investment opportunities to come down the pike in a long time. Here are just some of our reasons:

1. For some investors, the potential could be even better than 167%. There will be many companies whose stock will drop in 1999 and 2000 just because they are in the wrong market or are perceived as having problems more serious than they really are. These companies will need capital and will pay much above market rates for it in the private finance market. Even companies that are in good shape may have problems getting money through the banks, as I discussed earlier. This means that properly prepared investors may have the potential to make large profits by helping to provide the capital that the banks cannot. The key, of course, is to properly plan now, so you have the money to make these types of investments when it becomes time to get back into the markets.

2. The Genie is out of the bottle, so to speak, when it comes to technology, bio-technology and especially the Internet. Opportunities will exist for many types of new business ventures even in the midst of a recession. Investors and entrepreneurs will have to be more cautious, but many new opportunities should come from the recession. New ideas and products are being developed every day. Waiting two years for the dust to settle may mean you miss the opportunities altogether while others jump ahead. For those so inclined, there should be many opportunities to buy businesses far below today's values (in case you are interested in a new career or a private investment).

3. While Y2K will create some serious problems, especially outside the US, this dilemma is causing the most massive technology upgrade in history. Once the problems are sorted out, the computers are fixed and most old "legacy" mainframes are replaced, the world will be significantly more productive. As noted earlier, the US is ahead of the rest of the world in fixing the problem, so it stands to reason that the US will get the earliest economic boost on the other side of Y2K.

If you are in business today, use the information available on Y2K and the likelihood of a recession to your advantage. For a business person, the worst thing to do may be to sit back and simply wait. Your competition may be out gaining market share and some of it from you. **Whether you are a business owner or an investor, doing nothing could be one of the most costly non-decisions of your life.** Every personal and business situation is different. You need as much understanding of the problem as possible, and you should develop a positive strategy to deal with the effects it will have on your business and your personal life.

What You Should Do

As noted above, the first thing you should do is to learn more about how Y2K will impact your business and your personal life. There is a ton of information on the Internet including our new Web site at **www.2000wave.com**. [If you are not on the Net, you need to be.] Keep up with the issues via these various Y2K websites, and information in the print and other media. Make sure you keep in contact with your local city and county governments (and higher levels, if appropriate), to find out what they are doing that will affect you and your business.

Caution: Keep in mind that the information on the Internet ranges from outstandingly accurate to appallingly false and misleading. Anyone can post anything they want on the unregulated Internet. Be very careful and, by all means, do not believe everything you read or see.

While you are becoming more knowledgeable you should begin to reposition your investment portfolio. Do not sit around and wait for the market to drop or for someone to send you a telegram telling you the recession has started. Procrastination kills! It will hurt your investments and savings If you do the right things, you should be far better off in 4-5 years than you are today.

Have A Defensive Strategy For Most Of Your Equity Investments

Even in the absence of the Y2K problem, there is the real possibility of a market correction this year. The ***Bank Credit Analyst*** and others suggest it could be as much as 25%. As discussed earlier, the problems in Asia are worsening and will spread to the US at some point. Add to that the problems associated with Y2K, and this market could drop considerably more than 25%.

The next thing to do is begin making a plan today, while you are calm, if you are going to avoid major losses, and you need to stick to it. In formulating your plan, remember that just as a rising tide lifts all boats, so will a falling tide lower all boats. While there will be stocks and maybe a few equity mutual funds which do not go down much, you need to decide if you have the prowess, skill or luck to know which ones those are. If you don't, then you need to decide one of two things:

1. Either the scenario of a recession and market correction we are suggesting is *not* going to happen, in which case you should stay in the market; or

2. You think it is likely we *are* right and you need to adapt your investment strategy to the changing conditions.

As Gary Halbert pointed out in the June issue of his ***Forecasts & Trends*** newsletter, one of the most important lessons he has learned from experience is to protect your profits, especially when you have had a windfall like the last several years! We have had a great run in the markets. We have all (hopefully) made money. But is the opportunity of making more in the near-term worth the risk of the potentially severe losses a recession would bring?

Those who would disagree with us would say the following: ***You don't really know the future. You are not absolutely sure we will have a correction. Bears have been predicting a correction for years. If you got out of the market in 1987 and stayed out, you would have missed this huge bull run. And besides, even if there is a correction, the market will come back. You don't want to miss out.***

Answer: We are not recommending that investors get out of the market and go to cash. What we are recommending is that investors should move into a defensive mode which can remain long if the market continues higher *and* which can either go 100% to cash or short if the market turns decidedly lower. The best way to do this is by using professional market timers or specialty funds that will make these decisions for you.

Yes, there is a slim possibility the Y2K crisis will have no *major* effect on the stock market. There is also a slim possibility that Y2K will lead to some of the crisis scenarios the gloom-and-

doomers predict. **We believe both are very low probability occurrences.** However, the potential for large losses is just too great to ignore the possibility of a market correction. Unlike the conditions that caused many Doomsayers to miss out on much of the bull market of the 90s (inflation, deficits, etc.), this one is linked to a *specific time* and to an *actual event* - Y2K - an event that will almost certainly cause some market disruptions.

When fund managers and brokers tell you that the best thing to do is to stay in the market, they are really just saying: *"I will lose my commissions or management fees if you don't keep your money with me."* Now, they are correct in that we have seen a great bull run. Granted, the market has always come back, and I see no reason to believe it won't in the future. But it is hard to find investors who stayed in the market in 1987, all the way down, and all the way back up in 1988. **Remember that in 1973 "all the way back up" took 10 years!**

If we are right, then it is entirely possible that the coming "correction" will last a year or two or even more. What if the market drops 25% or more in 1999, and then drops another 25% in 2000, which would not be out of the norm for past recessions? That would mean the markets have to double in order for investors to just get even. If the recession is as severe as the 1973-74 recession, it could take several years for the market to recover fully.

What Are The Alternatives To Buy-And-Hold?

At this point, you may be asking, *"Why not just short the market and be done with it?"* **For several reasons we don't suggest this strategy.** In the first place, the stock market is volatile. Even in a true bear trend, the market will not go straight down. Just as it is hard to watch your (long only) accounts lose 25% as the market drops, it would be even more painful to watch your short positions lose 25% if the market continues to go up in the interim, before the recession.

There are "managed" investment programs by experienced Registered Investment Advisors who have successfully timed the markets for years. Some of these managers have systems which can "go short" the market (thus the potential for profits in a bear market).

We understand that buy-and-hold managers and brokers will say, *"Timing doesn't work."*

Answer: Yes, it does. There are numerous Investment Advisors who have either beaten the market through the use of timing or reduced the risk (volatility) of the market through timing and asset allocation. There are even some who have done both. But timing the market is difficult. Not many do it well. It takes hard work to find a reliable timer or allocator who can successfully beat the market and/or reduce volatility. But they <u>are</u> out there.

Timing is not about calling the exact top or bottom of the market. That is virtually impossible. However, there are timers who have successfully been able to track trends and get out of the market close enough to major tops to preserve profits and avoid large losses. Timing doesn't work for fund managers who must stay invested in a particular strategy and can't be flexible as market conditions warrant. Timing doesn't work for brokers who either do not have the skills or discipline to do so, and going to cash reduces their income.

The advantage that an experienced, successful Investment Advisor who is a timer brings is obvious. You have the potential for profits if the market goes up, and if the manager is correct in the timing, you have the potential to avoid losses. In addition, some Advisors have the ability to

make money if the market goes down by going short in specialty funds which make money if the market drops.

As you know, our ***ADVISORLINK***℠ program searches the country for the top-rated market timers. All of our recommended Advisors can go 100% to cash if market conditions warrant. Several of our Advisors can actually short the market, when that time comes. **If you agree with us that you need a defensive strategy for at least a portion of your equity investments, I highly recommend that you take a close look at our recommended Advisors. They can help you.** For detailed information on our recommended Advisors, including their past performance records, call ProFutures at **1-800-348-3601**.

Consider Diversifying Into Bonds

As mentioned earlier, bonds could be quite profitable if interest rates fall further due to a recession. Dr. Ed Yardeni, the Chief Economist of Deutsche Bank, sees rates going to 5% by the end of this year, then down to 4% in 1999, and as low as 3% in 2000. While other mainstream economists and advisors are not as bullish on bonds as Yardeni, most see rates moving down. The ***Bank Credit Analyst*** also forecasts lower interest rates and strongly recommends bonds over stocks as of the date of this Report.

You can invest in bonds by buying a bond mutual fund or through a managed account. If you invest in a bond mutual fund, use a no-load, low cost fund family. But the problem you have is deciding which type of bond fund to choose. If you choose a corporate bond fund to get more yield, you will eventually be exposed to corporate credit risk in a Y2K environment which is likely to see many companies struggle and thus have their bonds down-graded and lose value. If Forrester Research (see page 8) is right and 15% of the Fortune 1000 fail or have serious problems, corporate bonds could be a high risk proposition. Hopefully, the manager of the bond fund you choose will avoid all these companies so you will not be affected, but we think it is likely that many funds will have credit risk problems.

If you choose to go with a bond fund which only invests in US government backed securities, then you have to decide how far out on the yield curve you want to go. The longer the term of the bond, in general, the higher the interest rates. But it also means the bond fund is more volatile. Funds composed of zero coupon 30 year Treasury bonds can fluctuate severely. Of course, this type of fund will yield the highest return if rates go down, but just as in stocks, interest rates move up and down. In choosing a bond fund, you have to decide how much volatility and risk you want.

That being said, the profit potential on a downward move in interest rates is substantial. If government interest rates were to drop from 5.6% where they are as of this writing to 5% over the next 18 months the bond appreciation and interest would be about 15%. If the rates would drop to 4% as many predict the appreciation and interest would be around 35%. This yield would of course vary with the length of maturity of the bond portfolio you selected, but the point is that bonds offer substantial returns in a climate of falling interest rates.

The other route to go is through a managed account with an Investment Advisor who does this work for you. We have looked at numerous Advisors who time bond funds but, frankly, the large majority of them do not add enough value (in our opinion) for the fees they charge. Fortunately, we have two excellent Advisors who time bond funds, and we will be happy to send you detailed information on the programs they offer.

Hedge Funds

The term "hedge fund" has come to mean those types of funds which are private and are generally limited to 100 investors. These funds are not allowed to advertise to the general public and are generally only offered to "accredited" investors. An accredited investor is someone who has a net worth of $1,000,000 or more, or annual income of $200,000 for the last two years.

While I do not agree with the rules which segregate investors by net worth, they are nonetheless the rules we have to live by. If you are an accredited investor, there is a whole world of private funds and investments available to you. As you may imagine, some are excellent and some are not. In either case, finding out about them is difficult as they are all bound by the prohibition on advertising and limited offerings.

The variety of hedge funds is almost endless. It is possible to find almost any investment strategy. Some funds are designed for maximum profits and are highly leveraged and risky. Some are more conservative and are designed to produce slightly higher than bond market returns with a "market neutral" strategy. And there are countless strategies in between those two extremes. Many are designed to do their best in a downward trending market. The list is long, but suffice it to say that some hedge funds are going to do very well in the Year 2000. All of the funds and programs we offer or recommend at ProFutures, including our hedge funds, are designed with the potential to do very well, even in downward trending markets.

If you are an accredited investor and would like to know more about the world of hedge funds simply e-mail me at the Internet address below or call and verify that you are an accredited investor. I will tell you where to go on the Web for information, reports you can read, hedge fund ranking services, fund sponsors you can call, etc.

Finally, I Will Stay On Top Of This Problem For You

As you can hopefully tell from reading this Report, I have spent an incredible amount of time researching Y2K. Candidly, this Report could have been 100 pages long or more as there is so much information available. Obviously, Y2K is a problem we all need to stay on top of. As I have written above, we do not believe the Doomsayers' predictions of disaster. Likewise, we do not believe the Pollyanna camp either. The bottom line is that we believe Y2K will result in a situation much like the gas lines in 1973-74, only across industry lines. We believe it will spark a recession, possibly a severe one, but we will survive it. We believe it will take a heavy toll on the stock market.

Gary Halbert has asked me to continue my efforts to seek out the very best, most accurate, non-hyped information on Y2K. And I will do so in the weeks and months ahead. We want to keep you as informed as possible. We want to give you good information so you can minimize the effects of Y2K on you and your loved ones. And we want to help you position your investments to profit from the turbulence which lies ahead.

Feel free to call me at **817-261-4497** or fax me at **817-548-1555** or e-mail me **john@profutures.com**. I welcome your comments or questions about Y2K and this Report. Also, please visit our Y2K Web site at **www.2000wave.com** where we will continue to post information, timely articles and interesting interviews with people who are actively involved in solving this problem. I sincerely hope you have found this Report informative and helpful. ***JFM***

CONCLUSIONS

by Gary Halbert

Whew!! If you have read this (longest ever) **Special Report** in its entirety (or even most of it), we have given you A LOT to think about. If you have been wondering if the gloom-and-doomers are correct, and that you should be considering radical changes in where you live and work and what to do with your money, I am happy to bring you a different perspective on this problem. On the other hand, if you have not been thinking that Y2K was a problem that will affect you, I am happy that you now know you need to consider this seriously.

There are many interesting elements surrounding the Year 2000 Problem, but perhaps the most interesting is the fact that the pundits are so polarized (Pollyanna vs. Doomsday), and there are so few clear-headed voices in the more realistic middle. I have made the commitment to try and fill that void by sending John Mauldin far and wide to get us un-hyped information from really credible sources. We don't have all the answers, of course (no one does, despite what they say), but at least we are bringing you important information that just doesn't seem to be readily available.

The second most interesting thing about this problem (at least to me) is why haven't the **Bill Gates** and **Michael Dells** of the world haven't been more open and offered their specific views on what Y2K will bring upon us. What little these and other computer and software moguls have said has been very general, not specific and leaves one wondering what they really think.

Along this same line, I completely agree with John's comments on page 9 where be blast our government leaders for not being honest with us about their Y2K preparedness, or lack thereof in most cases. We need to apply heavy amounts of pressure on our elected officials to get us timely and accurate information on their Y2K status.

What Do I Really Think?

Let me be perfectly honest with you. I have read more information on Y2K in the last year than on any other subject, by far. I've read the Doomsayers extensively and, frankly, they've scared even me at times - because I can't categorically refute them. I've read the Pollyannas who say that Y2K will be a "non-event" in the pages of history. To tell you the truth, I don't know which camp is the *least* credible! **I believe neither at this point, especially when they declare over and over that it's their way or no way - there can be no middle ground.**

I don't want to digress too far on this issue, but think about this. Webster's Dictionary defines **extreme** as: ***"farthest away, excessive, unconventional or radical, drastic, very severe and as far away as possible from each other."*** Clearly the Pollyanna camp (nothing is going to happen, forget it) and the Doomsday crowd (the collapse of Western civilization, head for the hills) couldn't be farther apart! Their positions are the *definition* of "extreme". **And extreme is, by definition, that which is NOT likely to happen.** Think about that one for a moment. It is so true.

So, as is the case with most things in life, I believe the eventual outcome of the Year 2000 problem will be somewhere in the middle of the two prevailing extremes. But as John insightfully points out (on page 6), in this debate, **the middle is a very 'large territory.'** John especially liked my analogy (on page 14) about predicting, before it ever takes off, that the airliner would crash and how the only way to prove that prediction wrong is to wait until it lands safely. This analogy is right-on for Y2K; we can't categorically prove the Doomsayers wrong until we get to 2000.

Y2K Will Be Like The Gas Lines Of 1973-74

You and I have to accept one possibly uncomfortable fact, and it is a fact: no one *really* knows what is going to happen as a result of Y2K. It may be much worse than we think, or it may be only a minor disruption in our lives. We just don't know yet, nor does anyone else for sure.

But I have to tell you that I believe John's analogy that Y2K will be most like the gas lines in the early '70s, only across industry lines, is the best and most realistic scenario I have heard - including those of people who are far more knowledgeable on this subject that are we.

I do not believe we are looking at an economic collapse and social upheaval. I do not believe the power grid is going to implode. I don't believe the banking system is going to collapse. I don't believe that any of your money is going to disappear (unless you bury it in your backyard and someone steals it; be sure to use only plastic containers if you do). I do not believe that there will be rioting and looting in the streets if welfare or Social Security checks are a few days late getting out. And I do not recommend uprooting to the boonies and hoarding food, guns, gold, etc. Can I be more clear and unequivocal than that?

Based on the information we have now, and admittedly it is changing rapidly, I believe John is correct that we will see a lot of disruptions, a lot of delays and a recession. Gas lines in many places and many industries. How serious a recession is absolutely unknown at this point - it all depends on how much progress is made by the middle of next year. But I do believe we will see a recession, either mild or severe or somewhere in the middle. And I sincerely believe the stock market is going to get hammered.

Y2K Has Set The Tone Of My Recent Newsletters

In my last three newsletters (May, June and July), I have been practically crying out to you to take a more defensive position in your equity investments at least. Have you wondered why, all of a sudden, I have become so strident on this issue? The reason is that we have gathered all this information on Y2K, and the underlying message is so clear: **recession and a stock market hit.**

The worst recession and the worst bear market since WWII came in 1973-74 when we had gas lines. Of course, we also had soaring inflation then, which we clearly don't have now. But imagine the equivalent of gas lines all over the place - at the grocery store, at the department store, the bank (possibly), at work, etc., etc. I'm not saying this will happen, but it *is* possible. This is why I have been urging you to consider protecting your investment capital. **We just don't know!**

Remember, not once have I said or even hinted that you should get out of the market. We don't know what is going to happen. What I have advised is simply a move to investments - especially in equities - that can stay long, or go 100% to cash, or go short (if that is suitable for you). After reading this Report, I sincerely hope you will think more seriously about this.

Responding To Your Most Difficult Questions

I know that many of you are looking to me for an alternative to the gloom-and-doomers. I get many concerned questions about Y2K in your letters and phone calls. What follows are my answers to some of the most common (and most difficult) questions:

Should I sell my home and move to the country? Answer: **Yes,** ***IF*** that was what you've wanted to do for a long time - before you heard about Y2K - and you can comfortably afford it. The Y2K gloom-and-doomers recommend that you sell your home in the city (any city) and move to a remote location in the country. I categorically would not do so if Y2K is your only reason.

Should I take my money out of banks & brokerage firms? Answer: **No,** unless you believe money disappears into thin air. Even if the banks and the markets were closed for a few days, there is no evidence at this point that your money is not going to be safe. Sure, you need to keep good records and have all your account statements, in case there are computer glitches. But the Doomsayers' calls to close all your accounts are hogwash. Now I pause with a question for you:

If you did take your money out of banks, where would you physically put it? This is a serious question. If you have a sizable net worth, as all of our clients do, you simply *cannot* take all or even most of your money out of banks, etc., unless you are willing to take foolish risks (theft). When the Y2K doomsayers advices people to take all their money out of banks, etc. and stash it at home, it makes me think these people must not have very much money!

Should I buy gold coins, precious metals and tangible assets? Answers: **Yes,** if you've been doing that before the Y2K hype as a diversification play. **Probably not,** if you haven't already been investing in these assets. Actually, this is a tough one for me. The fact is, I have not seriously recommended buying precious metals since 1978 when gold and silver were on their way to $800 and $50 an ounce, respectively. We were lucky back then and sold out in late 1979 before the crash in metals. With the prices having come down so dramatically in the last 18 years, I am more inclined to buy gold, silver or coins now because they are so much cheaper and the risk is less. So, if you are inclined to take a small position in these assets, I would not advise against it, especially since we have admitted in this Report that we don't know how bad Y2K will be. *But be prepared for prices to fall further if deflationary forces intensify.*

Should I withdraw some emergency cash from the bank and stock up on food? This one requires a more detailed answer. First of all, I grew up in the country, and I have always been a nitpicker about having a lot of canned and frozen food on hand (you should see our pantry). Second, when I designed my house on Lake Travis five years ago, I planned to have a whole-house electric generator from the very beginning - before I had ever heard of the Y2K problem - again a throwback to my self-sufficient, country roots. Third, my Father was always big on having a lot of cash on hand. He rarely had less than $1,000 in his pocket and a few thousand more stashed in various places at home (and we weren't rich), and so do I. Frankly, I think having a couple of week's worth of food and cash on hand is a good idea anytime, Y2K aside.

The same goes for a lot of other staples. I have always kept a good supply of tools on hand. Likewise, I am big on having lots of flashlights of various kinds, lots of batteries of various kinds, candles, battery powered radios of various kinds, light bulbs of various kinds, etc., etc. on hand. Likewise, I have always kept a large stock of things like paper goods, day-to-day household items, etc. (Actually, Debi probably thinks I'm a little weird about all this, but it comes from growing up in the country and the fact that I don't like going shopping for these things very often.)

So, my answer is **Yes,** if you don't already. I would have some emergency cash stashed around places. I would have at least a couple of weeks' food on hand if you can. I would have some of all the things I mentioned on hand - irrespective of Y2K. Ditto for other essentials.

Are We Going To Know For Sure How Bad Y2K Will Be At Some Point & If Our Banks, Brokers, Etc. Are Truly Compliant?

There is no clear-cut answer to this question. Some firms in some industries have Y2K on the front burner and are streaking for the day when they can announce to their customers that they are Y2K compliant. They want to be the first, or among the earliest, to announce publicly that they are ready. Obviously, these firms are going to tell us and in writing.

Many other firms, unfortunately, have been scared out of their wits about all of the potential liability that might come if they announce they are compliant but are later found not to be. Even if they believe they are compliant, what if it turns out they missed something and problems arise? What if the gurus find some other computer glitch, like the embedded chips last year, after a company has assured its customers it was compliant? Or what if the company really is compliant, but one or more of its suppliers are not?

This is not a conspiracy. It is not as though companies don't *want* to assure us they are compliant, or will be by 2000. The problem is that many companies are simply scared. The lawyers (and I'm not one to beat-up on attorneys, I have great attorneys) are licking their chops over Y2K and the years of litigation and huge settlements that they see over the next 3-5 years! As a result, many companies will be compliant but will not want to announce it publicly. Of course, the flip-side is that some companies will claim to be Y2K compliant when they really aren't.

Here's what I can tell you. All of the major banks, all of the major brokerage houses, all of the financial exchanges and all of the largest companies are spending big bucks to be ready - or at least operational - well ahead of January 1, 2000. Yes, a lot of them got started late, didn't realize the magnitude of the problem, and now are having to gun their Y2K projects into "red-line." But the bottom line is that all of the banks, brokers, financial institutions and market exchanges we work with are "pedal-to-the-metal," and I believe they will be functional - it may not be pretty - well ahead of 2000. Unfortunately, some will not certify that in writing for the reasons cited above.

Will There Be Banking 'Holidays' & Market Shutdowns?

The truth is, I don't know. Nobody does. Currently, I doubt it. As John indicated above, the Fed is really cracking down on the banks now. As our last Special Report in January elaborated, Michael Curtiss, my long-time friend and Y2K banking expert, still believes that only about 10% of banks, mostly smaller ones, will have problems serious enough to shut them down or be merged with larger concerns. ***Question: what is new about that?*** We have witnessed a revolution in the banking industry in the last 10-15 years, with the larger institutions gobbling up the smaller ones like no time in our history. **If another 10% get merged, so what?**

As for the markets shutting down, here again, I don't know for sure. As John indicated above, the regulators are currently cracking down hard on the exchanges and all firms involved in the investment markets. Like others, the regulators and the industry at-large were late getting started and fully understanding the problem. However, in the last year the financial industry has gone into "over-drive" to get the Y2K problem under control or at least manageable.

The bottom line: I don't know if there will be a few bank holidays, or a few days when the markets don't open. Right now, I tend to doubt it. But what if there were? What if the banks didn't open on the first business day after the New Year in 2000? What if our beloved stock market didn't

trade for a day or two after the New Year in 2000? Frankly, if we are in a recession and a falling stock market, investors might actually like it if the markets were closed for a day or two for everyone to cool-off and get a fresh head. Again, I currently don't expect it to happen, but it wouldn't be the end of the world if it did. I will come back to this point in just a moment.

Will There Be Chaos & Hysteria If The Government Can't Get Welfare & Social Security Checks Out On Time?

In order answer this very common question, you're going to have to excuse me one more time - I know I try to oversimplify seemingly very complicated subjects - it's just my nature. But let me reduce this burning topic to a couple of very elementary questions:

Are all these Y2K catastrophe issues going to remain shrouded in secrecy until midnight on December 31, 1999, and then suddenly appear on the front pages of the newspapers on the morning of January 1, 2000 and place the whole nation in shock??

Are welfare and Social Security and pension recipients going to have no idea there may be problems with their checks and direct deposits on December 31, 1999 and wake up on January 1, 2000 to learn that there may be a delay in their payments??

THE ANSWER IS -- *NO!!*

Admittedly, the government has been woefully reluctant to acknowledge that many agencies are way behind the curve in addressing Y2K issues. Admittedly, the government in general will not be ready in time. Certainly, there will be problems and delays. But guess what? Everyone else is also behind on Y2K for the most part.

At some point, and my guess is it will be around the middle of next year, the government will have to "come clean" and tell the American people that there will be problems and delays. They are too smart to let Y2K come as an overnight surprise to the American people, especially those who depend on the government for their livelihood.

[Pardon me while I digress, but it will give me great pleasure to see that **Bill Clinton** - ***"Mr. Bridge To The 21st Century"*** - and **Al Gore** - ***"Mr. Information Superhighway"*** - the most brilliant men in America today - will have to tell the American people that a COMPUTER BUG, of all things, will threaten to cripple the government on their watches!! **Don't you just love it?**]

The Point Is, This Is Not Going To Be A Surprise

I know a lot of you are very worried about the Y2K threat, thanks mainly to the gloom-and-doomers. Actually, it is good that these people are putting out their hype and hysteria, because it may be a **self-defeating prophesy**. It may partly be that because of all their hype, that this country getting into gear and finding ways to correct or minimize the problem.

I also know that a lot of you are concerned (as I am) that the general public currently has little or no clue about the real Y2K story, despite the fact that it has been on the cover of ***Newsweek, Business Week*** and other mainstream publications in the last year. But wait a minute and let's put this in perspective. ***This is a very embarrassing problem for America and especially the government.*** Think about it. The US computer industry, envied around the globe, created this

problem over 30 years ago in an effort to save (then) expensive hard drive space. The problem with the Year 2000 date was never forgotten; it was just ignored. In the meantime, we exported our computers and software all over the world. **And now, the whole world has the Millennium Bug!** Would you want to admit this publicly? No! So until recently, we've been in a state of denial.

At some point, again I think no later than mid-1999, virtually everyone is going to know about Y2K and the problems and disruptions it may cause. The government, while quiet today, will have to tell the public that there will delays in services. And, yes, that the welfare checks, etc. may (and I emphasize may) be a few days late.

Will There Be Riots & Chaos If The Checks Are A Little Late?

Sure, if the public knows nothing about the problem until January 1, 2000. But come on, let's get serious here. That is just not going to happen! **We won't let it happen!!** Y2K is simply not going to unfold the way the Doomsayers spin it. They would have you believe that only we "select" few are going to know about it in any great detail. Everyone else will party hard on New Year's Eve 1999, only to wake up to a dramatically different world on New Year's Day 2000.

As we get closer, the public is going to know what is happening. As John said earlier, at some point, this is going to be front page news. **You may respectfully (or not) disagree, but I don't believe that recipients of government benefits are going to burn down the cities, as the Doomers predict, if the checks are a little bit late - provided this news doesn't come in a Y2K vacuum.** And I'm telling you now, it will not come in a vacuum. This story is just too great to keep a lid on it. Virtually everyone will know something about it a year from now or sooner.

Some Of My Friends Are Gloom-And-Doomers

I have not wanted to talk about this, but my better judgement and my commitment to be up-front with you tell me I have to. You know that I have a lot of friends in the newsletter business. They have been very good to me over the years with their endorsements, and I have tried to do things for them in return. However, some of them have joined the Y2K gloom-and-doom camp, in some cases in a very big way. This creates a problem for me because we are now at odds over Y2K.

As many of you know, I have been close (professionally speaking) to **Gary North** for many years. So has John Mauldin, who ran North's newsletter publishing company for a number of years. Gary North was the first investment newsletter writer to recommend me for commodities and futures years ago, and his endorsement led to more than a dozen others over the few years that followed.

The fact is, Gary North is one of the leading proponents of the gloom-and-doom forecasts for Y2K. To this day, I still consider North one of the great minds of our time, especially theologically. But when it comes to Y2K, he has moved into another world. He has abandoned all of his previous writing subjects and has focused on nothing but a Y2K disaster scenario for the last two years. To his credit, and I'm not surprised, he is perhaps *the* leading Y2K disaster proponent of all. He has a huge Web site devoted to the crisis scenario.

Another newsletter friend is **Don McAlvany.** Like North, Don has jumped on the Y2K bandwagon, and now about all he writes about is a Year 2000 disaster scenario. Don is a good writer and, like North, his newsletters and promotional ads sound very believable, especially to those who have inclinations toward crises.

To their credit, I think both North and McAlvany believe what they are writing and saying. (I cannot speak for others.) **I just think they are wrong!** Let me be more specific. I simply believe it is a real leap for them to take what information on Y2K is currently available and vault to the apocalyptic conclusions they have. I don't understand it. From a purely business standpoint, they are betting their careers, and their newsletters, on a Y2K disaster.

I hope you understand, they may well attack me for saying this. I hope not, both because I don't want to get into a dogfight (and won't) with people who buy paper and ink by the boxcar load as they do, and because (as strange as it may seem), I still consider them friends. If they attack me, you will know that they no longer feel likewise. Let the chips fall where they may, I guess.

I take this risk and mention this in writing because North and McAlvany are mailing millions of promotional ads to the universe of investment newsletter subscribers, and I know that many of you have seen these gloom-and-doom mailings in recent months. **Just know that I do not agree with them. I can't categorically prove them wrong, but I believe they will be wrong.**

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Let's Try To Sum It All Up For Now

This Special Report has given you a LOT to think about, probably more than you wanted to know. Don't let it overwhelm you. Take it slow, especially if much of this is new to you. The summary points which follow are in no particular order, but this is what I think you should do.

1. Trust that we will continue to try to bring you good information. We will continue to research the Y2K problem. We will tell you what we've learned, good or bad. Our opinions may be proven to be right or wrong in the end, but I promise we will not hype you!

2. Try to learn more on your own about Y2K. Unfortunately, the greatest amount of information is on the Internet, and I know many of you are not on the Web. I hope to devote an upcoming newsletter to how you can get computer savvy and on the Internet as conveniently and as cheaply as possible. In the meantime, learn as much as you can. This is really important.

3. If you are on the Net, don't believe everything you read. Remember that there is no regulation on what can be posted on the Web. Anyone can proclaim to be an expert and many do.

4. Recognize that Y2K is going to be a serious problem. I hope by now you know that we're not talking about something like a *possible* new war in the Middle East. Y2K is very different. It is NOT a possibility. We *know* it is real; we *know* it is coming; we *know* when it will arrive; and we *know* it is going to, at the least, be disruptive. What we don't yet know is *how disruptive.*

5. Think about what to do in your personal life. As you learn more about Y2K, spend some time thinking about how it might affect you and your family. Maybe there are some relatively simple things you can do to minimize its potential disruptions.

6. Think about your job, or those of your loved ones. If you have a business, think seriously about how Y2K could affect your ability to continue to function, including other businesses that provide services to your company. If you are retired, think about the businesses and jobs of your loved ones, should we enter a recession. Feel free to copy this Report and send it to them, or call us and we will send them a free copy. I will be happy to do so.

7. Whatever you do, don't get overwhelmed! This is a big problem. In one respect only, I agree with the gloom-and-doomers: this is perhaps one of the greatest challenges we have faced in the last generation. But what if it is? As John Mauldin eloquently points out, American entrepreneurs have always risen to the challenge, and we will this time as well.

About Your Investments . . .

Everyone focusing on the Y2K problem has some angle. I would be less than honest if I didn't admit that I have an angle, too. I am in the investment business - you know that. You also know that I have poured my heart and soul into the investment products we offer over the years. Some have done fantastically well, while others have been okay but well below our expectations. Fortunately, we have a record that I will gladly put up against anyone's for not losing your capital, even in high risk markets, and I hope you can appreciate that.

Whether in a Y2K context, or just a normal business/market cycle context, I sincerely believe the investments we sponsor and recommend are going to do very well, comparatively speaking, in the next few years as we enter the next century. As you think about the Year 2000 problem, or whatever you choose to believe about the next couple of years, I think you will agree that we may be in for some very volatile times. I also think you will agree that the US economy is long overdue for a recession. And I think you will agree that the odds of the US stock market having another three years like the last three are very, very low.

You need to move toward a more defensive posture in your portfolio. You need to protect the profits you've made (hopefully). You can do this while still participating in any future upside in the market, and we have the alternatives to help you do so. I think you know that by now.

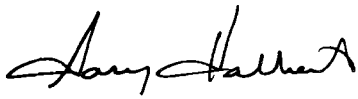
But here's the point. Whether you ever put one more dime with ProFutures or not, and there are certainly other places to put your money, **do something!** Don't run with the crowd; don't get caught flat-footed by the coming recession or Y2K. Get serious, take a stand (one way or the other) and most of all, don't be in a position to get hurt if surprises are coming.

Thanks For Your Business & Your Continued Interest

I hope you appreciate how much work we put into these Special Reports, this one in particular (our longest one ever). When you charge a pretty penny for things like this, it is easy to know how well it is received - $$$. But when you do this for free, as we do, it's hard to know. So, if you have found this Report especially helpful (or not so), please let us know. Just a note will do.

I do this for one reason only. You have stayed with me for a long time, through thick and thin. As a result, I feel we have a relationship of trust, even if we have never met or spoken on the phone. You will probably never know just how much that means to me. Thank you.

We are, no doubt, headed into some difficult times. You have my word that we will continue to try to keep you as informed as possible. Fortunately, I like doing this. I guess that comes through. But it is largely because of *your loyalty, your continued interest* and my commitment to *keeping it that way!* As always, feel free to call me at **800-348-3601** or write me at your convenience.



Mr. SESSIONS. Thank you so much. I would like to begin my questioning with Mr. Schmitt first. And I look on page 4 of your testimony where the statement is made assessment activities are schedule for completion by the end of the summer and work on infrastructure should be complete by the end of the year. It is not entirely outside the realm—as a matter of fact, it happened to me when I went out for a few minutes earlier today—to have someone come up and say "You know, there are a lot of pipe-lines in this country, and there are a good number of these pipelines that contain hydrogen sulfite."

OTHER PANELIST. Rotten eggs.

Mr. SESSIONS. Rotten eggs, that is a way to say it. You know when you smell it, that's for sure. We have pipelines that carry a lot of oil and gas and all sorts of things. Is the industry—and I don't mean to put this specifically on Texas Utilities. But is the industry aware of and looking at all these pipelines? And some of them may be shared or joint participation. Is that included in this assessment? And I know that was in reference to just your company, but is this same type of thing being done industrywide?

Mr. SCHMITT. Well, I can speak for Texas Utilities (inaudible). And so to the extent that our pipeline systems, our storage systems, the controllers and valves and monitors that are associated with our gas transportation systems, they're included as part of our overall evaluation and testing.

Mr. SESSIONS. So you are learning a lot more about your pipes in business really, you are finding these. Are there a lot of embedded chips out there?

Mr. SCHMITT. Yes, there are. In each of our business units that are responsible for those areas, the places where our experts and engineers know most about those components are actively involved in that aspect of the program. We test and assess based on a component level versus a chip level. And so that if there are more than a few chips in a component, then that's what we focus on.

Mr. SESSIONS. How would you characterize, if you have any knowledge, industrywide participation? Would you think that it's similar to what you are doing, the responsible thing in Texas Utilities?

Mr. SCHMITT. Yes, that's my feeling. The Electric Power Research Institute is a place where many utilities are active, and other members of that institute. So there's a great deal of sharing that goes on. There are other industry groups that we participate in. There seems to be a good environment where the utilities can share as we move forward to solve the problem.

Mr. SESSIONS. Are you finding that participation with vendors—and we had Ms. Brand talk about it, Mr. Mauldin talked about it—that full disclosure and trying to get information—you are dealing with huge systems, lots of valves and all these types of things. Is there a general, would you say, full disclosure between people that are helping you to solve the problem or do you find that you are out there on your own and not hearing back and not knowing from a vendor's perspective?

Mr. SCHMITT. Well, clearly the vendor communication and interaction is important to our overall program. Earlier this year we initiated correspondence to contact vendors and try to gain their sup-

port to learn the status of their programs. We've gotten a lot of feedback from that.

Mr. SESSIONS. Positive feedback?

Mr. SCHMITT. Positive. In some cases we haven't gotten feedback yet. And so follow-up is an important aspect of our program. So for almost all of this year there's been an active group of people that are trying to get the information we need from our suppliers and vendors.

Mr. SESSIONS. Would you think that from the testimony that's been given today that full disclosure requiring these companies to do these things—I know his statements in summary were related to financial solvency of a company and what their liabilities were. Do you think this full disclosure and best effort and trying to be open about it would aid your company, would be good for America?

Mr. SCHMITT. Well, clearly the more information that we have from vendors and suppliers that interface and provide our systems, the better job we can do to make sure that we're ready for the year 2000.

Mr. SESSIONS. Mr. Maulding, I have a question. You had talked about the SEC ruling. And I guess it's the K12?

Mr. MAULDIN. Yes.

Mr. SESSIONS. They had had a ruling earlier in the year.

UNIDENTIFIED SPEAKER. Staff bulletin No. 5.

Mr. SESSIONS. Staff bulletin No. 5. Wherever I go, somebody knows. (Inaudible). Can you please tell me why you think that what they have done is not leading edge enough?

Mr. MAULDIN. Well, what they've done is the best they could do. They've made an interpretive ruling, and that's the strongest thing that they can do absent (inaudible). And they're to be applauded for doing what they've done. I think they've done absolutely what they should have done. But since it is an interpretive ruling, it gives too much wiggle room, companies. And I think you're going to see at the end of the third quarter, you're going to see a lot more just legalistic happy talk.

When you look at what practice research (inaudible) capers, government, all these things are coming out. There is a significant number of Fortune 1,000 companies that are way behind in their—apparently way behind in their Y2K conversion. And they don't want to publicize that, and that's—quite frankly, for those of us who are investors, I feel sorry for their bad management. But we need to know that because we have money in these things. I need to know which companies are, in fact, on top of it because, as an investor, I want to know those companies as well.

This is a material fact. And for companies to be allowed to say "Well, it's not a material fact because we're only spending one-half percent or 1 percent of our budget. The viability of the company is a material fact to me. I think it's just wrong. And absent legislation from Congress, I think you're going to continue to see companies—in fact, of the companies which most need to be disclosing it, because that's the one we need to know most about, will be the ones that will say "Well, we don't think we need to" or "We'll start getting some happy talk." We need very clear language about this disclosure.

Mr. SESSIONS. And then the conclusion that you draw is that if people are more forthright with what they have done, that that is an indication of a best effort. And then it assures the public that responsible things are being done, and then there is not a run on either the stock market or in the case that you gave, banks and other financial institutions.

Mr. MAULDIN. It's going to be no surprise to you that there will be millions and millions of books and mail pieces and Internet pieces of letters written next year. I've got a good friend of mine who's fortunate enough to have written a book. He did $30,000 in his first 8 weeks, and publishers are already talking about how many millions are going to be sold, and it's a fairly negative book. And he's negotiating for his next million seller.

Most of the information that's going to come up out of this issue is going to be negative because it's very easy to take the information that we have and extrapolate to the negative. Now, I happen to be an optimist. I think that 90 percent of it's going to get done. I think we're going to mull through, and at the end of the day we'll be fine. But if you absent facts from my optimism, it's very difficult for me to tell people why I'm optimistic.

I think it's very possible that we could get into a session next year with all of the negative information coming out, that we could get a very negative attitude among the significant minority of this country that begin to flow cash out, that begin to withdraw from the markets. And as we all know, stocks are sold from the market. There's no absolute value to them. And you could create an economic problem simply because people get scared just as much—and it would have no basis in reality, and, yes, it could come back, but there's no point in it if we could have full disclosure.

Mr. SESSIONS. Thank you.

Mr. BRADY. I appreciate the testimony from both of you and the progress that you are making at TU, which is critical. I was just going to ask Mr. Mauldin if there's not—if you believe the freedom cry system, you believe in the market seeking out information from the marketplace itself, making corrections, pressuring brought on the companies that are not sharing with their shareholders and investors the status of their process and in people shifting money to and from companies that seem to be doing the better job. Why would we—when every company, many companies have unique issues to deal with, both with what their past infrastructure might be, and what relationship they have with other business partners or government or international.

Since everyone is different, do you really think a Federal disclosure system that doesn't provide benchmarks of knowledge to consumers would truly be helpful in avoiding this problem?

Mr. MAULDIN. Well, the SEC system's approach does do some good for us, and that's why I suggested that I think we need progress reports. But you understand, there's no bigger component of the free market. I've tried the companies. I don't think they should have to disclose (inaudible). They're a private company. When you have a public company, there are certain levels of disclosure that we require now. In fact, if you listen to people who are in charge of public companies, they think they have to disclose too

much. This is a material fact, and companies are not treating it like a material fact.

I mean, the very simple thing is Congress could just simply say (inaudible) and that would pretty much solve the problem. The market will decide which companies are doing well or doing poorly, and whatever stock level it goes to is fine. But we can't make that assessment properly unless we know what the situation fully is.

Mr. BRADY. The point you make is a very good one, a very valid one. I just wonder, given the participation of institutional investors, some of which may have dramatic significance on publicly traded companies, leaders like yourself among the money managers want to know these answers to these questions. I just question whether the best approach is through full disclosure without perspective or disclosure that comes from fairly targeted questions and pressure from investors and companies who can answer questions in perspective to that company itself rather than over abroad.

Mr. MAULDIN. I represent small investors, and I constantly get annoyed when large institutions can walk in, walk into a public company and say "I want this information," and that analyst sits down, and he makes a decision, and he sells and he buys. And the little guy, on the other hand, gets that information later. A public company has a trust that they are supposed to tell everybody at the same time. Everybody's hand is supposed to be on the table. And by allowing big investors or big people to put pressure on them and they get that information first puts a small investor at a significant disadvantage.

Mr. BRADY. If a company is reacting to public pressure, and again, most companies I talk to can't walk through a meeting or a reception without (inaudible). I mean, I asked everyone I know "Where are you at? What's it going to cost you? On a scale of 1 to 10, are you going to be ready?" And I would think that publicly disclosing that in itself, there would be a very tremendous pressure for that. And the question I ask of you, though, do you think that with full disclosure, public disclosure, how much of the liability would a company be open to, how much of that would full disclosure impact them?

Mr. MAULDIN. I think we have two separate issues. One is the right of investors to know, and the other is the legal liability issue and is keeping companies from disclosing issues, which is hampering the efforts to cooperate for systemwide communication. The first is it's the basic right of investors. There shouldn't be any argument. I'm upset with companies when we get—the last round was less than 20 percent of the companies release that document that say "Here's where we are and here's what we're doing."

And absent any real shoving, and the SEC is doing the best they can, they're not going to do it because they're concerned about their legal liabilities. And so we may need to, hand in hand, come in and say, with the bills of Congressman Dreier's, come in and say "If you disclose where you are, the fact of disclosure would not be legally held to you, that doesn't relieve you of the responsibility of having to produce a proper product or a proper service. But the act of disclosing where you are and what your situation really is, in and of itself, is not (inaudible)."

Mr. SESSIONS. As long as you have done what you have said you would do, obviously.

Mr. MAULDIN. Oh, absolutely, absolutely. False statements or misleading statements need to be dealt with severely. This is not a—these types of things can hurt you. Misleading people saying—you tell people you're in good shape, for instance, and so investors invest in the company, people buy the services when, in fact, you know you're not, that's pretty serious.

Mr. SESSIONS. Congressman Brady, I will let you conclude.

Mr. BRADY. I'm not quite convinced (inaudible). I do appreciate, Eric, you being here, and I appreciate you being here.

Mr. SESSIONS. Chairman Horn. I may chime in on one or two others, but I will let you have your shot.

Mr. HORN. This won't be too long. But what is your view of the administration's proposed data sharing that we are moving through the House and the Senate hopefully?

Mr. MAULDIN. The problem that I see with it is, it only deals with negative statements rather than positive statements. You get liability relief if you make a statement which turns out to be false, but you don't get liability relief, and nobody ever makes a statement knowing that it's false, so it's only statements that you think are true and you find out are false, and that's where you get liability from. That's not going to help people. What people want liability relief from is the statements that are true, and that's where Congressman Dreier is going to, a much better approach.

I mean, we all, when we make statements, we think what we're telling is true. And it's the true statements that we're worried about getting in businesses and industry, we're worried about what's going to get us in trouble. I think Congressman Dreier carved out a nice niche here. In terms of the way he's handled the liability, he hasn't completely said "You're not liable for your product and service." It's only that the statements that you make can't be used against you later down the road. And I think that's the much better way. Simply saying "You're not liable for your agency," I don't think it has any effect at all because it doesn't change it, because nobody knowingly makes a false statement.

Mr. HORN. Well, there is such a thing as a statement that isn't complete.

Mr. MAULDIN. Right.

Mr. HORN. I guess my worry, and I have a thorough look at Congressman Dreier's billing that we will be discussing when we get back, is it seems to me we should keep the heat on this year, the CEO's face up to this situation, not be in a period of denial, and that we shouldn't let them off the hook because the investor has the right to know what is going on.

Mr. MAULDIN. I think you have to do both things. I think one without the other doesn't do the job. But if we don't begin to have more shared communications among industry groups about the situation—you know, the 106th Congress, it's March before you can do anything. We have 6 months of incredibly valuable time and effort. This is just one of those issues that unfortunately we can't—Congress says "The date doesn't change." We've only got 501 days, and I think we have to move on those particular issues quickly. Now, we can put some of the banking and government things off.

But on these two issues, I think it's really critical something gets done in this session.

Mr. HORN. Do you think the markets have already discounted this situation?

Mr. MAULDIN. No, not even begun to deal with this.

Mr. HORN. When do you think? The summer of 1999? The fall?

Mr. MAULDIN. I'm not even going to hazard to guess because I'll be wrong. But it was the most interesting thing that I saw yesterday on the Net if you're familiar with, of course, Dr. Gardene (phonetic). He's putting a statement together tomorrow.

Mr. HORN. He is the one that's been preaching recessions?

Mr. MAULDIN. He's the one that's been preaching recessions for good reason, I think. But he got from Mr. Martin, a bank credit analyst (inaudible). Now, I know as of a few months ago when we had contacted a credit analyst they had not yet factored Y2K or economic recession, economic forecast. This is one of the most influential things and newsletters on economics in the country. And for him to be there is a significant statement. So the markets are beginning to wake up to it. And the credible institutions like Morgan, bank credit analysts, and others begin to make statements and begin to investigate it.

When you factor in the agent problems (inaudible) problems, the other things are going to happen. It wouldn't surprise me that the market is beginning to really start paying attention to it late this year and early next year and start factoring that into it. And the lack of disclosure is going to make it worse and not better because you get (inaudible). I don't mean to be so negative, but that's a concern that I have.

Mr. HORN. Really, Mr. Schmitt, on this one, how much inoperability do your systems have with other States and other countries in terms of the power system?

Mr. SCHMITT. Well, our service area, which is in the Electric Reliability Council of Texas, for the most part is an isolated transmission pool or grid. We do have some direct current ties north of our service area and the eastern part of the service area, but not relatively—not very much electricity can move any direction across those ties.

Mr. HORN. Am I understanding correctly that parts of Mexico are tied into that grid?

Mr. SCHMITT. Not to my understanding.

Mr. HORN. There is no exchange of power across the border?

Mr. SCHMITT. Not to my understanding.

Mr. HORN. Because in Canada there is with the United States.

Mr. SCHMITT. Essentially, our grid is isolated here in Texas.

Mr. HORN. Now, your grid includes the whole State of Texas.

Mr. SCHMITT. Most of it. Not the whole State, but most of the State of Texas.

Mr. HORN. How about the northern border with other States? Would power flow back and forth into the Texas grid?

Mr. SCHMITT. Only to the extent that the electricity can move across the direct current to the north which, as I mentioned, is not very much.

Mr. HORN. I see. What are the contingency plans for Texas Utilities? Do we have some?

Mr. SCHMITT. Well, as a normal course of business we have emergency plans to address, inclement weather, service problems. If we have short supplies, we have a 24-hour service available, preventive maintenance programs. All of those things, of course, are a normal part of our business. We maintain a reserve generation so that, if there's a unit in our system that has a problem, we're able to pick up loads so that it's transparent to the customer. So all those things are here today, and they're a normal part of our business. Our plan is to add contingencies that are specific to the year 2000.

Mr. HORN. Hold that a little closer. I am having trouble hearing you.

Mr. SCHMITT. Our plan is to add contingencies that are year 2000 specific as we begin to conclude more testing. We think early in 1999 to mid-99 we will have very specific plans that we can utilize with respect to the year 2000.

Mr. HORN. Now, as communications support manager for the Texas Utilities, does that mean all of them look to you for guidance in this area or are you a communicator with the outside world for all of them? How does it work? Is there a separate network here that is just Texas or any other?

Mr. SCHMITT. I'm part of an organization that handles communications for the corporation.

Mr. HORN. Which corporation?

Mr. SCHMITT. Texas Utilities.

Mr. HORN. And that includes just the municipals and the privates or all of them?

Mr. SCHMITT. Just Texas Utilities Co.

Mr. HORN. And does that have power throughout Texas?

Mr. SCHMITT. Just the top third or so of the State of Texas.

Mr. HORN. And what do you mean by that? The major cities or what?

Mr. SCHMITT. Well, we handle the Dallas/Fort Worth area. We go as far west as Midland Odessa, as far east as Tyler, south to Waco.

Mr. HORN. Who represents the rest of Texas?

Mr. SCHMITT. Various other utilities, smaller municipalities, co-ops.

Mr. HORN. But your area you just desribed, you said, is about one-third of the energy use of Texas?

Mr. SCHMITT. Right. (Inaudible) which is about 50,000 megawatts electricity. Texas Utilities contributes about 21,000 or 22,000 of those megawatts.

Mr. HORN. And from your understanding of the various status, where are the various energy companies in Texas? And is there a Texas Utilities Commission that would know that or are they involved? Does the Railroad Commission have jurisdiction in this area or what?

Mr. SCHMITT. We participate with other utilities in the State of Texas with respect to industry groups (inaudible) just our normal contacts. But the Railroad Commission does have jurisdiction, the Public Utilities Commission has jurisdiction.

Mr. HORN. What does the Railroad Commission have? On the oil wells or what?

Mr. SCHMITT. On our gas side.

Mr. HORN. On your gas side?

Mr. SCHMITT. Yes.

Mr. HORN. What is the Public Utilities Commission run now? Coming out of what? Hydro or just all electric service?

Mr. SCHMITT. All.

Mr. HORN. Regardless of the source——

Mr. SCHMITT. All electric service.

Mr. HORN. Well, what have you seen? Have you seen in other companies? Were they municipal, public, private, whatever? That there are problems within this area in, let's say, disclosure to Mr. Mauldin's point made? Are they fully disclosed at this point? Is it required by any of the Texas governmental organizations to fully disclose where they are in conversion under the Y2K approach here in the year 2000?

Mr. SCHMITT. I know that the Public Utilities Commission is very interested in the activities of the utilities here in Texas. We have had several meetings with those representatives in Austin to discuss programs and so on. So there's some sharing going on there. Additionally, we've begun a reporting process with the North American Electric Reliability Counsel. And so to the extent that those reports begin to come in nationwide about the status of the year 2000 programs, and the kind of sharing going on that could help elevate the entire process as well.

Mr. HORN. Do you have any idea what is going on in adjacent States?

Mr. SCHMITT. I don't. I'm not well versed on what some of the other utilities and projects, how they're progressing.

Mr. HORN. Where would be the best place to go in Texas to look at the overall jurisdiction for the Railroad Commission and Public Utilities Commission? Is there any other government, cabinet officer, Governors of the cabinet or something that pulls these data that you have?

Mr. SCHMITT. I'm not aware of any.

Mr. HORN. One other comment is that to many of the senior executives of different companies Y2K is strictly a technological problem, as I said earlier. It is really a management problem. How do you see it in the Texas Utilities? Are senior executives responsible for the various corp business functions, that they become actively involved in it, or is this sort of left to the people in information technology to worry about it.

Mr. SCHMITT. I believe they become very much involved in the active program. Additionally, we think the communication aspect of the program is essential. So we have a multi-faceted program that includes employees' internal communication and external communications. We just recently included a bill insert into bills for our customers to try and raise their level of awareness, and then invite them to visit our website which has information, has frequently asked questions. And it's interesting, oftentimes we can develop a dialog with customers and interests of the public by way of e-mail. We'll ask a question, "Will you recycle? How about this?" And frankly, there's a great deal of communication interaction that's taken place in that forum.

Mr. HORN. Texas Utilities is listed, I take it, on the New York Stock Exchange.

Mr. SCHMITT. Yes, we are.

Mr. HORN. So with the involvement of your senior executives, I am assuming they realize the impact some of this would have on their stock.

Mr. SCHMITT. Very much so. They're very attentive to the activities of the overall (inaudible) program, and they are briefed regularly, and they apply it at this point. I would consider that they are applying the right amount of resources to do the job.

Mr. HORN. Mr. Chairman, I have a couple of things I want to put in the record. This is XDAY!, eXchange DAY!, a proposal by Bob Bemer, and that is a proposal to get into the record, and I would like to include a memorandum, Mr. Chairman, from the American Law Division, which is part of the Congressional Research Service (inaudible) a Congress, part of the legislative branch. One memo is dated August 3rd, 1997, potential Federal liability or failure to properly implement the year 2000 data base conversion. Another is dated August 12th, 1998, Federal immunity for local governments on that same issue. So, Mr. Chairman, if we could get those in the record.

[The information referred to follows:]

XDAY! eXchange DAY!

A Proposal by Bob Bemer

Use the simple XDay method to avoid current problems with interchange of date data. Yes, one standard has a 4-digit year value as one part -- but

1) The world doesn't have the time to change to conform.

2) XDay is a nonconflicting simple alternative that the world has ample time to use, and it is totally compatible with the 4-digit form.

3) 4-digit years are people forms, cultural forms. Computers often use floating point calculation internally, but people don't. Computers often use binary arithmetic internally, but people don't.

   XDay is an inside-the-computer, people-don't-see-it, form of date that is always simpler for computers to use.

4) The method conflicts with no proprietary interests or prejudices, and works for all the world, not just for those using the Gregorian calendar. Nobody owns it! No religion, no government, no business type, no language group, no ethnic group, no continent has prestige or precedent to protect!

5) XDay doesn't enlarge or change record formats or database pointers. It can intermingle with, and never be mistaken for, whatever current date form one uses. In short, it is self-identifying.

6) Most people, for pennies, would be happy to see the external aspects of the total Y2K problem go away.

7) Even the name "XDay" has never been used for this.

What follows is a selection and distillation of existing methods to propose a best way to interchange date data for our time and its emergency.

There is no need to give credits for sources; all are in the public domain, as this variation is. They exist from Joseph Scaliger on down, and may be found, if desired, by a search of the Web for "Julian Day" or just "Julian".

These appendices follow the main exposition:

A. A TimeLine for XDays.

B. Conversion between XDay and calendar, ordinal, and fiscal dates.

C. Rebuttal arguments for any doubters and diehards that may remain after reading the main paper.

D. How to discuss or argue with Bob Bemer.

E. XDay calendar until Year 2000.

F. Ready-to-use Conversion Programs.

THE XDAY RATIONALE

The Year 2000 problem has two distinct parts -- internal (fixing computer programs to work correctly for multiple centuries in one's own system), and external (exchange of date data with other systems). Any belief that both parts are equally difficult is wrong.

A single value can have many representations. The value six can be represented by "six" or "6" or "VI". A Reuters story of 1998 Apr 15 quoted Merrill Lynch as saying they would "cut off firms that are not prepared to deal with the Year 2000 problem". Contamination is feared. This doesn't make a 4-digit year requirement, although odds are they won't accept "MMIV" for the year 2004. So representation is critical.

Interchange demands speaking the same language with the same symbols. As the world runs on networks of computers that vastly interconnect our lives, correct interchange of date data is critical to survival of that way of life.

The situation is akin to that in 1960 when computers had over 60 different ways to represent their character sets. We fixed that with ASCII, but it took over four years to get it adopted as a standard, and not until PCs became prevalent was it really in force. Time is shorter now!

An air traffic controller in Brazil, having just asked, in Portuguese, a friend to get her a cup of coffee, speaks in English to the airplane pilot, who may be German. That's done worldwide for safety, and we need to use a similar interchange method worldwide for another form of safety in this Year 2000 crisis.

XDay is an easy method for universal date value exchange, but before explaining it let's look at the current situation.

THE PRESENT CONFUSION

Missing century is just a part of the problem. A date value for import or export may be expressed as YYMMDD or MMDDYY or DDMMYY. If it has 4-digit years, use YYYY, not YY. If delimiters are used, it might show as DD/MM/YY. If in decimal numbers, each number might be in an 8-bit byte or in a 4-bit compacted form. If bytes it might be encoded in either ASCII or EBCDIC. If in binary numbers, DD and MM and YY might each be separate binary numbers, or they might be adjoined in a single binary number. Some programs use the ordinal (or nth) day of a year instead of month and day, as YYOOO. So a date might need anywhere from 3 to 10 or more computer characters.

Some existing methods don't even use decimal or binary numbers. Other methods give time in seconds or days, like internal clocks in PCs, UNIX, mainframes and the Global Positioning Satellites. If time is marked in seconds or days from some reference (starting) date, there is no standard reference starting time that everyone uses!

Thus there are NO standards for representing dates! Using 4 digits for years is recommended, naturally, but other than that - zilch! Very late in the day not to have standards for our interconnected world.

So the big question is -- with all these possible and existing usages, how do we KNOW WHICH? More properly, how does a stranger know? We know, of course, because it's implicit in the programs we are using. But that is not good enough. The XDay method solves all, in this way:

WHAT IS XDAY?

Only one unfailing human method of demarking time exists. Our EARTH rotates ONCE EACH DAY. Has and will. Two more rotations make it two days later. The only sure way to know the date is by how many days it is after some other day. Unsurprisingly a method exists. It's the JULIAN DAY system. Julian Day for the first day of Year 1 A.D. was 1721475. (Note: Some people use "Julian Day" erroneously to mean the Nth day of the year, rather than the Nth day of the Julian range).

For day 1 of the following centuries the Julian Day (in parentheses) is: 1800 (2378497), 1900 (2415021), 2000 (2451545), 2100 (2488070) ... 2400 (2597642).

The first digit stays the same for 27 centuries, and it won't roll over from "2" to "3" for 15 more centuries. So we DON'T NEED the leading "2"! Imply it, and call the 6 remaining digits

"XDay" (eXchange Day).

May 16 of 1998 had XDay value of 450950. January 1st of 2000 (the most feared) is XDay 451545 (see the display).

YYYYMMDD	*XDAY*	*YYMMDD*	*MMDDYY*	*DDMMYY*
18581116	*400000*	*581115*	*111558*	*151158*
19000101	*415021*	*000101*	*010100*	*010100*
19431003	*431001*	*431003*	*100343*	*031043*
19990101	*451180*	*990101*	*010199*	*010199*
19991231	*451544*	*991231*	*123199*	*311299*
20000101	*451545*	*000101*	*010100*	*010100*
20230224	*460000*	*230224*	*022423*	*240223*
21320831	*500000*	*320931*	*083132*	*310832*
35010814	*999999*	*010814*	*081401*	*140801*

XDay has some wonderful properties, the best being that, unlike the Lilian Day that IBM provides formulas for, it can't be mistaken for any other form of date. It's unique! (XDay = LilianDay + 299160)

See the TimeLine in Appendix A By Common Era Year 1102 XDay began with "13", so it couldn't be a month-day-year format; months go only to 12.

By 1616 XDay began with "32", so it couldn't be mistaken for a day-month-year format; days go only to 31.

XDay might have been mistaken for a year-month-day format in 1943, when calendar 43-10-03 equaled XDay 431001. But the YMD format is not a cultural format; it came into being primarily for computers, probably not until at least 1960. But assuming that it did show up in 1953, we have until October of 2214 (XDay=530000) before that conflict can occur! But by then we'll be totally converted, won't we?

This says you don't have to convert everything abruptly. Old formats and XDay can coexist intermixed during the transition. And XDay use does not require you to modify your other software or internal data.

But you may not derive XDays from 2-digit years. If fed mistakenly to the conversion formulas, you'll get XDays with minus values. Obvious enough? You've found one!

A bonus is that the leading "2" of Julian Day, which XDay ignores, won't change to "3" until August of 3501. But warn your descendants they'll have a problem similar to what we had in 2000 if they don't cater to it. Although a shift of 26 centuries would be less confusing than just one.

The next best property is that XDay takes up exactly the same space in the data that any of our old forms did when they handled 2-digit years. Users don't need to expand record and database formats; just fill them differently. The 6 digits of XDay handle 27 centuries, not just one.

Another fine property is that when one goes back to really fix the Year 2000 problem, Xday can be the main unit for all calculation. It handles leap years without a hitch (they're built in), provides elapsed days over many years (not just one, like Nth day does), and converts with ease in both directions to every other form of date - calendar, fiscal, ordinal, and non-Gregorian calendars like Imperial Japanese.

A still further advantage is that contrary to the internal difficulties everyone experiences in finding dates in the internal programs and data, people can usually pinpoint exactly the format and character of dates they input and output externally. See the copy books.

Consider the data transfer pipeline. A sender putting data into it first transforms the known date values, by trivial formulas in the public domain (See Appendix B), to XDay values. The receiver's transformer converts Xday values to the form they use, which may be different from the sender's. Does this differ in any way from the air traffic control language example?

As all date values go through this filter, anyone may use whatever form they wish to locally, probably just the form they've always been using.

We'd still use cultural forms for dates, but only for input and output from and to humans. All interchange between computers would be done in this standard XDay unit that they would all understand. Later, the internal calculations and storage could use XDays, too, in a gradual and very manageable changeover.

Can anyone think of an easier sort key than XDay?

XDay avoids the silly mistakes of PCs, UNIX, CPU clocks, and Global Positioning Satellites, et al, of using too short a time cycle.

XDay complies with U.S. Government GSA Federal Acquisition Regulation for Year 2000 compliancy, which verbiage permits XDays. It does not say you must provide 4 actual digits of the Gregorian Year. Only that:

> *"Year 2000 compliant, as used in this part, means, with respect to information technology, that the information technology accurately processes date/time data (including, but not limited to, calculating, comparing, and sequencing) from, into, and between the twentieth and twenty-first centuries, and the years 1999 and 2000 and leap year calculations, to the extent that other information technology, used in combination with the information technology being acquired, properly exchanges date/time data with it."*

The final advantage is that, like ASCII when it was developed, XDay is subject to no ownership or vested interest. No government, no religion, no language group, no ethnic group, no business, no political party, no continent has prestige or precedent to protect! As it coexists with all the world's existing calendars, all objections to its adoption can be overcome.

WHAT WE SHOULD DO

XDay can be made the gold standard, the lingua franca -- our salvation in the world of date interchange. Whatever you use at home, use XDay exclusively to represent the date in the world market. Providing (!) we get worldwide agreement to the following rule, even via laws:

> *In date interchange under private agreement between exporter and importer, both may represent date values in any agreed form.*
>
> *Absent such agreement, electronic interchange of date values must be done only in XDay form.*

Will XDay solve the Year 2000 problem? Definitely not. Will XDay take the sting out of a possible collapse? Definitely yes. Will XDay serve to prevent the feared contamination in interchange? Yes, indeed. Can everyone convert in time? With the right authority, a good chance.

Will Xday cause added programming we can't afford? No way. A Microsoft programmer and checker could do it in a day for most of the PCs in the world! The code may even exist as a step to the "date" function from the binary clock that counts seconds (or near seconds) from start time. Know and store the XDay when the clock started, divide the reading by 43,200 (seconds in a day) and add to the start time! A Java applet is just as simple. Here's the DOS form:

```
C:\>xday
Current XDay is 450950
Enter new XDay:
```

Could we wish that every computer in the world processed dates in XDay form? Yes. It's absolutely the simplest and the best way. One would hope that for the future, once the present 2000 crisis is passed, that they would all be so programmed. It's as critical a standard as ASCII.

APPENDIX A

A TimeLine for XDays (Common Era)

763 Sep -- Now XDay has the value 000000.

1101 Sep -- Now XDay cannot be mistaken for a month-day-year value like 12-31-01

1615 Oct -- Now XDay cannot be mistaken for a day-month-year value like 31-12-15

1858 Nov -- The 6-digit XDay begins with "4"

1880 -- XDay still begins with "4", and hardly anyone born before this date still lives

1950 -- XDay still begins with "4", and the computer era has just started

2000 -- XDay still begins with "4" when the danger era starts

2131 Aug -- XDay finally begins with a "5", but mankind has had time to fix everything

2406 Jun -- XDay begins with a "6", and if mankind still has not fixed everything, so what? The program logic is trivial!

3501 Aug -- XDay goes to "000000" again, and similar difficulty could occur. Historians and genealogists should have kept that leading "2" somewhere!

APPENDIX B

X DAY CONVERSION FORMULAS

(between XDay and calendar, ordinal, and fiscal dates)

Variables: (Use only integer arithmetic!)

```
   XD = XDay value
  XD1 = XDay for Jan 01
   Ti = intermediate variables
   LY = Leap Year (1 if true, else 0)
 YYYY = 4-digit year
   MM = 2-digit month
   DD = 2-digit day
  NNN = 3-digit ordinal day
 YYYF = 4-digit fiscal year        (may not = YYYY)
   WW = 2-digit fiscal week                (max 53)
    D = 1-digit fiscal day of the week
   FC = fiscal constant
```

My 1980 TEX program "DATE" adopted the following plan for conversions, using multiple transforms for the seldom-used cases. Obviously they could be rewritten to remove "IF"s.

1) Leap Year

```
LY=1-(YYYY-YYYY/4*4+3)/4
LY=LY+(YYYY-YYYY/100*100+99)/100
LY=LY-(YYYY-YYYY/400*400+399)/400
LY=YYYY/4000 if remainder:eq:0 LY=0        (optional)
```

2) Calendar Date to Ordinal Date

```
  do (1)
NNN=3055*(MM+2)/100+(MM+10)/13*(LY-2)-91+DD
```

3) Calendar Date to XDay

```
T1=(MM-14)/12
T2=DD-2032075+1461*(YYYY+4800+T1)/4
XD=T2+367*(MM-2-T1*12)/12-3*((YYYY+4900+T1)/100)/4
```

4) Calendar Date to XDay for Jan 01

```
XD1=1461*(YYYY+4799)/4-2031738-3*((YYYY+4899)/100)/4
```

5) Ordinal Date to XDay

```
   do (4)
XD=XD1+NNN-1
```

6) XDay to Calendar Date

```
T1=XD+2068569
T2=4*T1/146097
T1=T1-(146097*T2+3)/4
T3=4000*(T1+1)/1461001
T1=T1-1461*T3/4+31
T4=80*T1/2447
DD=T1-2447*T4/80
T1=T4/11
MM=T4+2-12*T1
YYYY=100*(T2-49)+T3+T1
```

7) Ordinal Date to Calendar Date

```
   do (1)
 T=NNN+((305+NNN-LY)/365)*(2-LY)
MM=((T+91)*100)/3055-2
DD=T+30-(MM*3056)/100
```

8) Fiscal Constant

```
 do (4)
 T=(XD1+2)-(XD1+2)/7*7      (or rmdr (XD1+2)/7)
FC=T+7-(T+3)/7*7
```

9) Fiscal Date to Ordinal Date

```
YYYY=FYYY
   do (8)
NNN=7*WW+D-FC
   do (1)
if NNN:gt:(365+LY) YYYY=YYYY+1 NNN=NNN-365-LY
if NNN:lt:1 YYYY=YYYY-1 do (1) NNN=365+LY+NNN
```

A) Ordinal Date to Fiscal Date

```
 do (8)
FFFF=YYYY
WW=(DON+FC-1)/7
 D=remainder+1
 do (1)
if WW:eq:53 if (FC+LY):lt:10
   FFFF=YYYY+1 WW=1
if WW:eq:0
   YYYY=YYYY-1 FFFF=YYYY do (1)
   YYYY=YYYY+1 WW=53-(FC+1-LY)/6
```

B) XDay to Ordinal Date

```
do (6) do (2)
```

C) XDay to Fiscal Date

```
do (B) do (A)
```

D) Calendar Date to Fiscal Date

```
do (2) do (A)
```

E) Fiscal Date to Calendar Date

```
do (9) do (7)
```

F) Fiscal Date to XDay

```
do (9) do (5)
```

Note: Input of fictitious dates may yield unpredictable results!

APPENDIX C

Rebuttal arguments for any doubters and diehards that may remain after reading the main paper.

A person confronted by death, due to some bad personal habit, will often change that habit in order to survive. A different diet, stopping smoking, whatever. But the change will be made only when one is aware of a solution, and has the opportunity to change.

A world confronted by a form of death may change a habit, but again only if it becomes aware of a solution, and has the opportunity to change.

That form of death is perceived in the Year 2000 problem for computers. Part of the solution is XDay, and yes -- there is an opportunity to change. Moreover, it can be done in the short time left. Therefore we must look upon XDay as an opportunity!

Will the person say "No, I can't save myself. The way to do it is contrary to a Government rule"? Rubbish! A way to ease such a conscience follows.

Standards, no matter how official, always seem to have recognized alternatives. Esperanto, of course, is the standard designed for universal

language. Yet it is not widely used in the United States because existing English is so prevalent.

Wait, you may say! English is not the standard language of the United States. Even though some states have attempted to make it so, judicial rulings have appeared to strike down such laws. Possibly because of conflict with other laws that specifically require the use of non-English.

Apparently countries will consider alternative practices permissible when high-volume usage exists. As another example, the metric system is the legal and official measurement system of the United States since about the mid-1800s. Can anyone prove the total absence of the old English measurement system in the laws of the United States?

Both standards and recognized and registered alternatives can coexist. In the case of ASCII and the ISO Code, this was made possible by the registry process. No one expected the Russians to change from Cyrillic to Roman alphabet just for a standard!

And there can be both standards and de facto practices. Most Brazilians speak Portuguese. But they will use English, as pointed out in the air traffic controller example. This may not be spelled out in Brazilian law, but it exists, and with excellent reason.

4-DIGIT YEARS vs. DATES EXPRESSED IN DAYS

Some standards prescribe use of all four digits to express year values. In their original embodiment the titles said "... writing dates in all-numeric form". "Writing ..." We know no legally-enforced U.S. standards for expressing dates, especially not via year-month-day. To the contrary, a standard exists for expressing day values via only year and day. A U.S. Federal Information Processing Standard!

If it is permissible to have a special standard for Nth day of a year, why not for Nth day of a decade? Nth day of a century? Nth day of some arbitrary range of time? Like the Julian Day range?

Internal clocks for many computers measure time in a binary number of seconds within some arbitrary range. Would anyone dare to brand such a large group of the world's computers as non-standard? It would certainly be foolish to do so. And impossible to enforce. IBM would complain.

IBM would be right! After all, the standard time unit (the metric system, the SI tells us) is the second! Moreover the ISO Date Standard does not permit only 4 digit years. Smaller options are mentioned specifically. See the NIST (US National Institute of Standards and Technology) ITL Bulletin for 1998 May.

These alternatives exist because there are exact transforms between representations. Rules that have existed for centuries, with rules for the Gregorian Calendar being about the most recent.

They exist because there are very good reasons, from an internal computer use viewpoint, for them to exist.

They exist because they don't present the values visually to human users, who see only the transformed cultural values, of which there are many, even within the Gregorian Calendar.

So to diehards anywhere: "Knock it off! We're trying to survive!"

APPENDIX D

How to discuss or argue XDay with Bob Bemer.

Contact him by e-mail at bbemer@bmrsoftware.com
voice at 972-671-5000
FAX at 972-783-9737

Keep an open mind.

APPENDIX E

XDay calendar until Year 2000.

	M	T	W	T	F	S	S
1998			01	02	03	04	05
JUL	06	07	08	09	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31		

XDAY = 450995 + (day-of-month)

	M	T	W	T	F	S	S
1998						01	02
AUG	03	04	05	06	07	08	09
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31						

XDAY = 451026 + (day-of-month)

	M	T	W	T	F	S	S
1998		01	02	03	04	05	06
SEP	07	08	09	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	29	29	30				

XDAY = 451057 + (day-of-month)

	M	T	W	T	F	S	S
1998						01	02
OCT	05	06	07	08	09	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	

XDAY = 451087 + (day-of-month)

	M	T	W	T	F	S	S
1998							01
NOV	02	03	04	05	06	07	08
	09	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30						

XDAY = 451118 + (day-of-month)

	M	T	W	T	F	S	S
1998		01	02	03	04	05	06
DEC	07	08	09	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30	31			

XDAY = 451148 + (day-of-month)

	M	T	W	T	F	S	S
1999				01	02	03	
JAN	04	05	06	07	08	09	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31

	M	T	W	T	F	S	S
1999	01	02	03	04	05	06	07
FEB	08	09	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28

XDAY = 451179 + (day-of-month)

1999	01	02	03	04	05	06	07
MAR	08	09	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30	31				

XDAY = 451210 + (day-of-month)

1999				01	02	03	04
APR	05	06	07	08	09	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30		

XDAY = 451238 + (day-of-month)

1999					01	02	
MAY	03	04	05	06	07	08	09
	10	11	12	13	14	15	16
	17	18	19	20	21	22	23
	24	25	26	27	28	29	30
	31						

XDAY = 451269 + (day-of-month)

1999		01	02	03	04	05	06
JUN	07	08	09	10	11	12	13
	14	15	16	17	18	19	20
	21	22	23	24	25	26	27
	28	29	30				

XDAY = 451299 + (day-of-month)

1999			01	02	03	04	
JUL	05	06	07	08	09	10	11
	12	13	14	15	16	17	18
	19	20	21	22	23	24	25
	26	27	28	29	30	31	

XDAY = 451330 + (day-of-month)

1999							01
AUG	02	03	04	05	06	07	08
	09	10	11	12	13	14	15
	16	17	18	19	20	21	22
	23	24	25	26	27	28	29
	30	31					

XDAY = 451360 + (day-of-month)

1999			01	02	03	04	05
SEP	06	07	08	09	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30			

XDAY = 451391 + (day-of-month)

1999					01	02	03
OCT	04	05	06	07	08	09	10
	11	12	13	14	15	16	17
	18	19	20	21	22	23	24
	25	26	27	28	29	30	31

XDAY = 451422 + (day-of-month)

1999	01	02	03	04	05	06	07
NOV	08	09	10	11	12	13	14
	15	16	17	18	19	20	21
	22	23	24	25	26	27	28
	29	30					

XDAY = 451452 + (day-of-month)

1999			01	02	03	04	05
DEC	06	07	08	09	10	11	12
	13	14	15	16	17	18	19
	20	21	22	23	24	25	26
	27	28	29	30	31		

XDAY = 451483 + (day-of-month)

XDAY = 451513 + (day-of-month)

Summary of Day-of-month Additives

	1998	1999
Jan		451179
Feb		1210
Mar		1238
Apr		1269
May		1299
Jun		1330
Jul	450995	1360
Aug	1026	1391
Sep	1057	1422
Oct	1087	1452
Nov	1118	1483
Dec	451148	451513

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August 3, 1997

TO : House Committee on Government Reform and Oversight
Subcommittee on Government Management, Information and Technology
Attention: Russell George

FROM : American Law Division

SUBJECT : Potential Federal Liability for Failure Properly to Implement Year 2000 Database Conversion

This memorandum is furnished in response to your request for an overview of potential federal liability for failure properly to implement the year 2000 database conversion. You ask, in other words, in what ways the government could be held liable for harm resulting from a government computer's not doing what it is supposed to do because it fails to recognize "00" as standing for the year 2000.

As a result of the common law doctrine of sovereign immunity, "the United States cannot be sued without its consent."[1] "Congress alone has the power to waive or qualify that immunity."[2] Congress has waived sovereign immunity from suit in three broad instances: torts, breach of contract, and violations of federal statutes. We discuss these in turn.

Torts. In 1946, by enacting the Federal Tort Claims Act (FTCA), 28 U.S.C. §§ 1346(b), 2671-2680, Congress waived sovereign immunity for some tort suits. With exceptions, it made the United States liable for personal injuries and property damage caused by the torts of its employees (but not of government contractors) committed within the scope of employment, just as private employers are liable for the torts of their employees committed within the scope of employment.

The FTCA makes the United States liable for the torts of its employees in accordance with the law of the state where the employee's tortious act or omission occurred. Thus, for example, state laws placing caps on non-economic damages apply in cases brought under the FTCA. However, the FTCA contains

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[1] Federal Housing Administration v. Burr, 309 U.S. 242, 244 (1940).

[2] United States v. Chemical Foundation, Inc., 272 U.S. 1, 20 (1926).

exceptions under which the United States may not be held liable even though a private employer could be held liable under state law.

One of the most significant of these exceptions is the discretionary function exception, which provides that the United States shall not be liable for claims "based upon the exercise or performance or the failure to exercise or perform a discretionary function." 28 U.S.C. § 2680(a). A discretionary act is one that involves choice or judgment, whether at the policy-making or day-to-day management level. "[T]he discretionary function exception will not apply when a federal statute, regulation, or policy specifically prescribes a course of action for an employee to follow." In this event, the employee has no rightful option but to adhere to the directive."[3] The discretionary function exception also does not apply to some acts that require discretion, such as driving an automobile, where the discretion is not related to "the purposes that the regulatory regime seeks to accomplish."[4]

Applying these principles to the matter at hand, if a federal agency official decided that 1997 was soon enough to start the year 2000 database conversion at his agency, and, in the year 2000, the project had not been completed and personal injury or property damage resulted, it appears likely that the United States would be found protected from liability under the FTCA by the discretionary function exception. By contrast, if an employee negligently failed to program a computer in accordance with instructions he had been given, then the United States might be subject to liability.

Other claims not subject to federal liability under the FTCA are listed at 28 U.S.C. § 2680, and include, to name just a few, claims arising out of the loss, miscarriage, or negligent transmission of letters or postal matter; claims arising out of libel, slander, misrepresentation, deceit, or interference with contract rights; and claims arising in a foreign country.

Breach of contract. Congress waived sovereign immunity for breach of contract actions by enacting the Tucker Act, 28 U.S.C. §§ 1346(a), 1491, in 1887. This statute gives the federal district courts and the United States Court of Federal Claims jurisdiction to hear claims against the United States "founded either upon the Constitution, or any Act of Congress, or any regulation of an executive department, or upon any express or implied contract with the United States, or for liquidated or unliquidated damages in cases not sounding in tort." The district courts' jurisdiction is limited to such claims not exceeding $10,000.

Violations of federal statutes. Many federal statutes contain a private right of action, usually express but occasionally implied, which authorizes suits against the United States. The Tucker Act, of course, is itself only a jurisdictional statute; it does not create any substantive right enforceable

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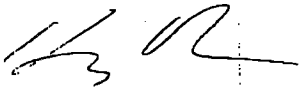
[3] Berkowitz v. United States, 486 U.S. 531, 536 (1988).

[4] United States v. Gaubert, 499 U.S. 315, 325 n.7 (1991).

against the United States for money damages."[5] Therefore, a federal statute other than the Tucker Act must itself contain a private right of action, express or implied, in order for one to sue for a violation of it.

Please let us know if we may provide additional information.



Henry Cohen
Legislative Attorney

[5] United States v. Testan, 424 U.S. 392, 398 (1976).

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August 12, 1998

TO : Honorable Stephen Horn
Attention: Russell George

FROM : American Law Division

SUBJECT : Federal Immunity for Local Governments

This memorandum is in response to your request for a brief consideration of whether Congress could immunize local governments for liability for problems that might arise because of Y2K difficulties.

First, if the States were the potential problem, they could not be sued in federal courts because of the Eleventh Amendment. Local governments, however, although they are creatures of state governments, do not have Eleventh Amendment immunity.

Second, if suits are to be brought against local governments in federal courts under federal question jurisdiction, Congress could deal with that question by excluding local governments from federal jurisdiction because of suits arising out of Y2K. Or Congress could legislate substantive immunity.

Third, if suits are to be brought against local governments in federal courts under diversity jurisdiction, it is evident that Congress could deny jurisdiction in federal courts of such suits. Inasmuch as diversity jurisdiction requires that one or the other of the parties, here, of course, the plaintiff, be from out-of-state, Congress might have legislative jurisdiction to provide immunity under the commerce clause, on the basis of protecting interstate commerce, but this course might be iffy, in terms of preempting state common-law causes of action. But it is a potential course to follow,

Fourth, inasmuch as local governments are creatures of the States, the States would have power to immunize them by enacting laws altering state common-law causes of action.

One consideration to observe is that the Supreme Court lately has interposed some constitutional federalism objections to congressional legislation regulating state and local governments. E.g., *Printz v. United States*, 117 S.Ct. 2365 (1998). It is not likely, however, that the same barriers would be erected against protective legislation, although that cannot be ruled out.

Because of time constraints, we have been required to be sketchy, but if you wish us to elaborate on these points please do not hesitate to request us to do so.

Johnny H. Killian
Senior Specialist
American Constitutional Law

Mr. SESSIONS. That objection will be noted.

Mr. HORN. When you are done, I have got just one other item to deal with.

Mr. SESSIONS. Any further questions, Mr. Brady? I would like to thank both of your for being here. I will tell you, this has been enlightning not only to me, but also to our chairman. We have now figured out that Texas is prepared to take care of ourselves in the event the United States falls apart. Our power grid is ready. We have got a lot of other things that break. It is kind of tough when you tell somebody from California "We can take care of it ourselves," but we have very effectively done that today.

Mr. Schmitt, I appreciate you being here. I will tell you, I know many of your executives at the top, and I have talked with them about these issues also, and I will tell you that I believe, as Mr. Mauldin was talking about, we do need integrity at the top, and I believe that your company is well represented in that regard in being forthright about their business and responsibility that they have to the public.

Mr. Mauldin, thank you so very much not only for your feedback, but your insight. I would now also like to thank a couple of people who have been very instrumental in making sure that I could simply walk in here today. One of them is our counsel seated to the chairman's right, J. Russell George, the staff director and chief counsel for the Government Management, Information, and Technology Subcommittee; Matthew Ebert; Megen Davis, who is a detailee with GAO; Mason Alinger, who is a staff assistant. We also have Brent Sturgess, who is the gentlemen who is the able-bodied man who is the court reporter. I have two wonderful people from my office who refer to themselves as being adult supervision. Chris Homan, who is my district director, and Pam Arrida, who is my press secretary. We also want to thank Dr. Pool, president of Eastfield College, for allowing this congressional hearing to be here today; Adelpha Barnett; Sharon Cook also, public information director at Eastfield College. Mr. Chairman, I shall give it back to you. I assume you wanted to state that again.

Mr. HORN. Right. I would just like to state for the record, which you did and we were off sound, that the record will be open for 3 weeks to allow for the submission of additional statements. And they can be sent either to Mr. Sessions, they can be sent to the government in the Government Management, Information, and Technology Subcommittee, whatever, when you get there. If you send it to the committee, it would be 373, as I remember.

And if you are done, Mr. Acting Chairman, I want to recess this meeting until Wednesday, August 19th, and that will be our next hearing on this route in New Orleans. So we are going to recess it and not adjourn it. And if that's acceptable to you, we will bang the gavel down.

[Whereupon, the subcommittee was recessed.]

OVERSIGHT OF THE YEAR 2000 PROBLEM: LESSONS TO BE LEARNED FROM STATE AND LOCAL EXPERIENCES

WEDNESDAY, AUGUST 19, 1998

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON GOVERNMENT MANAGEMENT,
INFORMATION, AND TECHNOLOGY,
COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT,
New Orleans, LA.

The subcommittee met, pursuant to notice, at 10 a.m., in the University of New Orleans Lakefront Campus, New Orleans, LA, Hon. Stephen Horn (chairman of the subcommittee) presiding.

Present: Representative Horn.

Staff present: J. Russell George, staff director and chief counsel; Megen Davis, counsel; and Matthew Ebert, clerk.

Mr. HORN. From recessing the hearing in Dallas to now, a quorum being present, the Subcommittee on Government Management, Information, and Technology will come to order.

We are nearing the point where it's no longer a requirement at the beginning of a speech or a hearing to explain the mechanics of the year 2000 problem, commonly known as Y2K. But for some of you that might not know what leads to this situation is the fact that in the 1960's, we had huge mainframes that would take up a room like this, which frankly the capacity of your personal computer now could match, and we had very little storage space. So somebody had the bright idea, let's not waste space on putting the whole year in it, 1967, let's just put '67. And so since that time, generally it has been a two-digit year. And the problem is when you get to January 1, 2000, you have 00, and the computer doesn't know what to do. It thinks it is 1900, heaven knows what they think it is, such as computers think, they are programmed by humans.

So out of this approach to get more space, we have a worldwide, probably half a trillion dollar problem, and the United States has half the computer power in the world, and the Government has a smaller portion of that. And what we are doing on these hearings that are in about 10 major cities is trying to get a feel for how State, county, and city government is doing in their conversion, and also how just vital segments of our economy, such as the power grid, be it electrical, nuclear, wind, solar, whatever you have in an area, and just getting a feel for this.

So we will be issuing a report once we finish the hearings in Indianapolis, Cleveland, and Chicago, among others, which we have

yet to go, and we will do that in early September. So we know that the year 2000 computing problem affects just about every aspect of our economy's life. It also affects the private sector organizations that conduct business, and it could affect the lives of most individuals.

Over 2 years ago, in April 1996, the subcommittee held the first congressional hearing on the year 2000 problem. Since that time, we have held numerous hearings to assess the status of the Federal Government's role, and at long last, they are coming out from procrastination for years, where they have now picked a coordinator. The President did make a speech to the National Academy of Sciences, it was buried in the news, and he needs to make more speeches to alert the Nation, because a lot of people have a lot of screwy ideas and sort of scare mongers trying to make money off it that we need to head off. And the President can fully play that role as an ideal opportunity to do something about it.

Anyhow, this being done in the context of the recent action on these hearings that we are holding, the Speaker of the House, Mr. Gingrich, who designated this subcommittee, which I chair, and the Subcommittee on Technology of the House Committee on Science, which is chaired by Mrs. Morella of Maryland. And in the Senate, Senator Bennett chairs a special select committee. This is the House answer to their select committee, and they are playing catchup, as are many, but we have 2½, 3 years of record in this area on the House side.

The chief objective of this Task Force in both the Senate and the house is to frankly stimulate action in the executive branch as well as other places in America, and that is why we are getting out of Washington to get into various communities. And no one organization, no one city, State, even country can solve the year 2000 problem alone. Data exchanges, interdependencies exist at all levels of Government and throughout the private sector. A single failure in the chain could have severe repercussions. For example, State disability determination systems provide data on whether an individual qualifies for disability benefits, how long he or she should receive them, and how much the beneficiary should receive. The Social Security Administration uses this data to approve the disbursement of the disability payment. The Department of the Treasury cuts the check, sends it to the local bank by electronic transfer. The local bank deposits the check and/or electronic transfer in the individual's account. Of course, all of this is made possible through an uninterrupted supply of power by utility companies throughout the Nation. The bottom line is: If any one of these entities fails, the deserving individual will not receive the payment. Now, multiply this situation by millions of people that receive benefits, and you can appreciate the magnitude of just one aspect of the Y2K issue.

Accordingly, the testimony we receive today will help improve our understanding of the extent of the problem at the State and local levels. So we welcome the witnesses we have here.

[The prepared statement of Hon. Stephen Horn follows:]

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ONE HUNDRED FIFTH CONGRESS

Congress of the United States

House of Representatives

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INDEPENDENT

"Oversight of the Year 2000 Problem: Lessons to be Learned from State and Local Experiences"

OPENING STATEMENT
REPRESENTATIVE STEPHEN HORN (R-CA)

Chairman, Subcommittee on Government Management, Information, and Technology

New Orleans, Louisiana
August 19, 1998

A quorum being present, the Subcommittee on Government Management, Information, and Technology will come to order. We are nearing the point where it is no longer a requirement at the beginning of a speech or a hearing to explain the mechanics of the Year 2000 problem, commonly known as "Y2K". We know that the Year 2000 computing problem affects just about every aspect of Federal, state, and local governmental operations. It also affects the way private sector organizations conduct business, and could affect the lives of most individuals.

Over two years ago, this subcommittee held the first Congressional hearing on the Year 2000 problem, and since that time, we have held numerous hearings to assess the status of the Federal Government's Y2K fixes. Today's hearing is the third in a series of field hearings on the Year 2000 problem that will focus on non-Federal entities.

This is being done in the context of the recent action of the Speaker of the House, Newt Gingrich. He named the Government Management subcommittee along with the Subcommittee on Technology as the House Task Force on the Year 2000.

The chief objective of this task force is to inspire action. No one organization, city, State, or even country can solve the Year 2000 problem alone. Data exchanges and interdependencies exist at all levels of government and throughout the private sector. A single failure in the chain could have severe repercussions. For example, State disability determination systems provide data on whether an individual qualifies for disability benefits, how long he or she should receive benefits, and how much the beneficiary should receive. The Social Security Administration uses this data to approve the disbursement of the disability payment. The Department of the Treasury cuts the check and sends it to the local bank. The local bank deposits the check into this individual's account. Of course, all of this is made possible through the uninterrupted supply of power by utility companies throughout the nation. The bottom line is: if any one of these entities fails, a deserving individual will not receive the payment. Now multiply this situation by the millions of people that receive benefits and you can appreciate the magnitude of just one aspect of the Y2K issue.

Accordingly, the testimony we receive today will help our understanding of the extent of the problem at the State and local levels. We welcome our witnesses.

Mr. HORN. Since this is an investigative committee of House Government Reform and Oversight, we do ask you to take the oath, and if you would stand and raise your right hands.

[Witnesses sworn.]

Mr. HORN. The clerk will note that nine witnesses affirmed. And we thank you for coming, and I think we will just use the position we have in the agenda here and we will start with our first witness, which is Joel Willemssen, the Director of Accounting and Information Management Division, the U.S. General Accounting Office, which is part of the legislative branch that reviews all Government activities in terms of both financial audits and particularly program audits.

Mr. Willemssen and his group have spent a lot of time on this issue in terms of best practices, so we are always glad to have him as the key witness pulling a lot of things together at the very beginning. Mr. Willemssen, please proceed.

STATEMENT OF JOEL WILLEMSSEN, DIRECTOR, ACCOUNTING AND INFORMATION MANAGEMENT DIVISION, U.S. GENERAL ACCOUNTING OFFICE

Mr. WILLEMSSEN. Thank you, Mr. Chairman, and thank you for, again, inviting us here today to speak at your hearing. We commend you for holding this third in a series of field hearings to get the word out, not just in Washington but across the country. And what we have also seen to date is that these hearings have been very instructive in identifying some of the best practices that can be implemented in other localities and States across the country. As requested, I am going to briefly summarize our statement covering where the Federal Government currently stands, issues confronting State and local governments, and then also touch on the critical data exchange issue.

Regarding the Federal Government, as you know, Mr. Chairman, overall, the 24 major Federal agencies continue to make slow progress in fixing their systems. For example, in May 1997, OMB reported that about 21 percent of mission critical systems of these agencies were year 2000 compliant. A year later, they were at 40 percent. As I testify before you, at that kind of rate of progress, if that were to continue, we won't make it in time. And with the testing challenge, for the most part, still ahead of us, it is unlikely that all Federal agencies can make it in time. An example of that is FAA. Since testifying before you in February, FAA has made tremendous strides in getting a better handle on its Y2K program, but because of their late start and with less than 17 months to go, FAA must still correct, test and implement a large number of its mission critical systems. It is doubtful that FAA can adequately do that in the time remaining; and therefore, one of the critical areas now with FAA and other agencies is to make sure that they put together the necessary contingency plans.

Beyond the FAA, our reviews have shown that many agencies have not acted to salvage priorities and solidify data exchange agreements or develop contingency plans. Likewise, there needs to be more attention to ensuring that the Government's critical core of business processes and supporting systems are tested end to end, and we need to have more action in assessing the Nation's year

2000 risks, especially those posed by some of the key economic sectors and those posed by key elements of our infrastructure, some of which we may hear today as it pertains to water, power and telecommunications.

State and local governments also face a major risk of year 2000 induced failures to the many vital services they provide, such as benefit payments, transportation and public safety. There have been surveys of State year 2000 efforts which have indicated that much remains to be completed. For example we recently saw a survey from the Department of Agriculture that revealed that only three States were reporting that their software, hardware and telecommunications supporting their food stamp programs were year 2000 compliant. To effectively manage their year 2000 projects, State and local governments have to perform the same types of activities that the Federal Government has to. Those include such things as priority setting, progress reporting and contingency planning. Beyond those kinds of challenges, there must be great concern about the issue of data exchanges. Our recent report on data exchanges show that Federal agencies and the States use thousands of such exchanges to communicate with each other and other entities. For example, Federal agencies alone were reporting that their mission critical systems had almost half a million exchanges with other Federal agencies, States, local governments and the private sector.

To successfully deal with these data exchanges is a time consuming, resource intensive task. It involves not just understanding and inventorying what those exchanges are, but assessing their compliance. And then the more time consuming tasks are reaching agreements with your data exchange partners on how you are going to exchange that data and testing those agreements. At the time that we did our review, there was a lot of work remaining to address that particular area. With the magnitude of what was left to be done in the data exchange area, we are very concerned that not everything can be done, and therefore, we reiterate the need to set priorities and to make sure that the most imperative, most critical systems supporting business processes and data exchanges are addressed.

Mr. Chairman, that concludes the summary of my statement, and after the panel is done, I will be pleased to address any questions that you have.

[NOTE.—The following reports were supplied for the record and are held in subcommittee files: "Year 2000 Computing Crisis: A Testing Guide, Exposure Draft," June 1998 (GAO/AIMD–10.1.21); "Year 2000 Computing Crisis: An Assessment Guide," September 1997 (GAO/AIMD–10.1.14); and, "Year 2000 Computing Crisis: Business Continuity and Contingency Planning," August 1998 (GAO/AIMD–10.1.19).

[The prepared statement of Mr. Willemssen follows:]

Mr. Chairman and Members of the Subcommittee:

Thank you for inviting us to participate in today's hearing on the Year 2000 problem. According to the report of the President's Commission on Critical Infrastructure Protection, the United States--with close to half of all computer capacity and 60 percent of Internet assets--is the world's most advanced and most dependent user of information technology.[1] Should these systems--which perform functions and services critical to our nation--suffer disruption, it could create a widespread crisis. Accordingly, the upcoming change of century is a sweeping and urgent challenge for public- and private-sector organizations alike.

Because of its urgent nature and the potentially devastating impact it could have on critical government operations, in February 1997 we designated the Year 2000 problem as a high-risk area for the federal government.[2] Since that time, we have issued over 50 reports and testimony statements detailing specific findings and recommendations related to the Year 2000 readiness of a wide range of federal agencies.[3] We have also

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[1]Critical Foundations: Protecting America's Infrastructures (President's Commission on Critical Infrastructure Protection, October 1997).

[2]High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997).

[3]A list of these publications is included as an attachment to this statement.

issued guidance to help organizations successfully address the issue.[4]

Today I will briefly discuss the Year 2000 risks facing the nation; highlight our major concerns with the federal government's progress in correcting its systems; identify state and local government Year 2000 issues; and discuss critical Year 2000 data exchange issues.

RISK OF YEAR 2000 DISRUPTION TO THE PUBLIC IS HIGH

The public faces a high risk that critical services provided by the government and the private sector could be severely disrupted by the Year 2000 computing crisis. Financial transactions could be delayed, flights grounded, power lost, and national defense affected. Moreover, America's infrastructures are a complex array of public and private enterprises with many interdependencies at all levels. These many interdependencies among governments and within key economic sectors could cause a single failure to have adverse repercussions. Key economic sectors that could be seriously affected if their systems are not Year 2000 compliant include information and telecommunications;

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[4]Year 2000 Computing Crisis: An Assessment Guide (GAO/AIMD-10.1.14, September 1997), which addresses the key tasks needed to complete each phase of a Year 2000 program (awareness, assessment, renovation, validation, and implementation); Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, August 1998), which describes the tasks needed to ensure the continuity of agency operations; and Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, Exposure Draft, June 1998), which discusses the need to plan and conduct Year 2000 tests in a structured and disciplined fashion.

banking and finance; health, safety, and emergency services; transportation; power and water; and manufacturing and small business.

The information and telecommunications sector is especially important. In testimony in June, we reported that the Year 2000 readiness of the telecommunications sector is one of the most crucial concerns to our nation because telecommunications are critical to the operations of nearly every public- and private-sector organization.[5] For example, the information and telecommunications sector (1) enables the electronic transfer of funds, the distribution of electrical power, and the control of gas and oil pipeline systems; (2) is essential to the service economy, manufacturing, and efficient delivery of raw materials and finished goods; and (3) is basic to responsive emergency services. Reliable telecommunications services are made possible by a complex web of highly interconnected networks supported by national and local carriers and service providers, equipment manufacturers and suppliers, and customers.

In addition to the risks associated with the nation's key economic sectors, one of the largest, and largely unknown, risks relates to the global nature of the problem. With the advent of electronic communication and international commerce, the United States and the rest of the world have become critically dependent on computers. However, there are indications of Year 2000 readiness problems in the international arena. For example,

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[5]Year 2000 Computing Crisis: Telecommunications Readiness Critical, Yet Overall Status Largely Unknown (GAO/T-AIMD-98-212, June 16, 1998).

in a June 1998 informal World Bank survey of foreign readiness, only 18 of 127 countries (14 percent) had a national Year 2000 program; 28 countries (22 percent) reported working on the problem; and 16 countries (13 percent) reported only awareness of the problem. No conclusive data were received from the remaining 65 countries surveyed (51 percent).

The following are examples of some of the major disruptions the public and private sectors could experience if the Year 2000 problem is not corrected.

- Unless the Federal Aviation Administration (FAA) takes much more decisive action, there could be grounded or delayed flights, degraded safety, customer inconvenience, and increased airline costs.[6]

- Aircraft and other military equipment could be grounded because the computer systems used to schedule maintenance and track supplies may not work. Further, the Department of Defense could incur shortages of vital items needed to sustain military operations and readiness.[7]

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[6]FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998).

[7]Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998).

- Medical devices and scientific laboratory equipment may experience problems beginning January 1, 2000, if the computer systems, software applications, or embedded chips used in these devices contain two-digit fields for year representation.

- According to the Basle Committee on Banking Supervision--an international committee of banking supervisory authorities--failure to address the Year 2000 issue would cause banking institutions to experience operational problems or even bankruptcy.

Recognizing the seriousness of the Year 2000 problem, on February 4, 1998 the President signed an executive order that established the President's Council on Year 2000 Conversion led by an Assistant to the President and comprising of one representative from each of the executive departments and from other federal agencies as may be determined by the Chair. The Chair of the Council was tasked with the following Year 2000 roles: (1) overseeing the activities of agencies; (2) acting as chief spokesperson in national and international forums; (3) providing policy coordination of executive branch activities with state, local, and tribal governments; and (4) promoting appropriate federal roles with respect to private-sector activities.

MUCH WORK REMAINS TO CORRECT THE FEDERAL GOVERNMENT'S YEAR 2000 PROBLEM

Addressing the Year 2000 problem in time will be a tremendous challenge for the federal government. Many of the federal government's computer systems were originally designed and developed 20 to 25 years ago, are poorly documented, and use a wide variety of computer languages, many of which are obsolete. Some applications include thousands, tens of thousands, or even millions of lines of code, each of which must be examined for date-format problems.

The federal government also depends on the telecommunications infrastructure to deliver a wide range of services. For example, the route of an electronic Medicare payment may traverse several networks--those operated by the Department of Health and Human Services, the Department of the Treasury's computer systems and networks, and the Federal Reserve's Fedwire electronic funds transfer system. In addition, the year 2000 could cause problems for the many facilities used by the federal government that were built or renovated within the last 20 years and contain embedded computer systems to control, monitor, or assist in operations. For example, building security systems, elevators, and air conditioning and heating equipment could malfunction or cease to operate.

Agencies cannot afford to neglect any of these issues. If they do, the impact of Year 2000 failures could be widespread, costly, and potentially disruptive to vital government

operations worldwide. Nevertheless, overall, the government's 24 major departments and agencies are making slow progress in fixing their systems. In May 1997, the Office of Management and Budget (OMB) reported that about 21 percent of the mission-critical systems (1,598 of 7,649) for these departments and agencies were Year 2000 compliant.[8] A year later, in May 1998, these departments and agencies reported that 2,914 of the 7,336 mission-critical systems in their current inventories, or about 40 percent, were compliant. Unless progress improves dramatically, a substantial number of mission-critical systems will not be compliant in time.

In addition to slow governmentwide progress in fixing systems, our reviews of federal agency Year 2000 programs have found uneven progress. Some agencies are significantly behind schedule and are at high risk that they will not fix their systems in time. Other agencies have made progress, although risks continue and a great deal of work remains. The following are examples of the results of some of our recent reviews.

- Earlier this month, we testified[9] about the Federal Aviation Administration's (FAA) progress in implementing a series of recommendations we had made earlier this year

[8]The Social Security Administration's (SSA) mission-critical systems were not included in these totals because SSA did not report in May 1997 on a system basis. Rather, SSA reported at that time, and again in August 1997, on portions of systems that were compliant. For example, SSA reported on the status of 20,000-plus modules rather than 200-plus systems.

[9]GAO/T-AIMD-98-251, August 6, 1998.

to assist FAA in completing overdue awareness and assessment activities.[10] These recommendations included assessing how the major FAA components and the aviation industry would be affected if Year 2000 problems were not corrected in time and completing inventories of all information systems, including data interfaces. Officials at both FAA and the Department of Transportation agreed with these recommendations, and the agency has made progress in implementing them. In our August testimony, we reported[11] that FAA had made progress in managing its Year 2000 problem and had completed critical steps in defining which systems needed to be corrected and how to accomplish this. However, with less than 17 months to go, FAA must still correct, test, and implement many of its mission-critical systems. It is doubtful that FAA can adequately do all of this in the time remaining. Accordingly, FAA must determine how to ensure continuity of critical operations in the likely event of some systems' failures.

- In October 1997, we reported that while SSA had made significant progress in assessing and renovating mission-critical mainframe software, certain areas of risk in its Year 2000 program remained.[12] Accordingly, we made several recommendations to address these risk areas, which included the Year 2000 compliance of the systems

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[10]Year 2000 Computing Crisis: FAA Must Act Quickly to Prevent Systems Failures (GAO/T-AIMD-98-63, February 4, 1998) and FAA Computer Systems: Limited Progress on Year 2000 Issue Increases Risk Dramatically (GAO/AIMD-98-45, January 30, 1998).

[11]GAO/T-AIMD-98-251, August 6, 1998.

[12]Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997).

used by the 54 state Disability Determination Services[13] that help administer the disability programs. SSA agreed with these recommendations and, in July 1998, we reported that actions to implement these recommendations had either been taken or were underway.[14] Further, we found that SSA has maintained its place as a federal leader in addressing Year 2000 issues and has made significant progress in achieving systems compliance. However, essential tasks remain. For example, many of the states' Disability Determination Service systems still had to be renovated, tested, and deemed Year 2000 compliant.

- Our work has shown that much likewise remains to be done in the Department of Defense and the military services.[15] For example, our recent report on the Navy found that while positive actions have been taken, remediation progress had been slow and the Navy was behind schedule in completing the early phases of its Year 2000 program.[16] Further, the Navy had not been effectively overseeing and managing its Year 2000 efforts and lacked complete and reliable information on its systems and

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[13]These include the systems in all 50 states, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

[14]Social Security Administration: Subcommittee Questions Concerning Information Technology Challenges Facing the Commissioner (GAO/AIMD-98-235R, July 10, 1998).

[15]Defense Computers: Year 2000 Computer Problems Put Navy Operations At Risk (GAO/AIMD-98-150, June 30, 1998), Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program (GAO/AIMD-98-53, May 29, 1998), GAO/AIMD-98-72, April 30, 1998, and Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998).

[16]GAO/AIMD-98-150, June 30, 1998.

on the status and cost of its remediation activities. We have recommended improvements to the Department of Defense and the military services' Year 2000 programs with which they have concurred.

In addition to these examples, our reviews have shown that many agencies had not adequately acted to establish priorities, solidify data exchange agreements, or develop contingency plans. Likewise, more attention needs to be devoted to (1) ensuring that the government has a complete and accurate picture of Year 2000 progress, (2) setting governmentwide priorities, (3) ensuring that the government's critical core business processes are adequately tested, (4) recruiting and retaining information technology personnel with the appropriate skills for Year 2000-related work, and (5) assessing the nation's Year 2000 risks, including those posed by key economic sectors. I would like to highlight some of these vulnerabilities, and our recommendations made in April 1998 for addressing them.[17]

- First, governmentwide priorities in fixing systems have not yet been established. These governmentwide priorities need to be based on such criteria as the potential for adverse health and safety effects, adverse financial effects on American citizens, detrimental effects on national security, and adverse economic consequences. Further, while individual agencies have been identifying mission-critical systems, this

[17]Year 2000 Computing Crisis: Potential for Widespread Disruption Calls for Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998).

has not always been done on the basis of a determination of the agency's most critical operations. If priorities are not clearly set, the government may well end up wasting limited time and resources in fixing systems that have little bearing on the most vital government operations. Other entities have recognized the need to set priorities. For example, Canada has established 48 national priorities covering areas such as national defense, food production, safety, and income security.

- Second, business continuity and contingency planning across the government has been inadequate. In their May 1998 quarterly reports to OMB, only four agencies reported that they had drafted contingency plans for their core business processes. Without such plans, when unpredicted failures occur, agencies will not have well-defined responses and may not have enough time to develop and test alternatives. Federal agencies depend on data provided by their business partners as well as services provided by the public infrastructure (e.g., power, water, transportation, and voice and data telecommunications). One weak link anywhere in the chain of critical dependencies can cause major disruptions to business operations. Given these interdependencies, it is imperative that contingency plans be developed for all critical core business processes and supporting systems, regardless of whether these systems are owned by the agency. Our recently issued guidance aims to help agencies ensure such continuity of operations through contingency planning.[18]

[18]GAO/AIMD-10.1.19, August 1998.

- Third, OMB's assessment of the current status of federal Year 2000 progress is predominantly based on agency reports that have not been consistently reviewed or verified. Without independent reviews, OMB and the President's Council on Year 2000 Conversion have little assurance that they are receiving accurate information. In fact, we have found cases in which agencies' systems compliance status as reported to OMB has been inaccurate. For example, the DOD Inspector General estimated that almost three quarters of DOD's mission-critical systems reported as compliant in November 1997 had not been certified as compliant by DOD components.[19] In May 1998, the Department of Agriculture reported 15 systems as compliant, even though these were replacement systems that were still under development or were planned for development.[20] (The department plans to remove these systems from compliant status in its next quarterly report.)

- Fourth, end-to-end testing responsibilities have not yet been defined. To ensure that their mission-critical systems can reliably exchange data with other systems and that they are protected from errors that can be introduced by external systems, agencies must perform end-to-end testing for their critical core business processes. The purpose of end-to-end testing is to verify that a defined set of interrelated systems, which collectively support an organizational core business area or function, will work

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[19]Year 2000 Certification of Mission-Critical DOD Information Technology Systems (DOD Office of the Inspector General, Report No. 98-147, June 5, 1998).

[20]Year 2000 Computing Crisis: USDA Faces Tremendous Challenges in Ensuring That Vital Public Services Are Not Disrupted (GAO/T-AIMD-98-167, May 14, 1998).

as intended in an operational environment. In the case of the year 2000, many systems in the end-to-end chain will have been modified or replaced. As a result, the scope and complexity of testing--and its importance--is dramatically increased, as is the difficulty of isolating, identifying, and correcting problems. Consequently, agencies must work early and continually with their data exchange partners to plan and execute effective end-to-end tests. So far, lead agencies have not been designated to take responsibility for ensuring that end-to-end testing of processes and supporting systems is performed across boundaries, and that independent verification and validation of such testing is ensured. We have set forth a structured approach to testing in our recently released exposure draft.[21]

In our April 1998 report on governmentwide Year 2000 progress, we made a number of recommendations to the Chair of the President's Council on Year 2000 Conversion aimed at addressing these problems. These included

- establishing governmentwide priorities and ensuring that agencies set agencywide priorities,

- developing a comprehensive picture of the nation's Year 2000 readiness,

[21]GAO/AIMD-10.1.21, Exposure Draft, June 1998.

- requiring agencies to develop contingency plans for all critical core business processes,

- requiring agencies to develop an independent verification strategy to involve inspectors general or other independent organizations in reviewing Year 2000 progress, and

- designating lead agencies responsible for ensuring that end-to-end operational testing of processes and supporting systems is performed.

We are encouraged by actions the Council is taking in response to some of our recommendations. For example, OMB and the Chief Information Officers Council adopted our guide providing information on business continuity and contingency planning issues common to most large enterprises as a model for federal agencies.[22] However, as we recently testified before this Subcommittee, some actions have not been initiated—principally with respect to setting national priorities and end-to-end testing.[23]

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[22]GAO/AIMD-10.1.19, August 1998.

[23]Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO/T-AIMD-98-205, June 10, 1998).

STATE AND LOCAL GOVERNMENTS FACE SIGNIFICANT YEAR 2000 RISKS

State and local governments also face a major risk of Year 2000-induced failures to the many vital services--such as benefits payments, transportation, and public safety--that they provide. For example,

- food stamps and other types of payments may not be made or could be made for an incorrect amount,

- date-dependent signal timing patterns could be incorrectly implemented at highway intersections, and safety severely compromised, if traffic signal systems run by state and local governments do not process four-digit years correctly, and

- criminal records (i.e., prisoner release or parole eligibility determinations) may be adversely affected by the Year 2000 problem.

Recent surveys of state Year 2000 efforts have indicated that much remains to be completed. For example, a July 1998 survey of state Year 2000 readiness conducted by the National Association of State Information Resource Executives, Inc., found that only

about one third of the states reported that 50 percent or more of their critical systems[24] had been completely assessed, remediated, and tested.

In a June 1998 survey conducted by the Department of Agriculture's Food and Nutrition Service, only 3 and 14 states,[25] respectively, reported that the software, hardware, and telecommunications that support the Food Stamp Program, and the Women, Infants, and Children program, were Year 2000 compliant. Although all but one of the states reported that they would be Year 2000 compliant by January 1, 2000, many of the states reported that their systems are not due to be compliant until after March 1999 (the federal government's Year 2000 implementation goal). Indeed, 4 and 5 states, respectively, reported that the software, hardware, and telecommunications supporting the Food Stamp Program, and the Women, Infants, and Children program would not be Year 2000 compliant until the last quarter of calendar year 1999, which puts them at high risk of failure due to the need for extensive testing.

State audit organizations have identified other significant Year 2000 concerns. For example, (1) Illinois' Office of the Auditor General reported that significant future efforts were needed to ensure that the year 2000 would not adversely affect state government

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[24]Critical systems were defined as "systems that effect public safety, public health, and financial and personnel aspects of government services."

[25]The Food and Nutrition Service included the District of Columbia, Guam, Puerto Rico, and the Virgin Islands in its survey. The Food and Nutrition Service did not verify the information provided by the states.

operations,[26] (2) Vermont's Office of Auditor of Accounts reported that the state faces the risk that critical portions of its Year 2000 compliance efforts could fail,[27] (3) Texas' Office of the State Auditor reported[28] that many state entities had not finished their embedded systems[29] inventories and, therefore, it is not likely that they will complete their embedded systems repairs before the Year 2000, and (4) Florida's Auditor General has issued several reports detailing the need for additional Year 2000 planning at various district school boards and community colleges.[30] State audit offices have also made recommendations, including the need for increased oversight, Year 2000 project plans, contingency plans, and personnel recruitment and retention strategies.

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[26]Bureau of Communications and Computer Services Third Party Review (July 1, 1998).

[27]State Auditor's Report On Vermont's Year 2000 Preparedness For The Period Ending April 1, 1998 (May 5, 1998).

[28]A Review of Oversight for the State's Embedded Systems Year 2000 Repair Efforts (SAO Report No. 98-056, August 10, 1998).

[29]Embedded systems are special-purpose computers built into other devices. They are used in, for example, security systems, prison control units, and certain medical equipment.

[30]Examples of these reports include, Report on Audit of the Alachua County District School Board For The Fiscal Year Ended June 30, 1997 (Report No. 13219, April 21, 1998) and Operational Audit of the District Board of Trustees Broward Community College For The Period July 1, 1996 through June 30, 1997 (Report No. 13222, April 30, 1998). The Year 2000 work for these reports was performed in early 1998.

FEDERAL/STATE DATA EXCHANGES
CRITICAL TO DELIVERY OF SERVICES

To fully address the Year 2000 risks that states and the federal government face, data exchanges must also be confronted--a monumental issue. As computers play an ever-increasing role in our society, exchanging data electronically has become a common method of transferring information among federal, state, and local governments. For example, the Social Security Administration exchanges data files with the states to determine the eligibility of disabled persons for disability benefits. In another example, the National Highway Traffic Safety Administration provides states with information needed for driver registrations. As computer systems are converted to process Year 2000 dates, the associated data exchanges must also be made Year 2000 compliant. If the data exchanges are not Year 2000 compliant, data will not be exchanged or invalid data could cause the receiving computer systems to malfunction or produce inaccurate computations.

Our recent report[31] on actions that have been taken to address Year 2000 issues for electronic data exchanges[32] revealed that federal agencies and the states use thousands of such exchanges to communicate with each other and other entities. For example, federal

[31]Year 2000 Computing Crisis: Actions Needed on Electronic Data Exchanges (GAO/AIMD-98-124, July 1, 1998).

[32]To perform this review, we developed and sent a data collection instrument to survey 42 federal departments, all states, the District of Columbia, and Puerto Rico.

agencies reported that their mission-critical systems have almost 500,000 data exchanges with other federal agencies, states, local governments, and the private sector.

To successfully remediate their data exchanges, federal agencies and the states must (1) assess information systems to identify data exchanges that are not Year 2000 compliant; (2) contact exchange partners and reach agreement on the date format to be used in the exchange; (3) determine if data bridges and filters are needed and, if so, reach agreement on their development; (4) develop and test such bridges and filters,[33] (5) test and implement new exchange formats; and (6) develop contingency plans and procedures for data exchanges.

At the time of our review, much work remained to ensure that federal and state data exchanges will be Year 2000 compliant. About half of the federal agencies reported during the first quarter of 1998 that they had not yet finished assessing their data exchanges. Moreover, almost half of the federal agencies reported that they had reached agreements on 10 percent or fewer of their exchanges,[34] few federal agencies reported having installed bridges or filters, and only 38 percent of the agencies reported that they had developed contingency plans for data exchanges.

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[33]A bridge is used to convert incoming 2-digit years to 4-digit years or to convert outgoing 4-digit years to 2-digit years. A filter is used to screen and identify incoming noncompliant data to prevent it from corrupting data in the receiving system.

[34]This does not include the status of agreements reported by the Federal Reserve. The Federal Reserve controls the data exchange software used by its partners and does not need to reach agreement with exchange partners on formats.

Further, the status of the data exchange efforts of 15 of the 39 state-level organizations that responded to our survey was not discernable because they were not able to provide us with information on their total number of exchanges and the number assessed. Of the 24 state-level organizations that provided actual or estimated data, they reported, on average, that 47 percent of the exchanges had not been assessed. In addition, similar to the federal agencies, state-level organizations reported having made limited progress in reaching agreements with exchange partners, installing bridges and filters, and developing contingency plans. However, we could draw only limited conclusions on the status of the states' actions because data were provided on only a small portion of states' data exchanges.

To strengthen efforts to address data exchanges, we made several recommendations to OMB. In response, OMB agreed that it needed to increase its efforts in this area. For example, OMB noted that federal agencies had provided the General Services Administration with a list of their data exchanges with the states. In addition, as a result of an agreement reached at an April 1998 federal/state data exchange meeting,[35] the states were supposed to verify the accuracy of these initial lists by June 1, 1998.[36] OMB

[35]Initial agreements between the federal government and the states on steps to address Year 2000 data exchange issues were reached at an October 1997 state/federal summit, sponsored by the federal Chief Information Officer Council and National Association of State Information Resource Executives, Inc., and hosted by the Commonwealth of Pennsylvania.

[36]According to the National Association of State Information Resource Executives, Inc., as of early August 1998, 16 states had completed the verification of their federal/state data exchanges and an additional 9 states had completed 80 percent of the verification.

also noted that the General Services Administration is planning to collect and post information on its Internet World Wide Web site on the progress of federal agencies and states in implementing Year 2000 compliant data exchanges.

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In summary, federal, state, and local efforts must increase substantially to ensure that major service disruptions do not occur. Greater leadership and partnerships are essential if government programs are to meet the needs of the public at the turn of the century.

Mr. Chairman, this concludes my statement. I would be happy to respond to any questions that you or other members of the Subcommittee may have at this time.

GAO REPORTS AND TESTIMONY ADDRESSING THE YEAR 2000 CRISIS

FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998)

Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, August 1998)

Internal Revenue Service: Impact of the IRS Restructuring and Reform Act on Year 2000 Efforts (GAO/GGD-98-158R, August 4, 1998)

Social Security Administration: Subcommittee Questions Concerning Information Technology Challenges Facing the Commissioner (GAO/AIMD-98-235R, July 10, 1998)

Year 2000 Computing Crisis: Actions Needed on Electronic Data Exchanges (GAO/AIMD-98-124, July 1, 1998)

Defense Computers: Year 2000 Computer Problems Put Navy Operations At Risk (GAO/AIMD-98-150, June 30, 1998)

Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, Exposure Draft, June 1998)

Year 2000 Computing Crisis: Testing and Other Challenges Confronting Federal Agencies (GAO/T-AIMD-98-218, June 22, 1998)

Year 2000 Computing Crisis: Telecommunications Readiness Critical, Yet Overall Status Largely Unknown (GAO/T-AIMD-98-212, June 16, 1998)

GAO Views on Year 2000 Testing Metrics (GAO/AIMD-98-217R, June 16, 1998)

IRS' Year 2000 Efforts: Business Continuity Planning Needed for Potential Year 2000 System Failures (GAO/GGD-98-138, June 15, 1998)

Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO/T-AIMD-98-205, June 10, 1998)

Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program (GAO/AIMD-98-53, May 29, 1998)

Year 2000 Computing Crisis: USDA Faces Tremendous Challenges in Ensuring That Vital Public Services Are Not Disrupted (GAO/T-AIMD-98-167, May 14, 1998)

Securities Pricing: Actions Needed for Conversion to Decimals (GAO/T-GGD-98-121, May 8, 1998)

Year 2000 Computing Crisis: Continuing Risks of Disruption to Social Security, Medicare, and Treasury Programs (GAO/T-AIMD-98-161, May 7, 1998)

IRS' Year 2000 Efforts: Status and Risks (GAO/T-GGD-98-123, May 7, 1998)

Air Traffic Control: FAA Plans to Replace Its Host Computer System Because Future Availability Cannot Be Assured (GAO/AIMD-98-138R, May 1, 1998)

Year 2000 Computing Crisis: Potential For Widespread Disruption Calls For Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998)

Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998)

Department of the Interior: Year 2000 Computing Crisis Presents Risk of Disruption to Key Operations (GAO/T-AIMD-98-149, April 22, 1998)

Tax Administration: IRS' Fiscal Year 1999 Budget Request and Fiscal Year 1998 Filing Season (GAO/T-GGD/AIMD-98-114, March 31, 1998)

Year 2000 Computing Crisis: Strong Leadership Needed to Avoid Disruption of Essential Services (GAO/T-AIMD-98-117, March 24, 1998)

Year 2000 Computing Crisis: Federal Regulatory Efforts to Ensure Financial Institution Systems Are Year 2000 Compliant (GAO/T-AIMD-98-116, March 24, 1998)

Year 2000 Computing Crisis: Office of Thrift Supervision's Efforts to Ensure Thrift Systems Are Year 2000 Compliant (GAO/T-AIMD-98-102, March 18, 1998)

Year 2000 Computing Crisis: Strong Leadership and Effective Public/Private Cooperation Needed to Avoid Major Disruptions (GAO/T-AIMD-98-101, March 18, 1998)

Post-Hearing Questions on the Federal Deposit Insurance Corporation's Year 2000 (Y2K) Preparedness (AIMD-98-108R, March 18, 1998)

SEC Year 2000 Report: Future Reports Could Provide More Detailed Information (GAO/GGD/AIMD-98-51, March 6, 1998)

Year 2000 Readiness: NRC's Proposed Approach Regarding Nuclear Powerplants (GAO/AIMD-98-90R, March 6, 1998)

Year 2000 Computing Crisis: Federal Deposit Insurance Corporation's Efforts to Ensure Bank Systems Are Year 2000 Compliant (GAO/T-AIMD-98-73, February 10, 1998)

Year 2000 Computing Crisis: FAA Must Act Quickly to Prevent Systems Failures (GAO/T-AIMD-98-63, February 4, 1998)

FAA Computer Systems: Limited Progress on Year 2000 Issue Increases Risk Dramatically (GAO/AIMD-98-45, January 30, 1998)

Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998)

Year 2000 Computing Crisis: Actions Needed to Address Credit Union Systems' Year 2000 Problem (GAO/AIMD-98-48, January 7, 1998)

Veterans Health Administration Facility Systems: Some Progress Made In Ensuring Year 2000 Compliance, But Challenges Remain (GAO/AIMD-98-31R, November 7, 1997)

Year 2000 Computing Crisis: National Credit Union Administration's Efforts to Ensure Credit Union Systems Are Year 2000 Compliant (GAO/T-AIMD-98-20, October 22, 1997)

Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997)

Defense Computers: Technical Support Is Key to Naval Supply Year 2000 Success (GAO/AIMD-98-7R, October 21, 1997)

Defense Computers: LSSC Needs to Confront Significant Year 2000 Issues (GAO/AIMD-97-149, September 26, 1997)

Veterans Affairs Computer Systems: Action Underway Yet Much Work Remains To Resolve Year 2000 Crisis (GAO/T-AIMD-97-174, September 25, 1997)

Year 2000 Computing Crisis: Success Depends Upon Strong Management and Structured Approach (GAO/T-AIMD-97-173, September 25, 1997)

Year 2000 Computing Crisis: An Assessment Guide (GAO/AIMD-10.1.14, September 1997)

Defense Computers: SSG Needs to Sustain Year 2000 Progress (GAO/AIMD-97-120R, August 19, 1997)

Defense Computers: Improvements to DOD Systems Inventory Needed for Year 2000 Effort (GAO/AIMD-97-112, August 13, 1997)

Defense Computers: Issues Confronting DLA in Addressing Year 2000 Problems (GAO/AIMD-97-106, August 12, 1997)

Defense Computers: DFAS Faces Challenges in Solving the Year 2000 Problem (GAO/AIMD-97-117, August 11, 1997)

Year 2000 Computing Crisis: Time is Running Out for Federal Agencies to Prepare for the New Millennium (GAO/T-AIMD-97-129, July 10, 1997)

Veterans Benefits Computer Systems: Uninterrupted Delivery of Benefits Depends on Timely Correction of Year-2000 Problems (GAO/T-AIMD-97-114, June 26, 1997)

Veterans Benefits Computer Systems: Risks of VBA's Year-2000 Efforts (GAO/AIMD-97-79, May 30, 1997)

Medicare Transaction System: Success Depends Upon Correcting Critical Managerial and Technical Weaknesses (GAO/AIMD-97-78, May 16, 1997)

Medicare Transaction System: Serious Managerial and Technical Weaknesses Threaten Modernization (GAO/T-AIMD-97-91, May 16, 1997)

Year 2000 Computing Crisis: Risk of Serious Disruption to Essential Government Functions Calls for Agency Action Now (GAO/T-AIMD-97-52, February 27, 1997)

Year 2000 Computing Crisis: Strong Leadership Today Needed To Prevent Future Disruption of Government Services (GAO/T-AIMD-97-51, February 24, 1997)

High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997)

(511474)

Mr. HORN. Well, we thank you very much for returning down here. Mr. Willemssen flies between the hearings and his job in Washington, and sometimes the airlines aren't always effective and efficient, and this is one of those days when he arrived at 1 a.m. We thank you for surviving all of that and coming to share your thoughts with us.

The next witness is Edgar McManus, the Project Director, Year 2000 Readiness Project of the U.S. Department of Agriculture's National Finance Center. He is accompanied, I believe, by Director Ortego, who is the Director of the National Finance Center. And is there anybody else at this point on agriculture around that you wish to have present?

Mr. MCMANUS. No, sir, Mr. Chairman.

Mr. HORN. It is all yours, Mr. McManus, along with Mr. Ortego.

STATEMENT OF EDGAR J. McMANUS, PROJECT DIRECTOR, YEAR 2000 READINESS PROJECT, USDA NATIONAL FINANCE CENTER, ACCOMPANIED BY JOHN R. ORTEGO, DIRECTOR, NATIONAL FINANCE CENTER

Mr. MCMANUS. Chairman Horn and Members of the subcommittee, thank you for the opportunity to appear today to discuss the National Finance Center's progress in meeting the challenges posed by the Y2K computer problem. In my capacity as Program Manager for Year 2000 Readiness at the Finance Center, I am responsible for ensuring that all National Finance Center computer platforms and systems, as well as the entire facility, are Y2K compliant as mandated by the Office of Management and Budget. I am pleased to report that our application systems are Y2K compliant.

The National Finance Center provides and maintains payroll/personnel, Thrift Savings Plans, administrative payments, billing and collections, accounting and property management information systems. The Y2K challenge affected virtually all of the National Financial Center's approximately 24 million lines of computer code. Following General Accounting Office and OMB guidelines, the National Finance Center developed and is executing a comprehensive Y2K readiness plan to ensure that its customers experience a smooth transition into the new millennium.

The National Finance Center's highest priority was to renovate its 24 million lines of mission critical computer code to correctly process dates after December 31, 1999. In addition, all facility equipment, systems and processes which enable us to maintain and operate computer systems and provide a suitable working environment for the delivery of our client services, must be inventoried, assessed and ensured Y2K compliant by whatever means necessary. The National Finance Center is and will continue to provide all possible resources to ensure that the day-to-day services we provide to the Department of Agriculture, more than 100 other Federal departments and agencies that we cross service, and the millions of Federal civilian employees we service directly will not be disrupted on January 1, 2000 or thereafter.

The National Finance Center is one of several Federal agencies that absolutely must meet the year 2000 deadline. Virtually every Federal agency and employee depends on the National Finance Center to process data throughout our two governmentwide sys-

tems, the Thrift Savings Plan system and the direct premium remittance system. We process the payroll for approximately 435,000 employees, roughly 20 percent of the Federal civilian work force, every 2 weeks. We service more than 2.3 million Federal employees with our Thrift Savings Plan system. We provide debt collection services for the Department of Agriculture and other Federal agencies. Annually, we process more than 33 million financial transactions, some $37 billion in disbursements and $9 billion in collections through our financial and accounting systems.

The following is a summary of the action plan we implemented to address year 2000 issues: We assigned a senior level manager with overall project responsibility who reports to the Director of the Center.

We carefully identified and assessed our mission critical systems.

We appointed a senior manager with telecommunications background to coordinate all interface testing.

We successfully installed a separate, dedicated mainframe on which to validate our mission critical applications by advancing the system and data dates into the year 2000 and beyond.

We upgraded our mainframe operating system and our primary data base software to year 2000 compliant versions.

We completed renovation, system testing, and returned to production approximately 24 million lines of application program code from 143 mission critical applications as of June 30th, 1998.

We are approximately 95 percent complete in assuring our entire information technology platform is Y2K compliant. The remaining 5 percent, which includes our postage meters, computer output microfilm, electronic publishing, one midrange computer platform, and approximately 700 personal computers will be replaced by the end of this calendar year.

We inventoried, assessed, and have assured that our facility's vulnerable systems and processes, such as fire suppression systems, chilled water for our mainframe, boilers and water systems, utility meters, uninterruptible power supply for the computer room and auxiliary power generators are year 2000 compliant.

We have inventoried, assessed and have been assured that all non-IT office equipment, such as fax machines, microfiche reader printers, copy machines, etc., either are year 2000 compliant or will be replaced by the end of the calendar year.

We asked vendors that supply critical goods and services to the daily operation of the Center to certify that they will be year 2000 compliant and will be able to deliver those goods and services in a continued timely manner prior to and after the century change.

We are working on contingency plans and have already made major strides in providing alternatives for failure of critical systems beyond our control, such as power and communications.

We have an auxiliary power source in the form of four diesel generators that are capable of powering our main facility, which includes the computer room, under a full load for an indefinite period. These generators were successfully tested in July of this year under full load condition for a contiguous 31-hour period.

We have been audited for Y2K readiness by our Office of Inspector General in 1997 and in 1998 with positive findings on both audits.

To provide additional information on the status of the National Finance Center's year 2000 efforts, we have included in our handout a copy of a current year 2000 briefing document, which provides more detail about our methodologies, accomplishments, interfaces and contingency planning. In addition, we have included our monthly report which goes to the Department of Agriculture's Chief Financial Officer, to whom we report. The Department's Chief Information Officer also receives this update and uses the information for the quarterly OMB report. We have also included our Y2K newsletter, several charts containing detailed information on the code renovation effort, a few articles written about the Center's year 2000 efforts, and a fact sheet with general information about us and the Federal entities we service. We also have a Web page that contains several pieces of information pertaining to the year 2000 project.

The National Finance Center has been working closely with the Treasury Department and the Federal Reserve to ensure our systems will continue to interface properly. We are scheduling end-to-end testing to validate that all payment activity can be successfully processed with advanced dates. On August 5th, 1998, the Department hosted an end-to-end seminar in Washington, DC. The National Finance Center, the Department of Treasury's Financial Management Service, the Office of the Controller of the Currency and the Federal Reserve all participated in this seminar designed to let our customer agencies and employees know where we are in our year 2000 efforts. We have also held customer briefings in Washington, DC, for client agency Chief Financial Officers and Chief Information Officers.

Our entire effort today has been accomplished under budget and with minimal contractor assistance. This was made possible primarily because of the support of the National Finance Center's Director, Mr. John R. Ortego. Mr. Ortego provided the most support I have ever received on a project, including the Thrift Savings Plan. I can assure you this project truly is our No. 1 priority, as evidenced by the fact that Mr. Ortego made the unpopular move of putting all agency requests for system modifications on hold pending completion of the Y2K code renovation effort. The only modifications made during this critical period were those legislatively mandated and any necessary correction of system errors. This proved to be invaluable in helping us meet our self-imposed deadline of June 30th, 1998, to have all mission critical production code renovated, user tested and returned to production. It allowed our application programmers to concentrate primarily on Y2K changes. We are well into the validation phase now, and it should be noted that because all of our renovated code has been returned to production, we are much further along than it might appear. We project to have all applications validated on the time machine by the end of this calendar year. We plan to keep the time machine up and available for the remainder of the century to facilitate regression testing and user testing of interfaces as their systems are being renovated.

Thank you for allowing me the opportunity to discuss the National Finance Center's current status and future plans to complete the massive work necessary to enable us to meet the year 2000

computer challenge. We recognize the importance and enormity of the challenge and are working to ensure that important government services are not disrupted on January 1, 2000. After all the testimony, I will be glad to answer any questions you may have regarding this issue.

[The prepared statement of Mr. McManus follows:]

UNITED STATES DEPARTMENT OF AGRICULTURE
OFFICE OF THE CHIEF FINANCIAL OFFICER
NATIONAL FINANCE CENTER

Statement of Edgar J. McManus
Program Manager for Year 2000 Readiness of the
National Finance Center
for Presentation to the House Government Reform and Oversight
Subcommittee on Government Management, Information, and Technology

Chairman Horn, and members of the Subcommittee, thank you for the opportunity to appear today to discuss the National Finance Center's progress in meeting the challenges posed by the Year 2000 (Y2K) computer problem. In my capacity as Program Manager for Year 2000 Readiness at the National Finance Center, I am responsible for ensuring that all National Finance Center computer platforms and systems, as well as the entire facility, are Y2K compliant, as mandated by the Office of Management and Budget (OMB). I am pleased to report that our application systems are Y2K compliant.

The National Finance Center provides and maintains Payroll/Personnel, Thrift Savings Plan, Administrative Payments, Billing and Collections, Accounting, and Property Management Information Systems. The Y2K challenge affected virtually all of the National Finance Center's approximately 24 million lines of application program code. Following General Accounting Office (GAO) and OMB guidelines, the National Finance Center developed and is executing a comprehensive Y2K readiness plan to ensure that its customers experience a smooth transition into the new millennium.

The National Finance Center's highest priority was to renovate its 24 million lines of mission critical computer code to correctly process dates after December 31, 1999. In addition, all facility equipment, systems, and processes which enable us to maintain and operate computer

systems and provide a suitable working environment for the delivery of our client services, must be inventoried, assessed, and ensured Y2K compliant by whatever means necessary. The National Finance Center is and will continue to provide all possible resources to ensure that the day-to-day services we provide to the Department of Agriculture, more than 100 other Federal departments and agencies that we cross service, and the millions of Federal civilian employees we service directly, will not be disrupted on January 1, 2000, or thereafter.

The National Finance Center is one of several Federal agencies that absolutely must meet the Year 2000 deadline. Virtually every Federal agency and employee depends on the National Finance Center to process data through our two government-wide systems, the Thrift Savings Plan System and the Direct Premium Remittance System. We process the payroll for approximately 435,000 employees, roughly 20 percent of the Federal civilian workforce, every two weeks. We service more than 2.3 million Federal employees with our Thrift Savings Plan System. We provide debt collection services for the Department of Agriculture and other Federal agencies. Annually, we process more than 33 million financial transactions, some $37 billion in disbursements and $9 billion in collections through our financial and accounting systems.

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- We upgraded our mainframe operating system and our primary database software to Year 2000 compliant versions.

- We completed renovation, system testing, and returned to production approximately 24 million lines of application program code from 143 mission critical applications as of June 30, 1998.

- We are approximately 95 percent complete in assuring our entire information technology platform is Y2K compliant. The remaining five percent, which includes our postage meters, computer output microfilm, electronic publishing, one midrange computer platform, and approximately 700 personal computers will be replaced by the end of this calender year.

- We inventoried, assessed, and have assured that our facility's vulnerable systems and processes; such as fire suppression systems, chilled water for our mainframe, boilers and water systems, utility meters, uninterruptible power supply for the computer room, and auxiliary power generators are Year 2000 compliant.

- We have inventoried, assessed, and have been assured that all non-IT office equipment; such as, Fax machines, microfiche reader printers, copy machines, etc., either are Year 2000 compliant or will be replaced by the end of the calender year.

- We asked vendors that supply critical goods and services to the daily operation of the National Finance Center to certify that they will be Year 2000 compliant and will be able to deliver those goods and services in a continued timely manner, prior to and after the century change.

- We are working on contingency plans and have already made major strides in providing alternatives for failure of critical systems beyond our control, such as, power and communications.

- We have an auxiliary power source, in the form of four diesel generators, that is capable of powering our main facility, which includes the computer room, under a full load for an indefinite period. These generators were successfully tested in July 1998 under full load conditions for a contiguous 31-hour period.

- We have been audited for Y2K readiness by our Office of Inspector General in 1997 and 1998 with positive findings on both audits.

To provide additional information on the status of the National Finance Center's Year 2000 efforts, we have included in our handout a copy of a current Year 2000 briefing document, which provides more detail about our methodologies, accomplishments, interfaces, and contingency planning. In addition, we have included our monthly report which goes to the Department of Agriculture's Chief Financial Officer, to whom we report. The Department's Chief Information Officer also receives this update and uses the information for the quarterly OMB report. We have also included our Y2K Newsletter, several charts containing detailed information on the code renovation effort, a few articles written about the National Finance Center's Year 2000 efforts, and a fact sheet with general information about us and the Federal entities we service. We also have a web page that contains several pieces of information pertaining to the Year 2000 project.

The National Finance Center has been working closely with the Treasury Department and the Federal Reserve to ensure our systems will continue to interface properly. We are scheduling end-to-end testing to validate that all payment activity can be successfully processed with advanced dates. On August 5, 1998, the Department of Agriculture hosted an end-to-end seminar in Washington, D.C. The National Finance Center, the Department of Treasury's Financial Management Service, the Office of the Controller of the Currency, and the Federal Reserve all participated in this seminar designed to let our customer agencies and employees know where we are in our Year 2000 efforts. We have also held customer briefings in

Washington, D.C. for client agency Chief Financial Officers and Chief Information Officers.

Our entire effort to date has been accomplished under budget and with minimal contractor assistance. This was made possible primarily because of the support of the National Finance Center's Director, Mr. John R. Ortego. Mr. Ortego provided the most support I have ever received on a project including the Thrift Savings Plan. I can assure you this project truly is our number one priority, as evidenced by the fact that Mr. Ortego made the unpopular move of putting all agency requests for system modifications on hold pending completion of the Y2K code renovation effort. The only modifications made during this critical period were those legislatively mandated and any necessary correction of system errors. This proved to be invaluable in helping us meet our self-imposed deadline of June 30, 1998, to have all mission critical production code renovated, user tested, and returned to production. It allowed our application programers to concentrate primarily on Y2K changes. We are well into the validation phase now and it should be noted that because all of our renovated code has been returned to production, we are much further along than it might appear. We project to have all applications validated on the "time machine" by the end of this calendar year. We plan to keep the "time machine" up and available for the remainder of the century to facilitate regression testing and user testing of interfaces as their systems are being renovated.

Thank you for allowing me the opportunity to discuss the National Finance Center's current status and future plans to complete the massive work necessary to enable us to meet the Year 2000 computer challenge. We recognize the importance and enormity of the challenge and are working to ensure that important government services are not disrupted on January 1, 2000. I would be happy to answer any questions you may have regarding this issue.

Year 2000: The Challenge For The National Finance Center, It's Customers, And Business Partners

Introduction

By now, everyone has heard of the Year 2000 (Y2K) challenge. This is the problem caused by computer systems throughout the industry using 2-digit year fields to store and manipulate dates. Unless corrective action is taken, when the dates being processed roll over from 1999 to 2000, many systems will not function properly.

The National Finance Center (NFC) provides and maintains Payroll/Personnel, Thrift Savings Plan, Administrative Payments, Billings & Collections, Accounting, and Property Management Information Systems. The Y2K challenge potentially impacted all of the NFC's more than 23 million lines of application programs. The NFC, following Government Accounting Office guidelines, developed and is executing a comprehensive Y2K readiness plan to ensure that all needed corrective action is taken and that its customers experience a smooth transition into the new millennium. The Center recently received a favorable review from USDA's Office of the Inspector General for having fixed its mission-critical applications on schedule, and it has moved into the validation testing phase of its readiness strategy.

Methodology

Determining the approach to be used in fixing the Y2K problem was a top priority for the Center. After assessment and testing, a twofold approach was adopted. For those systems the NFC is currently building, reengineering, or replacing, 4-digit year fields are being used in order to make them automatically Y2K compliant. However, there was not sufficient time nor resources to reengineer or replace all existing systems prior to December 1999.

So the issue remaining was to determine the appropriate technique to use for existing systems not scheduled for significant modernization prior to the end of 1999. One option involves expanding all date fields in existing systems from 2 digits to four digits. This option would require changes to all existing programs, interfaces, databases, and data containing date fields. However, this option was not deemed highly feasible due to the time and resources required to make all of these changes by the end of 1999. Another option called "windowing" was examined and tested. It was determined that windowing would accomplish the Y2K fix in a more timely and equally effective manner. Therefore, for systems not undergoing significant modernization, the NFC decided to use a fixed windowing technique.

The windowing technique involves the continued use of the 2-digit year field. When the century is needed, it is determined based on the value of the 2-digit year field. If the year is less than 50, the century is assumed to be 20; otherwise, it is assumed to be 19. For example if the year field is 01, the year is assumed to be 2001; if the year field is 97, the year is assumed to be 1997. This technique allows for changing only those programs that perform certain functions on date fields

such as compares, and elapsed days calculations.

The NFC is using the number 50 as a default cutoff year for windowing. This will work well with most of applications. Date processing is usually performed on transactions that are planned 1 to 5 years in advance or have happened within the past 5 years. Therefore, the use of 50 extends the life of our systems with 2-digit year fields until the year 2045. This is more than enough time to complete the reengineering efforts which will utilize a 4-digit year field. The use of 50 is also consistent with American Management Systems' use of windowing in the Federal Financial System and the Oracle Corporation's database management system.

There are some date fields, such as date of birth, where the default of 50 does not work as well. The tools being used provide the capability to change the default to handle these date fields. For example, for the "date of birth" field in our Payroll/Personnel System, the number 04 is used as the cutoff year for windowing since the oldest employee we service was born in 1904. Other system date fields have been analyzed and the default year has been adjusted as appropriate.

Accomplishments

To date the NFC has upgraded the mainframe operating system and related vendor-supplied software, purchased and installed a standalone IBM mainframe for Year 2000 validation testing, upgraded the Foundation Financial Information System software to Version 5.3, and assured compliance of 23,500,000 lines of application code. The NFC met a self-imposed deadline of June 30, 1998, to have identified, remediated, tested, and returned to production all programs requiring Y2K-related modifications.

Using the standalone IBM mainframe referred to as the "Time Machine," the Center has begun validation testing. Validation testing is defined as substantiating the functional, performance, and integration effectiveness of all components (application software, system software, hardware, etc.) in an independent environment in terms of processing with dates from the 20th and 21st Centuries. Validation testing on the Time Machine encompasses testing each and every production application system along with associated support applications, system software, and hardware. This testing centers on advanced date testing as prescribed by Government-wide standards and some application unique criteria developed internally. Successful validation testing of an application will mean that NFC has proven that this application and all supporting software and hardware can and will function without defect with Year 2000 dates. In fact some of the advanced date scenarios also deal with dates in late 1999 and other key dates beyond the Year 2000 itself. Overall success in Time Machine testing will, in effect, certify NFC Y2K ready.

NFC Y2K preparation will not end with Time Machine certification. NFC will continue to retest in order to ensure the compliance of all systems and processes as they are maintained in the time approaching the actual Year 2000 cut-over. This testing will include, mainframe and midrange computers and software, telecommunications, LAN, personal computer hardware and software, mission-critical systems, and applications and programs. Additionally, the Center has begun testing such things as elevators, fire alarms, copiers, fax machines, and the local power source to ensure compliance.

Customer And Other Business Partners Interfaces

The NFC has been very proactive in providing information to increase customer awareness of necessary actions to be taken to ensure compliance and readiness. Specifically, the NFC has and continues to conduct presentations to user groups, provides quarterly newsletters to customers, continually reports progress to the Office of the Chief Financial Officer, Office of the Chief Information Officer, and Office of Management and Budget, and provides status and other Y2K information on the NFC web site. In addition to the aforementioned, a form letter was sent to customers asking them to identify interfaces that needed changes. The NFC has taken the position that all interface formats will remain unchanged unless a customer requests a change. However, to further emphasize the importance of customer input and action, the NFC sent detailed letters to more than 2,000 customers soliciting cooperation to ensure that any outstanding Y2K issues were identified and resolved between and among the NFC, its customers, and other business partners.

The employee pay process illustrates the complexities and interdependencies between and among the NFC systems and those of its customers and business partners. The pay process involves a series of customers and business partners with a variety of systems and telecommunication links which all must be Y2K capable and compatible in order for the employee to receive their salary payment on a timely basis. The Center wants to be sure that all of the links (software, hardware, and telecommunications) satisfy Y2K processing requirements in a compatible manner. Issues such as formats, interfaces, and compliance methodologies all have a bearing on compatibility and the NFC has strongly encouraged its customers to test common business links. In addition, the "Time Machine" will be available to customers as NFC continues to emphasize the importance of application and interface testing. NFC strongly encourage its customers to schedule testing as soon as possible.

The General Services Administration has assured the Center that all customers connecting to the NFC via the FTS2000 X.25 Packet Switch Service will be Y2K compliant. Customers who are not FTS2000 users have been requested to review the Y2K compliance plan of their service provider to assure that telecommunications functionality will not be a problem. If an agency is not secure with Y2K telecommunications link functionality, the FTS2000 service may be a solution.

Contingency Planning

While we are convinced that Y2K conversion and testing will be successfully completed well in advance of the critical Y2K date, we recognize that business interrelationships may result in problems. The Center continues to evaluate what could go wrong and what alternative operations are available to handle these problems. One problem is identifying the risks involved with other companies' failures to adequately address Y2K issues. For example, the NFC could have problems with the electric power supply if the power company experiences date related problems with their systems. To ensure that an alternative power source is available if needed, the NFC recently conducted an extended period full load test of its auxiliary diesel generators with great success. If there is any possibility of a computer-induced electrical outage, the Center has

demonstrated that it can operate using locally generated power for as long as necessary to ensure uninterrupted service to its customers.

Other examples of possible problems and proposed solutions include: if telecommunication problems between NFC and its customers are experienced, tapes will be sent to handle batch interfaces; if there is a problem with electronic funds transfer transmissions to the Federal Reserve Bank, tapes will be sent; if the Federal Reserve Bank experiences transmission problems to financial institutions, checks will be printed.

Conclusion

Much has been accomplished in meeting our goal to provide continuity of service when we reach that critical date of January 1, 2000. We remain confident that with the support of our customers and other business partners we can complete on schedule the critical work still to be done to transition smoothly into the next millennium.

Mr. HORN. Mr. McManus, I want to include at this point in the record the dozen or so documents to which you referred to be printed at the end of your statement.

All of your speeches and presentations, by the way, automatically go in when I introduce you. And you can feel free to summarize it, you don't have to read it, because we have gone over this last night when we had the testimony.

[The information referred to follows:]

GOVERNMENT NEWS

GCN July 13, 1998

NFC's ready to 'take on' 2000

USDA center fixed 23.5m lines of code

By Florence Olsen
GCN Staff

Readiness has required a lot of contingency planning for NFC, center director John Ortego says.

The National Finance Center has finished making its date code fixes, which is good news for the 470,000 federal employees whose paychecks the New Orleans facility processes.

"Frankly, I would be prepared to take on the next century today," said the center's director, John Ortego, who reported completing the code assessment, fixes and initial tests.

The cross-servicing center run by the Agriculture Department maintains 23.5 million lines of code, mostly in Cobol and chock full of dates.

"Our goal by June 30 of this year was to have identified, remediated, tested and returned to production all code, and we accomplished that," Ortego said.

The finance center received a clean bill of health this month from Agriculture's Office of the Inspector General for having fixed its mission-critical applications on schedule, "placing NFC in a firm position for carrying out validation testing in a timely manner," the IG said in a report.

Agriculture as a whole has earned poor grades from Congress for its year 2000 readiness efforts. But Ortego, who became NFC director last August, said readiness has been his No. 1 priority.

Later this month, the finance center will test its readiness to operate for an extended time under diesel power. The test will run for 30 hours over a weekend, during which time "we're going to bring up every machine, every light, every terminal," Ortego said.

If there is any possibility of computer-induced electrical outages after 2000, Ortego intends to park several diesel trucks near the center.

Readiness has required more contingency planning than usual even for a large information shop, Ortego said. "We're taking it very seriously," he said.

Ortego will even consider asking the Treasury Department for authority to print checks if Treasury systems are not ready to do so.

Still ahead is a full schedule of validation testing. This summer, the staff assigned to year 2000 readiness will begin copying entire applications running on two IBM ES/9000 mainframes and loading them onto a separate IBM System/390 time machine for forward date testing.

"Because we manually carry the tapes from production silos to the time machine silos, we have to build procedures and bridges to get that data reloaded on the time machine," said Edgar McManus, project manager for the center's 2000 readiness effort.

The time machine has a complementary metal-oxide semiconductor processor rated at 61 million instructions per second, 1 terabyte of attached storage, two robotic tape silos from Storage Technology Corp. of Louisville, Colo., and an IBM 3745 front-end communications processor for testing 500 interfaces to external systems.

"We're already scheduling clients for testing on our time machine," Ortego said, adding that the center "is ready to take on cross-servicing work for people who are not compliant."

The center processes the payroll for 100,000 Agriculture employees, along with the payrolls for the IRS, Library of Congress and the Commerce, Justice and Treasury departments. It also handles processing for the federal Thrift Savings Plan, which has 2.3 million participants.

McManus said only 14 state tax systems can accept the center's automated W-2 information at this time. "Fortunately for us," he said, "we were already giving them a four-digit year, so those interfaces were compliant."

The center tackled its date code problems with windowing logic rather than date field expansion, McManus said.

The added logic can handle either two-digit or four-digit year dates. It assumes 1900 for any two-digit year written as 50 or higher, and 2000 for any two-digit year below 50. But that logic will not work for all cases, McManus said. One woman employee still working for the federal government was born in 1904, for example.

"We have some federal judges who are very old, and if it gets to the point where we haven't replaced the systems when those eight or 10 people are affected, we will just pay them manually," Ortego said.

Money trail

The center has spent $8 million, much of it for platform software upgrades, and may spend another $2 million to test and retest readiness throughout 1999, McManus said.

The entire readiness effort has been an in-house project engaging 200 government employees at peak times and fewer than 10 contractors.

"The youngsters we are hiring are not trained in Cobol; they're trained in all the new stuff," McManus said. The center managed the skills gap through in-house training and pairing new hires with experienced Cobol programmers.

"We have policies and projects in place to replace all that Cobol code," he said, "but that's probably going to take a few years."

By deferring most systems maintenance work, Ortego said, the center has managed to continue redesigning its payroll and accounting systems while keeping date code fixes as the top priority. "The redesign projects are not complete, but we've been able to sustain them," he said.

EDITORIAL

GCN July 27, 1998

The sky will not fall

If the year 2000 problem was a giant asteroid, it would probably be flaming out in the upper atmosphere about now. A few embers would hit a roof here and there, but society could exhale.

We're not out of the woods yet on 2000, but there are signs that the professional scare consultants ought to find other work.

Like religious fanatics who gather regularly to await the end of the world, the computer Armageddon types are likely to wake up a bit sheepish on the morning of Jan. 1, 2000.

A couple of recent developments show that—whether despite the scare or because of it—government agencies and other large institutions are making progress.

The National Finance Center's declaration that it is ready to take on the year 2000 [GCN, July 13, Page 1] roughly coincided with tests on Wall Street to see if computers running the stock exchanges could handle post-2000 dates.

There will still be glitches, no doubt.

But getting big transaction systems to the point of testing the applications on time machines is no small feat.

Meanwhile, Congress, or at least some members, appear to be getting bored with the 2000 issue. The evidence? Lawmakers are playing politics with $4 billion earmarked for agency fixes.

Conservative House Republicans want the so-called emergency funds offset by spending cuts. As a bonus, observers speculate, a few failed government computers might embarrass Vice President and Techie-in-Chief Al Gore as he embarks on his presumed presidential campaign.

The date code problem is real. It is the hype that's starting to sound unreal and shopworn, hype that in recent months has taken on fantastic proportions. One widely quoted consultant is predicting that date code problems will spur an economic recession or meltdown. So-called experts go on television to warn against taking airplane trips on that fateful New Year's Eve.

As GCN columnist Bob Deller and others have pointed out, the plans and repairs organizations have begun will define the government's response because time has run out for starting from scratch.

Agencies are in the home stretch of getting the job done, and so the pressure to reach the finish line must continue. It's time to cut the hyperbole and support the unsung heroes down in the trenches doing their work.

Thomas R. Temin
Editor
editor@gcn.com

ENTERPRISE COMPUTING | Beat the Clock

GCN July 27, 1998

Oldies but goodies. The National Finance Center in New Orleans has managed its year 2000 project without a large contingent of extra contractors, dollars or automated tools.

The reason is Ed McManus, who said he manages projects the only way he knows how: "the old-fashioned way."

"I get good people I can depend on, give them direction and stay on top of them, and that's how we pulled it off," said McManus, former associate director of the IRM Division at the center. Now he manages its year 2000 readiness project.

The cross-servicing center, run by the Agriculture Department, has 1,800 federal employees and a couple hundred contractors. The year 2000 work was done by 200 federal employees, mostly from the Applications Systems Division, McManus said.

Bring 'em back. He brought back four retired employees to work at full salary under waivers to the regulation that prevents double-dipping by government retirees.

The four have aggregate experience adding up to 140 years, and, McManus said, each of them has been able to do the work of two or three contractors.

Two of the four rehired employees were already working part time, two days a week, on the year 2000 project. They had accepted reduced pay because they enjoyed the challenge, McManus said.

Earlier this year, the Office of Personnel Management issued waivers for rehires engaged in year 2000 work, letting them return without salary reductions to offset their monthly retirement annuities.

NFC so far has spent $8 million on its year 2000 effort, most of it this fiscal year, McManus said, and not much of it for new tools.

The center had made large investments over the years in software from Computer Associates International Inc., especially CA-IDMS databases. When the programmers needed code assessment tools, they turned to CA-Examine 3.1 and CA-Impact 2000.

"The best method was to go through the code line for line," McManus said.

Programmers burrowed through 23.5 million lines of Cobol code and old IDMS databases to find and fix the two-digit year dates that could cause problems in central accounting, administrative payments, payroll and the government's popular Thrift Savings Plan.

"It was like going into an old closet," McManus said.

Tools but not factories. McManus tried a factory tool, thinking it might expedite the project. He

decided it added to the burden of the center's database administrators.

"I thought we went faster and cleaner doing it ourselves," he said.

For the next big phase, validation testing, McManus and his staff will load their applications onto an IBM OS/390 time machine and watch what happens as they run a date simulator on the corrected code.

—Florence Olsen
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Federal Computer Week

JULY 13, 1998

National Finance Center closes gap on Y2K compliance

BY COLLEEN O'HARA (ohara@fcw.com)

The Agriculture Department's National Finance Center, which processes payrolls for numerous agencies and manages the government's multibillion-dollar Thrift Savings Plan, is one step closer to making its computer systems Year 2000-compliant.

On June 30, the NFC finished renovating more than 23 million lines of code contained in the mission-critical systems that process financial and administrative data for more than 100 federal agencies. The code was checked and fixed and is ready to be tested for Year 2000 compliance.

"Our goal was to have the code remediated, tested and returned to production by June 30 this year," said John Ortego, director of the NFC. "We did this with minimal outside support and without asking the users to pay additional costs. It can be done on time and within budget."

Ortego said he assigned about 200 people to work on fixing the software code to meet the self-imposed June 30 deadline. Also helping the NFC meet the deadline was its decision to use an approach known as "windowing," which is a shortcut Year 2000 fix that allows software programs to assume what century a given date is in. The NFC will use windowing to assume that any date with a two-digit year below 50 is a year that occurs in the 21st century. The program assumes years above 50 occurred in the 20th century. This approach is a faster and less expensive, although less comprehensive, method to fix software code than changing two-digit year fields to four-digit year fields.

"Windowing is a way of easing the pain," said Ed McManus, the project manager for the Year 2000 readiness project at the NFC. "By using it, we don't need to change as many programs and expand date fields. It reduces the workload."

Another motivation for using windowing, McManus said, is that all the current applications will be replaced by 2005. This will obviate the need to fix programs that currently rely on windowing.

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GOVERNMENT SUMMIT

The six mission-critical systems renovated by the NFC were: payroll and personnel, Thrift Savings Plan, administrative payments, billings and collections, accounting and property.

"We have established a separate but duplicate mainframe," McManus said. "On this platform, we will advance the system date to the Year 2000 and beyond and will actually simulate processing."

McManus and his team also will test the Year 2000 compliance interfaces between the NFC and other agencies. For example, the NFC receives payroll, time, attendance and other data from agencies. It processes data on a biweekly basis and transmits payment information to the Treasury Department, which then cuts checks. However, if a payment is made via electronic funds transfer, then Treasury sends the data to the Federal Reserve.

The NFC has identified more than 556 interfaces between it and more than 290 locations.

Treasury's Financial Management Service has two systems that interface with the NEC: one system that supports payment via electronic funds transfer and another that supports check payments. Both systems will be Year 2000-compliant by the end of this year, said Connie Craig, the chief information officer for FMS.

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Mail questions to webmaster@fcw.com
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DATE: August 12, 1997

REPLY TO
ATTN OF: 50601-1-FM (3)

SUBJECT: USDA Review Of Year 2000 Conversion Project

TO: Irwin T. David
Acting Chief Financial Officer
Office of the Chief Financial Officer

ATTN: Gary Barber
Audit Liaison Officer
Office of the Chief Financial Officer

The Office of Inspector General has completed its initial review to ascertain the National Finance Center's (NFC) progress in addressing the Year 2000 conversion project. Our primary objectives were to determine if NFC had (1) developed an overall strategy, (2) assessed the impact of the Year 2000 computing problem, and based on this assessment, prioritized the conversion or replacement of affected systems and/or hardware, including system interfaces, (3) devoted sufficient resources to accomplish the plan, and (4) developed a contingency plan for critical systems and activities.

Based on our review of the NFC Year 2000 conversion project, we believe that NFC is making good progress to achieve Year 2000 compliance. For example, NFC has assessed the year 2000 computing problems and developed an overall project plan, which addresses the key elements needed to achieve Year 2000 compliance. As you know, NFC plans to expend considerable resources on the Year 2000 effort. We plan to continue to monitor NFC in this area as NFC work continues. However, we noted two areas where NFC must continue to closely monitor. These are: (1) The establishment/availability of a test facility to adequately test for Year 2000 compliance and to verify operational readiness, and (2) the development of contingency plans if critical system changes fall behind schedule. We are not making any specific recommendations at this time. We appreciate the cooperation of the NFC staff during our review. The Director, Information Resources Management Division, and her staff were also instrumental in assisting in identification of an issue that we brought to the Acting Chief Information Officer concerning recent personal computer purchases by the Department. If

you have any questions, please have a member of your staff contact Thomas F. Heideman, Regional Inspector General, at (816) 926-7667.

Richard J. Davis

ROBERT W. YOUNG
Deputy Assistant Inspector General
for Audit

cc:

Anne Thomson Reed, Acting, Chief Information Officer
John W. Hall, NFC, Acting Director
Gerry Knepp, Audit Liaison, NFC
Doug Toomey, Year 2000 Project Leader, NFC
D. Davis, Director, AFD
D. Gannon, ARIG, F&ADPO
R. Anton, Senior Auditor, F&ADPO
J. Hughes, Computer Specialist, F&ADPO

USDA

UNITED STATES DEPARTMENT OF AGRICULTURE

OFFICE OF INSPECTOR GENERAL

Washington D.C. 20250

DATE: July 10, 1998

REPLY TO
ATTN OF: 11009-1-FM

SUBJECT: Review of Year 2000 Conversion Project
at the National Finance Center

TO: Sally Thompson
Chief Financial Officer
Office of the Chief Financial Officer

We have completed this phase of our review of the National Finance Center's (NFC) Year 2000 (Y2K) conversion efforts. As part of this effort, NFC identified 6 mission critical systems, comprised of 143 applications, for conversion. NFC also identified additional aspects of its operations (e.g. mainframe operating systems, Local Area Networks (LAN), facilities, and telecommunications) which may be impacted by the millennium change. We reviewed the management and overall status of the project, concentrating on the renovation process for 13 selected applications. We also reviewed how data exchanges were being addressed, and NFC's efforts regarding business continuity and contingency planning.

Overall, we believe that NFC has and continues to place the proper priority on resolving Y2K problems. NFC has completed renovation of its mission critical applications on schedule, placing NFC in a firm position for carrying out validation testing in a timely manner. NFC management officials have been instrumental in achieving the current progress. Renovation of all NFC's mission critical systems is a key accomplishment in the overall process of resolving Y2K problems.

Project Status Reports

The NFC Year 2000 project status updates are provided to the Office of the Chief Financial Officer (OCFO) on a biweekly basis and to the Office of the Chief Information Officer (OCIO) on a monthly basis. The reports to OCFO include the detailed status of NFC's six mission critical systems, and also include some additional information relating to its other Y2K activities, such as conversion of the mainframe computer operating system, LAN and related issues, facilities, and telecommunications. Although these activities are critically important to the continued functionality of the center,

NFC has not cited them as mission critical systems in its reports to the Chief Information Officer. We noted that NFC established its reporting process in accordance with guidance issued by OCIO. In a separate report to OCIO, we recommended that the Department implement a standard definition of the term "system" to ensure consistent reporting of Y2K activities. OCIO agreed with our recommendation and advised us that it is reviewing the reporting process and plan to make changes to increase consistency and accuracy. NFC plans to revise its reporting methodology to incorporate the new guidelines.

During our review, we noted that the NFC time machine was operational, and testing of renovated applications has started. The NFC schedule calls for completion of validation by December 31, 1998, well ahead of the Office of Management and Budget deadlines. NFC has taken the initiative and is preparing overall plans and schedules to ensure that the scheduled date is achieved. In our opinion, development of this plan, including the methodology and schedule, is a critical step to ensure that time machine testing is effectively accomplished, and completed in a timely manner. NFC has added additional resources to this area to assure the validation phase progresses in an effective and timely manner.

Data Exchanges

In its June 1998, status report, NFC reported having 591 data exchanges with 322 external entities. NFC indicated that negotiations had been carried out with 218 of the 322 external business partners, signaling a significant improvement over the 29 negotiations reported in the May 1998, status report. The intent of the negotiations was to establish each partners' responsibilities for renovating and operating compatible data exchanges with NFC. During our review, NFC developed a central data exchange tracking system to compile and report progress in this area and assigned specific management personnel the responsibility of overseeing data exchange activities.

Business Continuity and Contingency Planning

In its May 1998, status report to OCFO, NFC reported it was evaluating the new General Accounting Office guidance pertaining to business continuity and contingency planning. The guidance is designed to assist agencies in determining the proper course of action for contingency planning. NFC officials advised us they plan to form a business continuity work group, consisting of staff members experienced in NFC's disaster recovery process to address contingency plans for mission critical systems. Further, NFC personnel agreed and plan to develop contingency plans for other risk areas, such as voice and data telecommunications, transportation, facilities, and other infrastructure services.

RECOMMENDATION

Revise Y2K status reports to designate the computer operating system, LAN and facilities, and telecommunications as mission critical systems.

Please provide your written reply within 10 days detailing the actions taken or planned for the above recommendation.

If you have any questions or need additional information, please contact me at 720-6945 or have a member of your staff call Thomas F. Heideman, Regional Inspector General, at (816) 926-7657.

Robert W. Young

JAMES R. EBBITT
Assistant Inspector General
For Audit

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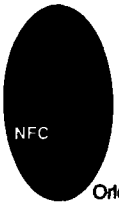


The National Finance Center,

located in New Orleans, Louisiana, is the operational component of the United States Department of Agriculture's (USDA) Office of the Chief Financial Officer. The mission of the NFC is to *design, develop, implement, and operate cost-effective financial, administrative, and management information systems and services supporting the missions of USDA and its customers.*

To achieve its mission, NFC provides centralized, automated, integrated systems and support services for payroll, personnel, administrative payments, accounts receivable, property management, budget, and accounting activities. NFC has over 1,700 employees and an operating budget of approximately $140 million.

USDA has been the forerunner in the application of computer technology in managing administrative functions. Beginning in the early 1960's, USDA operated a centralized payroll and personnel system; in 1972, USDA established a centralized voucher and invoice processing center. In 1973, these organizations merged to become the National Finance Center. Today, NFC provides consolidated payroll, personnel, and voucher and invoice payment systems and services to numerous Government agencies. NFC also provides systems and support services for several Governmentwide processes, including the Federal Retirement Thrift Savings Plan.

Government Franchising

In the early 1980's, NFC was the leader in developing and operating efficient and cost-effective administrative, financial and management information systems. By 1983, this distinction paved the way for NFC to begin cross-servicing (now known as franchising) other Federal departments and agencies.

Franchising proved to be an effective method for customers to reduce operating costs, increase efficiency, and avoid system development costs. Franchising has saved the Government, and ultimately the taxpayers, millions of dollars. These savings have been achieved through the sharing of automated systems and processing expertise.

Franchising activities are conducted through fee-for-service contracts with customers. These reimbursement agreements between NFC and its customers incorporate conversion and on-going operating costs.

Through franchising partnerships, NFC has steadily reduced unit costs while continuing to enhance systems and improve the quality of service to its customers.

Customers **N**ational **F**ranchise **F**inance **C**enter

Successful implementations, on schedule and under budget, quickly prompted additional Federal departments to seek NFC's services. With over 10 years of cross-servicing experience, NFC has grown both in numbers of customers and services provided. NFC currently provides administrative and financial services to approximately 120 agencies.

NFC services small and large customers alike. The smallest payroll/personnel customer has only 6 accounts; the largest customer has over 160,000 accounts.

The General Accounting Office (GAO) has recognized NFC as the most experienced and successful franchising service provider in Government and recommended that other departments consider NFC's services before planning to design and develop independent systems.

NFC continually evaluates and enhances its services to ensure that existing systems are maintained and new systems are developed using state-of-the-art technology. We are dedicated to satisfying the expanding needs of our customers and staying current with the rapidly accelerating technological advances.

With today's changing environment and Government streamlining initiatives, NFC plays a vital role in helping its customers meet their objectives and accomplish their missions; in effect, to become a *"Government that works better and costs less."*

NFC . . . Your Source For Solutions!

Customers

Partnerships

NFC systems are specifically designed to readily accommodate requirements necessary to satisfy unique customer needs.

With a proven record of reducing costs while improving servioes for USDA and other customers, NFC has attracted interest throughout Government. Studies by GAO and others consistently show that NFC is among the most efficient and cost-effective administrative service centers in the Federal Government. By using NFC's systems and services, agencies have reduced the cost of doing the Government's business. As a result, NFC has become one of the largest franchising providers of administrative and financial services in the Federal Government.

We invite you to visit our facility in New Orleans. We will be happy to discuss our systems and services, address your unique needs, and demonstrate how we can be *your source for solutions.*

For information regarding our systems and services, visit our web site at www.nfc.usda.gov or contact:

USDA
National Finance Center
ATTN: IC–398
P.O. Box 60000
New Orleans, LA 70160
(504) 255–5230
(800) 981–3026
(504) 255–5525 (FAX)

Systems and Services For Every Need

INTEGRATED APPLICATION SYSTEMS AND SERVICES

The **Payroll/Personnel System** incorporates a fully integrated online data base which maintains employee personnel records and time and attendance reports, and processes a biweekly payroll for over 450,000 employees.

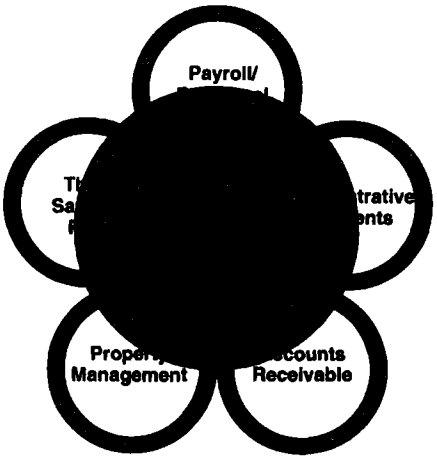
The **Administrative Payments Systems** reimburse employees for travel and transportation expenses, transfer funds between Government agencies, and process payments to commercial vendors incorporating all features of the Prompt Payment Act.

The **Accounts Receivable Systems** process billings and collections for customers' administrative and program functions in compliance with the Debt Collection Act.

NFC's **Property Management Systems** integrate fiscal accounting with property accountability and provide data to manage and control capitalized, leased, loaned, excess, expendable, and sensitive property.

The **Thrift Savings Plan System** handles recordkeeping for the 401(k) type retirement plan in accordance with the Federal Employee's Retirement System Act.

All application systems are integrated with a central **Accounting System** that maintains the general ledger and produces all necessary reports to satisfy Treasury, OMB, GSA, and unique customer requirements.



CUSTOMER SUPPORT

- *Help Desk*
- *Training*
- *State-of-the-Art Training Facilities*
- *Customer Orientations*
- *User Procedure Manuals*
- *User Support Groups*
- *Quality Assurance*
- *Video Conferencing*
- *Data and Physical Security*
- *Disaster Recovery Facilities*
- *Business Analysis*

OUTPUT CAPABILITY

- *Adhoc Reporting*
- *Preprogrammed Reports*
- *System Generated Reports*
- *Remote Printing*
- *Electronic Data Downloading*
- *Tape/Cartridge/Diskette/CD-ROM*
- *Online/Nearline Remote Access*

U.S. Department of Agriculture, Office of the Chief Financial Officer

NATIONAL FINANCE CENTER

Customers

Full Service

- 35 USDA Agencies
  - –Office of the Secretary
  - –Agricultural Marketing Service
  - –Agricultural Research Service
  - –Farm Service Agency
  - –Foreign Agricultural Service
  - –Forest Service
  - –Office of Communications
  - –Office of the General Counsel
  - –Rural Utilities Service
  - –Natural Resources Conservation Service
  - –Economic Research Service
  - –National Agricultural Statistics Service
  - –Cooperative State Research, Education, and Extension Service
  - –Office of the Inspector General
  - –Food and Consumer Service
  - –Rural Business–Cooperative Service
  - –Animal and Plant Health Inspection Service
  - –Grain Inspection, Packers and Stockyards Administration
  - –Food Safety and Inspection Service
  - –National Appeals Division
  - –Office of Chief Economist
  - –Office of Budget and Program Analysis
  - –Office of the Chief Financial Officer
  - –Office of Administrative Law Judges
  - –Office of Operations
  - –Alternative Agriculture Research and Commercialization Center
  - –Office of Small and Disadvantaged Business Utilization
  - –Office of the Chief Information Officer
  - –Office of the Executive Secretariat
  - –Risk Management Agency
  - –Rural Housing Service
  - –Board of Contract Appeals
  - –Departmental Administration Management Services Staff
  - –Policy Analysis and Coordination Center
  - –National Sheep Industry Improvement Center
- Federal Housing Finance Board
- Occupational Safety and Health Review Commission
- Office of Government Ethics
- U.S. Commission on Civil Rights
- U.S. Court of Veterans Appeals
- U.S. Merit Systems Protection Board

Payroll/Personnel

- Appalachian Regional Commission
- Architect of the Capitol
  - –Architect of the Capitol
  - –U.S. Senate Restaurants
- Commission on Security and Cooperation in Europe
- Commodity Futures Trading Commission
- Congressional Budget Office
- Corporation for National and Community Service
- Department of Commerce – 15 Agencies
  - –Technology Administration
  - –Office of the Secretary
  - –Economic Development Administration
  - –Bureau of Economic Analysis
  - –National Oceanic and Atmospheric Administration
  - –International Trade Administration
  - –Patent and Trademark Office
  - –National Institute of Standards and Technology
  - –Minority Business Development Agency
  - –National Telecommunications and Information Administration
  - –National Technical Information Service
  - –Bureau of Census
  - –Office of the Inspector General
  - –Economics and Statistics Administration
  - –Bureau of Export Administration

U.S. Department of Agriculture, Office of the Chief Financial Officer

NATIONAL FINANCE CENTER

Customers

Payroll/Personnel (cont'd.)

- Department of Housing and Urban Development
- Department of Justice – 11 Bureaus
  - –Community Relations Service
  - –Drug Enforcement Administration
  - –Executive Office for Immigration Review
  - –Federal Prison System
  - –Headquarters Components
  - –Office of the Inspector General
  - –Immigration and Naturalization Service
  - –Offices of the U.S. Attorneys
  - –Office of Justice Programs
  - –U.S. Marshals Service
  - –U.S. Trustee Program
- Department of the Treasury – 12 Bureaus
  - –Bureau of Alcohol, Tobacco and Firearms
  - –Departmental Offices
  - –Internal Revenue Service
  - –Office of the Inspector General
  - –Financial Management Service
  - –Bureau of the Public Debt
  - –U.S. Secret Service
  - –U.S. Mint
  - –U.S. Customs Service
  - –Federal Law Enforcement Training Center
  - –Bureau of Engraving and Printing
  - –Office of the Comptroller of the Currency
- Department of the Treasury's U.S./Saudi Arabian Joint Commission on Economic Cooperation
- Farm Credit Administration
- Farm Credit System Insurance Corporation
- Federal Communications Commission
- Federal Deposit Insurance Corporation
- Federal Emergency Management Agency
- Federal Mediation and Conciliation Service
- Federal Mine Safety and Health Review Commission
- General Accounting Office
- Institute of Museums and Library Services
- Interagency Council on the Homeless
- International Boundary and Water Commission, United States and Mexico
- John C. Stennis Center for Public Service Training and Development
- Library of Congress
- National Capital Planning Commission
- National Endowment for the Arts
- National Endowment for the Humanities
- National Gallery of Art
- National Labor Relations Board
- Office of Congressional Compliance
- Small Business Administration
- Smithsonian Institution – 5 Agencies
  - –Smithsonian Institution (Federal)
  - –Smithsonian Institution (Trust)
  - –Woodrow Wilson International Center for Scholars (Federal)
  - –Woodrow Wilson International Center for Scholars (Trust)
  - –Reading is Fundamental
- Treasury Technical Assistance
- U.S. Architectural and Transportation Barriers Compliance Board
- U.S. Botanic Garden
- U.S. Capitol Police (House and Senate)
- U.S. Office of Special Counsel

Accounts Receivable

- All Serviced Agencies

Travel

- Department of Education
- Department of Justice
  - –U.S. Marshals Service
- Department of State

Property Management

- Department of Commerce
- Department of the Interior, National Park Service
- Department of the Treasury, Financial Management Service
- General Accounting Office

Thrift Savings Plan System

- Federal Retirement Thrift Investment Board

Direct Premium Remittance System

- Office of Personnel Management

Status of USDA/OCFO Year 2000 Efforts: Monthly Report for August 1998

1. Organizational Responsibilities.

   No change from previous report.

2. Status.

   a. The NFC has six mission-critical systems; all six have completed renovation.

6	0	0	6	0

   b. The status of the mission-critical systems being repaired.

Central Accounting	4/97 - 4/97	6/98 - 6/98	12/98 -	12/98 -
Administrative Payments	4/97 - 4/97	6/98 - 6/98	12/98 -	12/98 -
Billings & Collections	4/97 - 4/97	6/98 - 5/98	12/98 -	12/98 -
Payroll/Personnel	4/97 - 4/97	6/98 - 6/98	12/98 -	12/98 -
Property	4/97 - 4/97	6/98 - 6/98	12/98 -	12/98 -
Thrift Savings Plan	4/97 - 4/97	6/98 - 6/98	12/98 -	12/98 -

APPLICATION VALIDATION STATUS (TIME MACHINE)

Central Accounting	31	2	6	1	1
Administrative Payments	31	5	4	3	1
Billings & Collections	4	1	1	1	1
Payroll/Personnel	61	6	2	2	2
Property	6	2	2	2	
Thrift Savings Plan	4				
TOTAL	137	16	15	9	5

c. Description of Progress:

(1) Status of Mission-Critical Systems. There are 137 applications within the six mission-critical systems. Of these, 21 were determined to require no change for Y2K and the remaining 116 have completed renovation. Five applications have completed validation.

Progress on Y2K assessment, upgrading, and testing the Information Technology platforms:

Ninety-eight percent of the critical systems which make up the mainframe, LAN, and other miscellaneous systems have completed the Evaluation Phase.

Ninety-four percent of the critical systems have completed the Corrective Actions Phase and are progressing into the IV&V Certification Phase.

Mainframe	**Hardware**	654	0	0	654
	Software	224	8	18	198
Local Area Network	**Hardware**	183	0	0	183
	Software	18	0	8	10
Miscellaneous Systems	**Hardware**	149	8	9	132
	Software	104	15	16	73
Totals	**Hardware**	986	8	9	969
	Software	346	23	42	281

(2) Status of Nonmission-Critical Systems. There are another 19 applications that are not identified as mission-critical. All of these have been assessed; 9 require no change for Y2K, the remaining 10 have completed renovation, tested, and implemented back into production. Personal computers are also not critical to the mission of the NFC, but could create inconveniences. The status of the PCs at NFC is listed in the tabular form below and additional explanation is listed under (9) Other Evidence of Progress.

19	9	0	10	0

No. Completed	10	10	10	10
Expected Dates for Completion	4/97	7/98	7/98	7/98

Personal Computers	Hardware	2,249	994	1,255	1,255
	Software	265	77	188	0

(3) Data Exchanges. We have identified one interface with state and local governments. This interface is for W-2 information and is provided upon request. This interface contains the year in 4-digit format and only 16 states receive it electronically. We feel there is no need to contact states about this interface. We have notified our customers via newsletter and web page that our incoming interface formats will not change. We have sent out letters to agencies that receive download from our payroll/personnel system offering to accommodate either 2- or 4-digit years and asking them to notify us of their requirements. We have received bulletins from Treasury FMS and IRS stating their plans and timing for the formats of those interfaces. The Thrift Savings Plan (TSP) system accounts for 304 of the interfaces with 150 organizations. It has been determined that no changes will be made to the TSP interface formats until the replacement system is implemented. The Thrift Investment Board has sent letters to the organizations they interface with.

Other Federal Agencies (provide list)	290	556	278	239
State Agencies	16	16	0	0
U. S. Private Sector	22	22	15	8

(4) Contingency Planning. We have established a team to develop a contingency plan. We have issued a task order against the ISAP contract to receive assistance from IBM in preparing our contingency plan.

(5) Other Y2K Implications. We have a representative on the Facilities Assessment Committee, and we are participating in the telecommunications assessment being headed by OCIO. We have tested all personal computers and scheduled the repair or replacement

of those that are not Y2K compliant.

(6) Problems Affecting Progress. None to report.

(7) Governmentwide Systems. The Thrift Savings Plan System has completed renovation. The Direct Premium Remittance System (DPRS) bills and collects premiums for eligible non-Federal employees who elect to participate in the Federal Employees Health Benefits (FEHB). We have been reporting it under the Billings and Collections System. Conversion of DPRS was completed and returned to production in February 1997. DPRS has completed validation on the Time Machine.

(8) Verification Efforts. The NFC has a Quality Assurance Office that is separate from the development organizations. A test platform "Time Machine" has been acquired to provide Y2K simulation for Validation Phase testing. The Office of the Inspector General has conducted an audit of the Y2K Readiness Project, and an independent contractor has conducted an audit of the Thrift Savings Plan (TSP). Grain Inspection, Packers and Stockyards Administration (GIPSA) is developing a Y2K simulation lab of their network environment to allow for Y2K compliance certification. GIPSA will be testing all NFC PC systems in their lab. We have provided them with copies of PC-TRVL Version 1.08, PC-BLCO Version 1.03, PC-TARE Version 1.11a, and PC-TARE Version 2.0.

(9) Other Evidence of Progress.

Mainframe:

The Mainframe consists of CPUs, DASD, Optical Storage, Automated Cartridge Library System, System Printers, Network Interface devices, and software programs.

Of the 654 hardware components,

- 652 (or 99.7 percent) are Y2K compliant, conditional, or tolerant
- 2 (or 0.3 percent) will no longer be used and will be removed from the system

Of the 224 software programs,

- 147 (or 65.9 percent) are Y2K compliant, conditional, or tolerant
- 51 (or 22.4 percent) will no longer be used and will be removed from the system
- 18 (or 8.1 percent) are noncompliant and are in the process of being upgraded
- 8 (or 3.6 percent) are still under investigation

Local Area Network Components:

The Local Area Network consists of servers, hubs, catalysts, concentrators, communications bridges, and software programs.

Of the 183 hardware components,

- 183 (or 100 percent) are Y2K compliant, conditional, or tolerant

Of the 18 software programs,

- 10 (or 55.6 percent) are Y2K compliant, conditional, or tolerant
- 8 (or 44.4 percent) are noncompliant and are in the process of being replaced or upgraded

Personal Computers and Peripherals:

This category include PCs, laptops, printers, scanners, and software.

Of the 2,294 hardware components,

- 1,249 (or 54.4 percent) are Y2K compliant, conditional, or tolerant
- 6 (or 0.3 percent) will no longer be used and will be removed from the system
- 994 (or 43.3 percent) are noncompliant and are in the process of being replaced or upgraded

Of the 265 software programs,

- 188 (or 70.9 percent) are Y2K compliant, conditional, or tolerant
- 77 (or 29.1 percent) are noncompliant and are in the process of being replaced or upgraded

Miscellaneous Systems:

Examples of miscellaneous systems are mail handling, voice response, computer output microfiche, mid-range processors, CD-ROM production, and automated time clock system.

Of the 149 hardware components,

- 120 (or 80.5 percent) are Y2K compliant, conditional, or tolerant
- 12 (or 8.1 percent) will no longer be used and will be removed from the system
- 9 (or 6.0 percent) are noncompliant and are in the process of being replaced or upgraded
- 8 (or 5.3 percent) are still under investigation

Of the 104 software programs,

- 29 (or 27.8 percent) are Y2K compliant, conditional, or tolerant
- 44 (or 42.3 percent) will no longer be used and will be removed from the system
- 15 (or 14.4 percent) are noncompliant and are in the process of being replaced or upgraded
- 16 (or 15.4 percent) are still under investigation

Summary:

3,235 hardware components

- 2,204 (or 68.1 percent) are Y2K compliant, conditional, or tolerant
- 20 (or 0.6 percent) will no longer be used and will be removed from the system
- 1003 (or 31 percent) are noncompliant and are in the process of being replaced or upgraded
- 8 (or 0.2 percent) are still under investigation

611 software programs

- 374 (or 61.2 percent) are Y2K compliant, conditional, or tolerant
- 95 (or 15.5 percent) will no longer be used and will be removed from the system
- 119 (or 19.3 percent) are noncompliant and are in the process of being replaced or upgraded
- 23 (or 3.9 percent) are still under investigation

3. Costs. Y2K costs for Telecommunications and Vulnerable Systems and Processes are not tracked separately from other Y2K costs.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
All Other Information Technology Cost	$1,236,000	$1,472,000	$8,980,000	$1,000,000	$1,000,000	$13,688,000

4. Exception Report on Systems.

   No systems to report as being behind schedule by more than two months.

5. Systems Scheduled for Implementation After March 1999.

   None to report.

Supplement 1. Telecommunications Systems Monthly Report

Number of telecommunications and data networks supporting mission-critical service delivery functions. (Number) + (Narrative)

One. The FTS2000 data network supports the OCFO National Finance Center's (NFC) mission-critical service delivery functions. NFC is primarily a payment data center, and any disruption in the timely delivery of payments via FTS2000 would cause concerns for Agriculture and other cross-servicing agencies.

Has your agency initiated the telecommunications equipment and services inventory? (Y/N)

Yes. NFC has initiated a telecommunications equipment and services inventory. Both OCFO-NFC (New Orleans, LA) and OCFO-HQ (Washington, D.C.) have begun inventory activity.

3. Has your agency submitted a telecommunications inventory plan? (Y/N) + Date Submitted.

Yes. NFC submitted a telecommunications inventory plan on February 2, 1998.

4. Is the inventory proceeding according to schedule? (Y/N)
If "No," please explain the reason for not meeting the projected schedule.

The inventory is proceeding according to the inventory plan schedule.

5. Inventory Equipment Summary Information

Equipment Type	Inventory to Date	Percent Known Compliant	Percent Known Non-Compliant	Percent Unknown Compliance Status
ODS Model 1110 Hubs	85	100 percent		
Cisco Fast Hubs	22	100 percent		
Cisco routers	9		100 percent needs software patch	
Cisco Concentrators	8		100 percent needs software patch	
Cisco catalyst	17		100 percent needs software patch	
Cisco catalyst	6	100 percent		

Supplement 1. Telecommunications Systems Monthly Report (Continued)

6. If compliance status is unknown, how do you intend to discover Y2K status and alternatives available? (Narrative)

   NFC compliance status is known.

7. Telecommunications Y2K Compliance Costs

   NFC expects to spend $220,000 in FY 1998 to make Telecommunications Y2K compliant and provide equipment in support of testing.

Supplement 2. Vulnerable Systems and Processes Monthly Report

Buildings/Facilities

3	0	1	0	2	0

a. Certifications are pending.

b. Update on the status of progress of buildings/facilities:

1. Michoud Assembly Facility
   Building 350
   13800 Old Gentilly Road
   New Orleans, LA 70129

Building 350 is an agency-leased building owned by the National Aeronautics and Space Administration (NASA). This building is mission-critical. A letter was sent to NASA during the week of March 1, 1998, requesting their Y2K status.

2. TANO Building
   4277 Poche Court West
   New Orleans, LA 70129

The TANO Building is a GSA-leased building owned by James Reiss, CEO, TANO Corporation. The TANO Building is considered mission-critical. Contact has been made with Glen Moore, Director, New Orleans Property Management Center, during February 1998. Mr. Moore advised us that GSA would be responsible for ensuring that the TANO Building is Y2K compliant.

3. NFC Warehouse
   4432 Poche Court West
   New Orleans, LA 70129

The warehouse is a GSA-leased building managed by Stirling Properties. The warehouse is considered mission-critical. GSA indicated to us that they will ensure that the warehouse is Y2K compliant.

Testing of the buildings has been scheduled for January 1999.

c. Collocation - N/A.

Scientific/Lab Equipment - N/A

Supplement 2. Vulnerable Systems and Processes Monthly Report (Continued)

Personal Property

An inventory assessment of personal property has been conducted.

Office equipment needed to be repaired or replaced is currently being evaluated.

Aircraft - N/A

Motor Vehicles

11	0	2	2

Agency Owned Vehicles - None

Agency Leased Vehicles

Total number of vehicles - two
Both vehicles will be turned in prior to October 1998.

GSA Vehicles

The Department has not provided information from GSA on their vehicles.
These vehicles do not require remediation. GSA will be contacted to resolve this issue.

USDA, OCFO, National Finance Center
Customer Information Newsletter

Y2K newsletter

Vol.2 No. 2 July 1998

Renovation Phase Completed

NFC has reached a major milestone in the Y2K effort with the completion of the Renovation Phase. We had a deadline of June 30, 1998, for completion of the renovation of NFC applications. We successfully completed renovation of all applications by the deadline. As you can see from the NFC Y2K Conversion Status on the back page of this newsletter, this was no small feat. Our 6 mission critical systems are made up of 143 applications. Most of these applications required some renovation to become Y2K compliant. The applications contain 15,244 programs, of which 6,673 required and received renovation by June 30, 1998. To qualify as complete with renovation, these applications had to be modified, unit tested, system tested, acceptance tested, and then returned to production.

Application Renovation Status

Mission Critical System	Number of Applications by Phase				
	Total Applications	No Change Necessary	Renovation Under Way	Renovation Complete	Not Started Yet
Central Accounting	32	9	0	23	0
Administrative Payments	34	4	0	30	0
Billings and Collections	4	0	0	4	0
Payroll/Personnel	63	11	0	52	0
Property	6	2	0	4	0
Thrift Savings Plan	4	1	0	3	0
TOTAL	**143**	**27**	**0**	**116**	**0**

Program Renovation Status

Mission Critical System	Number of Programs by Phase				
	Total Programs	No Change Necessary	Renovation Under Way	Renovation Complete	Not Started Yet
Central Accounting	4,664	2,979	0	1,685	0
Administrative Payments	2,109	895	0	1,214	0
Billings and Collections	735	170	0	565	0
Payroll/Personnel	5,602	3,296	0	2,306	0
Property	1,174	701	0	473	0
Thrift Savings Plan	960	530	0	430	0
TOTAL	**15,244**	**8,571**	**0**	**6,673**	**0**

Testing, Testing, Testing

Now that we have completed the renovation phase, we have begun the validation phase. During this phase, applications are tested with the system date advanced. To do this, we have installed a time machine to simulate production in the 21st century. The time machine is a single-processor IBM mainframe Model 9672-R15 running OS/390. It has been configured with over one terabyte of direct access storage devices (DASD) and two tape silos. This environment is separate from production to ensure that advance dates don't corrupt production processing.

We have completed installation and checkout of this platform and it is fully operational. When we advanced the system date to the year 2000, we did experience some problems with the systems products. Most problems were associated with the expiration dates of the product licenses. We contacted vendors and received and installed patches to these packages to extend the licenses beyond the testing dates.

We have developed procedures for migrating applications to the time machine, and we tested these procedures on our first application. The Direct Premium Remittance System (DPRS) was the first application to be tested on the time machine. DPRS bills and collects premiums for eligible non-Federal employees who elect to participate in the Federal Employees Health Benefits Program. During March and April, the system date was set to 1 day earlier than the current day and the year to 2000. DPRS processed through the March 98 processing schedule with the data aged to year 2000. During the testing of DPRS, we worked through the few problems that remained with this application and, just as important, was the identification and correction of problems associated with the systems software. The applications that follow DPRS will benefit from this testing. One important note about time machine testing is that we are using blue paper for all the outputs. This is to ensure that test output doesn't get confused with true production output. If you receive output from NFC on blue paper, please return it to: Y2K Project Office, National Finance Center, USDA, PO Box 60000, New Orleans, LA 70160.

Payroll/ Personnel

There are 63 applications that make up the Payroll/Personnel System. Most of these applications are completed and testing began May 5, 1998. The testing of the Payroll Personnel System will be extensive. Initially, we will be testing with a single small agency's data. We have established two IDMS Central Version (CV) environments to perform parallel testing. In one environment (IDMS85), data from Pay Period 5 of 1998 will be processed. In the other environment (IDMS61), the same data will be "aged" to advance dates by 2 years and simulate Pay Period 5 of 2000. A product named HourGlass 2000 will be used in IDMS61 to cause programs to receive system dates that correspond with the Pay Period 5 of 2000 processing date. After completion of this test, the data will be altered to test as many conditions as possible. Other tests will be conducted for Pay Period 26 of 1999 and Pay Period 1 of 2000.

After completion of these tests, we will place the Payroll/Personnel System on the time machine with a recent dump of all production payroll/personnel data. The data will be aged, and a parallel process will be run on the time machine to that production data. This will ensure that every aspect of the payroll/personnel process works in the 21st century as it does today. This testing of the Payroll/Personnel System will also provide data for testing the accounting applications. Other applications will undergo similar testing scenarios that will exercise their processes in the same environment that they will encounter in the year 2000.

Contingency Planning

As part of our Y2K preparations, we are reviewing NFC's disaster recovery plan. While we are convinced that we will successfully complete Y2K conversion and testing well in advance of the critical date, we recognize that business interrelationships may result in problems for NFC in the year 2000. Therefore, we continue to evaluate what

could go wrong and what alternative operations "contingencies" are available to handle these problems. NFC has a disaster recovery plan that includes moving operations to an alternative site in the event that our computing facility would be destroyed. Many of these contingencies are exercised to ensure that the proper coordination is in place to carry them out. During the week of May 15, the disaster recovery team performed tests of the recovery site provided by COMDISCO.

Y2K presents a unique set of problems. One of those problems is identifying the risks involved with other companies' failures to adequately address Y2K issues. For instance, NFC could have problems with the electric power supply if the power company experiences date-related problems with their systems. We do have a diesel power generator onsite and have determined that it is not date sensitive. Many of these risks have been evaluated previously; however, when the probability of an event such as power loss is increased, the contingencies need to be reevaluated to ensure continuity of operation.

We have begun the process of identifying potential problems and evaluating the adequacy of our contingencies to handle them. These are some examples of potential Y2K problems and NFC solutions: If there is a problem with telecommunications, we are prepared to send tapes to handle batch interfaces. If there is a problem with electronic funds transfer transmission to the Federal Reserve Bank, we will send a tape. If there is a problem between them and the banks, they are prepared to print checks.

We are prepared to take whatever action is necessary to ensure that critical operations continue thru this crisis, including making sure all of us are paid on time and correctly.

NFC Benefits from New Rules

There is a shortage of available programmers who have knowledge of the legacy systems, the languages they are written in, and the production environments that they run under. The shortage of available programmers with these skills is due to the nature of the Y2K problem and the fact that all organizations, both private and public, need these trained programmers. This shortage is being experienced throughout the computer industry, and the Federal Government has to compete with industry to acquire and maintain qualified personnel.

The Office of Personnel Management has approved provisions that allow retired employees to return without reduced pension or salary. NFC has been fortunate to have four retired employees return to help in key possitions on the Y2K effort. Carroll Boudreaux and Wade Buquoi have returned to help with the conversion of the Payroll/ Personnel System. Tom Kopfler has returned to help with the conversion of the Billings and Collections System. Kitty Guion has returned to lead the time machine testing effort. These four bring back valuable knowledge of the workings of the NFC systems and skill levels that would cost the government significantly more to obtain through other means.

PC-Applications Update

While most people think of NFC's mainframe applications as the "meat and potatoes" of our organization, more and more users are working with PC (personal computer) applications as part of their jobs. For example, PC-TARE (Personal Computer Time and Attendance Remote Entry System) is critical to the transmission of time and attendance data, which ensures that we all get paid! Therefore, it is imperative that the PC applications be Y2K compliant and that all current versions are running smoothly.

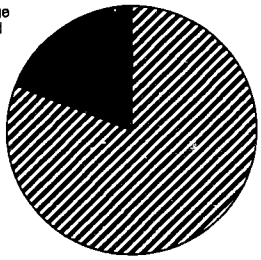
The Special Systems Branch has been working hard to convert all of our PC applications and are moving along to meet NFC timelines for completing all of the coding and program changes. The illustration on page 4 indicates the PC applications that have been converted to Y2K compliance thus far.

No changes were necessary on PC-BRCD (Personal Computer Bar Code Data Transmission and Interface Program) and PC-PEST (Personal Computer Period-End Estimates). Many thanks to the Special Systems Branch for all of their efforts on the PC applications conversions and keep watching the Y2K Newsletter for more updates!

PC-AMPS (Personal Computer Automated Miscellaneous Payments System)	4.02	April 1998
PC-BLCO (Personal Computer Billings and Collections System)	1.01	November 1997
PC-MISC (Personal Computer Miscellaneous Payments Remote Data Entry System)	1.01	December 1997
PC-PRCH (Personal Computer Purchase Order System)	1.11	September 1997
PC-TARE (Personal Computer Time and Attendance Remote Entry System)	2.0	November 1996
PC-TRVL (Personal Computer Travel System Data Entry)	1.08	September 1997
PC-FEDS (Personal Computer FEDSTRIP System)	1.03	May 1998
PC-PROP (Personal Computer Property Data Entry)	1.02	May 1998

NFC Year 2000 Application Conversion Status

Twenty-seven applications require no change for Year 2000, and 116 applications have completed corrective action.



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Directives and Analysis Branch
Financial Services Division
National Finance Center, USDA
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New Orleans, LA 70160

NAME/POSITION	DEPARTMENT/AGENCY
STREET ADDRESS	BUILDING NAME, ROOM NUMBER
CITY ZIP CODE	STATE

Application Status

[illegible]	[illegible]	0	0	0	0
[illegible]	20	4	0	20	0
[illegible]	0	0	0	0	0
[illegible]	0	0	0	57	0
[illegible]	0	0	0	4	0
[illegible]	4	1	0	2	0

Program Status

Mission Critical System *Number by Phase*	Total Programs	No Change Necessary	Renovation Underway	Renovation Complete	Not Yet Started
Central Accounting	4,664	2,979	0	1,685	0
Administrative Payments	2,109	895	0	1,214	0
Billings and Collections	735	170	0	565	0
Payroll/ Personnel	5,602	3,296	0	2,306	0
Property	1,174	701	0	473	0
Thrift Savings Plan	960	530	0	430	0
Totals	15,244	8,571	0	6,673	0

Y2K Year 2000 Readiness Project

Application Validation Status (Time Machine)

Mission Critical Systems Number by Status	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Central Accounting	31	2	6	4	1
Administrative Payments	31	[illegible]	[illegible]	3	1
Billings and Collections	4	1	[illegible]	[illegible]	1
Payroll/ Personnel	61	6	2	2	2
Property	[illegible]	2	2	2	0
Thrift Savings Plan	4	0	0	0	0
Totals	[illegible]	[illegible]	[illegible]		

Mr. HORN. Mr. Ortego, do you want to add anything at this point?

Mr. ORTEGO. General observation, sir, is that our No. 1 priority is our fiduciary responsibility for over 2 million Federal employees, and it is my opinion that we have met this challenge.

Mr. HORN. Very good. We will get to questions after we have finished with all the witnesses.

Next we have Renea Austin, deputy commissioner for the division of administration. Is she here? And Chris LeBlanc is taking her place, I take it, project manager of Louisiana year 2000 coordination project. Go ahead.

STATEMENT OF CHRIS LEBLANC, PROJECT MANAGER, LOUISIANA YEAR 2000 COORDINATION PROJECT

Ms. LEBLANC. First of all, I would like to apologize for Renea Austin, who was unable to participate this morning.

Good morning, my name is Chris LeBlanc, and I represent the State of Louisiana's year 2000 coordination project. Renea Austin leads the coordination project as project coordinator, and I serve as project officer. I appreciate the opportunity to speak today and commend the subcommittee's efforts in addressing the year 2000 problem and conducting these field hearings.

As I am sure most of you know, today is Y2K Global Awareness Day, which emphasizes our 500 day milestone marker. Although this day has special significance, every day serves as a reminder for all of us that the clock continues to tick in our efforts toward minimizing the year 2000 impact.

The State of Louisiana continues its efforts toward reducing the risk of detrimental consequences to State services and operations due to the year 2000 computer problem. Governor Foster's Executive Order 96–50, issued on October 17th, 1996, defined the policy of year 2000 compliance for the State of Louisiana. This Executive order directed all departments, commissions, boards, agencies and other State entities to evaluate the impact of the year 2000 and correct or replace non-compliant systems on or before July 1, 1999 to ensure that services and operations will not be interrupted due to the year 2000. In 1997, the State conducted a survey of its major departments and agencies to evaluate the year 2000 compliance status and make recommendations. On January 22, 1998, Governor Foster issued Executive Order 98–04, which widened the scope of applications covered by the Executive Order 96–50. These two Executive orders require all State departments, agencies and other State entities to perform all year 2000 duties necessary to ensure compliance by July 1, 1999.

The Louisiana year 2000 coordination project, LAY2K, was established to coordinate the planning, administrative support, progress monitoring and communication for the year 2000 work effort at the State level. The primary focus of the coordination project is to identify and monitor the mission critical applications of the State and each department. Mission critical applications are defined as those systems which affect the safety and health of the public, or affect payments for income maintenance or critical core business applications.

The coordination project consists of the project coordinator, the project officer and the year 2000 task force, which represents all State departments, higher education and the medical facilities. A department under secretary and a department Y2K project coordinator participate on the year 2000 task force, which is responsible for reporting the status of mission critical applications, addressing critical year 2000 issues and problems and disseminating the year 2000 related information to departments/agencies, boards, commissions and other State government entities. The task force is also responsible for ensuring individual agency involvement.

The coordination project efforts include monthly statewide task-force meetings, department status meetings, the year 2000 emergency funding pool recommendations, and the remediation effort status reporting of State departments.

Monthly task force meetings provide a forum for the sharing of information, discussions of lessons learned and best practices as it relates to the year 2000. Recent presentations included the embedded chip inventory procedure by the Department of Corrections and establishment of management teams by the Department of Health and Hospitals. In addition, the State's critical business partners utilize this forum to address the year 2000 compliance efforts.

The first cycle of department status meetings has been completed. These meetings were conducted with the department secretary and designated executive management. These meetings afforded the Y2K Project Office the opportunity to address specific department issues and increase awareness of potential year 2000 problems.

The year 2000 funding pool consisting of $5 million, which was established to assist agencies experiencing emergency circumstances in mission critical applications and unable to correct the problems with their existing resources. We are currently conducting the final review of seven requests with recommendation for funding to be made September 1st.

In June, State departments were asked to submit remediation status reporting on their information systems applications. Quarterly reporting will continue for the remainder of 1988 and then monthly reporting will be required. The September reporting process has been refined to include mission critical embedded systems, communication systems, hardware, and business partners and will be automated using Internet technology. Through this improved reporting mechanism, a statewide summary will better represent the status of the mission critical applications for the State of Louisiana.

The LAY2K task force is also directing efforts toward the State's business partners. The Louisiana Public Service Commission, the State's regulatory body, is working with privately owned electric utility companies and with water, sewer and gas companies. The Office of Emergency Preparedness is addressing year 2000 issues and is assisting parish and other emergency response groups' efforts toward planning and preparation. We are also working with various Y2K users groups and reaching out to other governmental entities. In our most recent task force meeting, we requested the department Y2K coordinators to complete the request for data exchange information.

Although the State of Louisiana has made progress toward minimizing the year 2000 impact, much work remains. The Coordination Project Office is committed to focusing State departments on the year 2000 mission, increasing awareness and education to promote action, sharing solutions to decrease the remediation effort required and to develop strategies to minimize economic disruptions.

Thank you, sir, and I would be happy to answer any questions.

[The prepared statement of Ms. LeBlanc follows:]

Subcommittee on Government Management, Information, and Technology
Oversight of the Year 2000 Problem
State of Louisiana Year 2000 Coordination Project
August 19th, 1998

Introduction

Good morning. My name is Chris LeBlanc and I, along with Renea Austin, Deputy Commissioner for the Division of Administration, represent the State of Louisiana's Year 2000 Coordination Project. Renea leads the Coordination Project as Project Coordinator and I serve as Project Officer. We appreciate the opportunity to speak today and commend the Subcommittee's efforts in addressing the Year 2000 problems and conducting these field hearings.

As I'm sure most of you know, today is Y2K Global Awareness Day, which emphasizes our 500 day milestone marker. Although this day has special significance, every day serves as a reminder for all of us that the clock continues to tick in our efforts towards minimizing the Year 2000 impact.

Louisiana Year 2000 Coordination Project Overview

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The Louisiana Year 2000 Coordination Project (LAY2K) was established to coordinate planning, administrative support, progress monitoring, and communication for the Year 2000 work effort at the state level. The primary focus of the Coordination Project is to identify and monitor the mission critical applications of the state and each department. Mission critical applications are defined as those systems which affect the safety and health of the public; or affect payments for income maintenance; or critical core business applications.

Louisiana Year 2000 Coordination Project Organization

The Coordination Project consists of the Project Coordinator, the Project Officer, and the Year 2000 Task Force which represents all state departments, higher education, and the medical facilities. A Department Undersecretary and a Department Y2K Project Coordinator participates on the Year 2000 Task Force which is responsible for reporting the status of mission critical applications, addressing critical Year 2000 issues and problems, and disseminating Year 2000 related information to departments/agencies, boards, commissions, and other state government entities. The Task Force is also responsible for ensuring individual agency involvement.

Louisiana Year 2000 Coordination Project Efforts

The Coordination Project efforts include monthly statewide Task Force meetings, Department status meetings, Year 2000 Emergency Funding Pool recommendations, and remediation effort status reporting of state departments.

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Summary

Although the State of Louisiana has made progress towards minimizing the Year 2000 impact, much work remains. The Coordination Project Office is committed to focusing state departments on their Year 2000 mission, increasing awareness and education to promote action, sharing solutions to decrease the remediation effort required, and developing strategies to minimize economic disruptions.

Mr. HORN. Well, thank you very much, we appreciate your coming. Since I am sure you wrote the testimony, I am glad to hear you utter it.

It is a great privilege to have the chief administrative officer for the city of New Orleans here, Marlin Gusman. How long have you been at the CAO?

Mr. GUSMAN. Four and a half years.

Mr. HORN. Well, I must say, the city has improved. Driving in, I can see the dynamic changes that are going on here. So I assume you deserve a lot of congratulations for that, and of course, the city council.

Mr. GUSMAN. Thank you.

Mr. HORN. Thank you for coming. And you are accompanied by Earl Kilbride, the administrator of management and information systems for the city of New Orleans. Thank you both for coming.

STATEMENT OF MARLIN GUSMAN, CHIEF ADMINISTRATIVE OFFICER, CITY OF NEW ORLEANS, ACCOMPANIED BY EARL KILBRIDE, ADMINISTRATOR, MANAGEMENT AND INFORMATION SYSTEMS

Mr. GUSMAN. Congressman, good morning, and on behalf of Mayor Morial, I wanted to welcome you and the subcommittee to New Orleans in your investigation. The city of New Orleans has been working toward the year 2000 compliance issue for quite some time.

In the early 1990's, the city recognized and accepted that the turn of the century was going to present a problem. We began working toward correcting the problem at that time and have been working on it since.

As a matter of policy, it was decided that all new major software modules would be purchased rather than developed in-house. This provided several major benefits. First, we could require that the software would be year 2000 compliant, or at least have a plan to become year 2000 compliant. It would make the vendor responsible for providing software maintenance. They would now assume the task of providing program fixes and modifications. This would free up the city's programming resources for other duties. Finally, upgrades to the software would be provided under the maintenance agreement. And we have found that this approach to software acquisition has been very effective.

After making this important policy decision, the city began the task of upgrading its infrastructure. As with any project of this magnitude and with the city finances in mind, funding was a very important issue. We estimated the cost and secured the financing through a certificate of indebtedness in the amount of $5 million to cover the cost of the modernization.

This updating began with the basics. Our physical plant was in shambles. Our computer facility was nothing more than converted office space. Window units and makeshift air conditioning provided much needed cooling, but there was no power protection. Our computer facility operated on electricity provided by the local utility company. The power was inconsistent at best. Every thunderstorm was a thrill. A bleep in the lights caused all computers to go down. In New Orleans, as you know, it rains almost every day in the

summer and the spring. And if we were to experience a fire, the New Orleans Fire Department would have to extinguish it with water, and we all know computers and water do not mix. On top of all this, the physical security of the area was extremely lax, if present at all.

The facility was updated in phases. The first and foremost important was the computer room. An architectural firm assisted with the design, ensuring that all of the shortcomings outlined earlier were covered. The completed work was a true state-of-the-art computer facility. An uninterrupted power supply provided power protection; a Halon system provided fire protection. Self-contained air conditioning with backup was installed to provide the proper environment, and an electronic card entry system provided physical security.

Once the physical facility was completed, work was begun to upgrade the computer hardware and system software. The hardware was old and outdated. The costs for maintaining aging hardware was rising at an alarming rate, reliability was suffering, and the users' confidence level was at an all-time low. The system software was as old or older than the hardware. The city was not taking advantage of the improvements associated with the changing technology. An IBM ES 9000 Model 210, which has since been upgraded to an IBM 2003 Model 215 CMOS machine, was obtained along with RAID technology disk storage, and a modern laser printer was obtained from IBM. All the hardware obtained was year 2000 compliant. The operating system and its associated subsystems were upgraded to the most current release and version to ensure that they would also be year 2000 compliant.

We sent letters to all of our third party software providers, asking that they certify that their software is compliant, or if not, provide the release date of the software that would be compliant. Most of the software proved to be compliant, and we are working with those who are not to ensure that they become compliant. It is expected that the remaining subsystems which need updating will be completed prior to the end of 1998.

Before the infrastructure was completed, work was begun on getting application software compliant. Not only did this offer us the opportunity to become year 2000 ready, we were able to take advantage of the changes in the technology and move from a batch processing environment to one that operates in real time. The two applications we felt would be the most difficult in terms of the manpower needed to implement, in changes in the city's business practices and in the length of time needed for implementation, were the financial management system and our payroll system or our human resource system. These are also two of our most mission critical applications.

A steering committee was established to ensure that the necessary decisionmakers were involved in the project. A project manager was brought in on contract in order to make sure that the project stayed on target. A detailed set of specifications, which required year 2000 compliance, was developed to ensure that the city obtained a system that would meet its needs now and into the future. After a competitive selection process, American Management

Systems [AMS], was selected to provide both the financial management system and the human resources system.

After many hours of effort, the financial management system was placed into production in September 1995. Although it was not year 2000 compliant at that time, the next release of the software due out in 1997 would be. In September 1997, the system was upgraded to be year 2000 ready. Throughout the financial management system implementation effort, work was also progressing on the human resources implementation. Upon completion of the financial management system, we then focused all of our efforts on the human resources system. A February 6, 1999 implementation date is targeted for that project. Based upon our current work plan, everything is on schedule.

With the two major mission critical applications addressed, work then began on the smaller, although just as important, applications. Our Department of Safety and Permits, which issues all of our permits for buildings, has a SPIN system, safety and permit information network, that was implemented and enhanced. This system is in production and year 2000 ready. A new traffic court management system, which handles all of the traffic tickets and citations issued, was obtained and implemented. It is year 2000 ready. A team headed by a project manager has been assembled to look at the in-house applications which need updating. These include our revenue collection system, our accounts receivable and our property assessor's system. It is scheduled that these systems will be updated to be year 2000 compliant by the first quarter of 1999.

Over the past 5 years, the city has developed and become more reliant upon computer platforms other than mainframes. Having implemented a wide area network that supports over 40 locations and has access, is accessed, rather, by 2,500 users, it was important that these systems also become year 2000 compliant. The network was installed using Novell, Inc., the NetWare software version 3.12. That software was not year 2000 ready. But when the city migrated to version 4.11 with fixes, it became compliant. Since that time, the city has moved on to version 5.2 of the software, and it is completely year 2000 ready. Over the recent years, we have been steadily replacing all of the older personal computers with Pentium based computers. These new computers are year 2000 compliant. It is expected that most, if not all, of our personal computers will have been replaced before the year 2000. We will ensure that those computers which are critical to the operation of the city be compliant.

Another area of concern with our telephone system, we are a Bell South Essex customer, and the telephone company has assured that all of their systems are year 2000 compliant. Our internal switching equipment, Tadiran, is year 2000 compliant.

Our director of the Department of Property Management is in the process of surveying all of the building control vendors to ensure that they are year 2000 ready.

In conclusion, the city is year 2000 compliant with the exception of its human resources system. Although that has been acquired, installed and tested, it won't become fully functional until February 1999. Our computer infrastructure has been updated, the biggest of our applications have been completed, and our teams are imple-

menting the remainder. And we will be finished by the first quarter of 1999.

And as an additional note, I wanted to let the subcommittee know that the New Orleans Technology Council, which is an organization that the city of New Orleans supports, and they are represented here by Mr. Joseph Grace, they are having on August 26, 1998, a seminar entitled "Year 2000, Are You Prepared for the Millennium?" And this is another opportunity for people outside of government to become aware of this big issue.

And as you stated earlier, I am joined by Mr. Earl Kilbride, who can answer any of the very difficult questions after the other testimony is concluded.

[The prepared statement of Mr. Gusman follows:]

In the early days of computers, the cost of hardware was considerably higher than it is today. One of the techniques that programmers used to reduce this cost was to only store the most significant pieces of data and ignore the others. A prime example of this is the main reason for the fix the computer industry is in today. The century portion of the year was stripped off when the year was stored on the, then expensive, disk storage. Although, this may seem as trivial now, when you consider that industry-wide billions of dates were stored at a savings of two bytes each. The associated cost savings were directly proportional.

In the early 1990's, the City recognized and more importantly accepted that the turn of the century was going to present a problem. We began working towards correcting the problem at that time and have been working on it since.

As a matter of policy, it was decided that all new major software modules would be purchased rather than developed in-house. This provided several major benefits. First, we could require that the software would be year 2000 compliant or at least have a plan to become year 2000 compliant. It would make the vendor responsible for providing software maintenance. They would now assume the task of providing program fixes and modifications. This would free up the City's programming resources for other duties. Finally, upgrades to the software would be provided under the maintenance agreement. This approach to software acquisition has proven to be very effective.

After making this important policy decision, the City began the task of upgrading its infrastructure. As with any project of this magnitude, funding is important. A cost was estimated and financing was secured. A C of I was issued in the amount of $5,000,000.00 to cover the cost of the modernization.

This updating began with the basics. The physical plant was in shambles. The computer facility was nothing more than converted office space. Window units and make shift air conditioning provided much needed cooling. There was no power protection. The computer facility operated on electricity provided by the local utility company. The power was inconsistent at best. Every thundershower was a thrill. A bleep in the lights caused all the computers to go down. In New Orleans, it rains almost everyday in the spring and summer. If, God forbid, we were to experience a fire, the NOFD would have to extinguish it with water. We all know computers and water do not mix. On top of all of this, the physical security of the area was extremely lax, if present at all.

The facility was be updated in phases. The first and most important was the computer room. An architectural firm assisted with the design, insuring that all of the shortcomings outlined earlier were covered. The completed work was a true state of the art computer facility. An uninterrupted power supply provided power protection; a Halon system provided fire protection; self contained air conditioning with backup was installed to provide the proper environment, and a electronic card entry system provided physical security.

Once the physical facility was completed, work was begun to upgrade the computer hardware and system software. The hardware was old and outdated. The costs for maintaining aging

hardware was rising at an alarming rate; reliability was suffering; and the user's confidence level was at an all time low. The system software was as old or older than the hardware. The City was not taking advantage of the improvements associated with the changing technology. A IBM ES 9000 Model 210, since upgraded to an IBM 2003 Model 215 CMOS machine, was obtained along with RAID technology disk storage and a modern laser printer was obtained from IBM. All of the hardware obtained was year 2000 compliant. The operating system and its associated subsystems were upgraded to the most current release and version to insure that they would also be year 2000 compliant. A letter was sent to all third party software providers (security, utilities, etc) asking that they certify that their software is compliant or if not, provide the release date of the software that would be compliant. Most of the software proved to be compliant and we are working with those, who are not, to insure that they become compliant. It is expected that those remaining subsystems which need updating will be completed prior to the end of 1998.

Before the infrastructure was completed, work was begun on getting the application software compliant. Not only did this offer us the opportunity to become year 2000 ready, we were able to take advantage of the changes in the technology and move from a batch processing environment to one that operates in the real time. The two applications we felt would be the most difficult in terms of the manpower needed to implement, in changes in the City's business practices and in length of time needed for implementation were the Financial Management System and the Payroll System. These are also two of our most mission critical applications. A steering committee was established to insure that the necessary decision makers were involved in the project. A project manager was brought in to make sure the project stayed on target. A detailed set of specifications, which required year 2000 compliance, was developed to insure that the City obtained a system that would meet its needs now and into the future. After a competitive selection process, American Management Systems was selected to provide both the Financial Management System and the Human Resources System.

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With the two major mission critical applications being addressed, work was begun on some of the smaller, although just as important applications. Safety and Permit's SPIN system was implemented and enhanced. This system is in production and year 2000 ready. A new Traffic Court Management System was obtained and implemented. It is year 2000 ready. A team, headed by a project manager, has been assembled to look at the in-house applications which need updating. These include the revenue collection, accounts receivable and the assessor's system. It is scheduled that these systems will be updated to be year 2000 compliant by the first quarter 1999.

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Mr. HORN. You are going to deal with the overall policy envisioned, right?

Mr. KILBRIDE. Right.

Mr. HORN. Anything you want to add at this point?

Mr. KILBRIDE. He covered it pretty well, thanks.

Mr. HORN. Our next witness, then, is Mike Walker, who is director of information services for the city of Baton Rouge. Nice to have you here, Mr. Walker.

STATEMENT OF MIKE WALKER, DIRECTOR, INFORMATION SYSTEMS, CITY OF NEW ORLEANS

Mr. WALKER. Thank you. I would also like to recognize two additional city/parish employees today that have attended this conference meeting with myself; one is Bob Laughlin, who is assistant director of information services, and Thomas Yang, who is project manager for network systems.

The city of Baton Rouge/Parish of east Baton Rouge began addressing the year 2000 problem 7 years ago. At that time, our Information Services Steering Committee prepared a technology plan for mainframe computers, financial/administration systems, public safety applications, networks and personal computers. While today we cannot say that we are year 2000 compliant in all areas of technology, Baton Rouge has made considerable progress called in remediation of problems caused by representing the year with two digits. Our progress in some areas has been limited or has been hindered due to limited available solutions for major corporations.

In 1998, Mayor Tom Ed McHugh announced a call for action to enhance local government and community awareness of potential problems for the year 2000. Coinciding with his announcement, governmental and community seminars addressing these potential problems have been brought to Baton Rouge. The mayor has actively supported and promoted these seminars while continuing to look for ways to ensure the community's stability. Another example of raising community awareness is an arrangement we are working on with the National Association of Counties to carry a satellite broadcast on the year 2000. The city will make this broadcast available to the public during the month of October.

Concerning government operations, an internal task force has been established by the mayor to review critical services. These services include public safety and public works operations, specifically fire fighting, police protection, emergency medical response, traffic signals and sewerage control. Other internal awareness steps taken for the year 2000 include publication of information in the city/parish newsletter, memorandums to all city/parish agencies, creation of the Web page on our Intranet, an internal seminar for quasi city/parish agencies, and scheduled meetings for all city/parish departments to establish compliance guidelines. The Web page on our Intranet details hardware and software items and their status for the year 2000 compliance. This provides city/parish agencies with a quick reference guide to eliminate duplication of effort.

Our mainframe computers, personal computers, servers, networking equipment, operating software and application software have been documented for the year 2000 compliance, which is in-

cluded for your review. This documentation is being used to help each city/parish agency in planning and problem resolution. We have also reviewed numerous embedded systems and thus far have received verbal assurances from the associated vendors. As we continue to work with the city/parish agencies, these embedded systems will be documented and written acknowledgement of the year 2000 compliance will be obtained from the appropriate vendors.

Another policy implemented has to do with future purchases and city/parish annual contracts. Our Purchasing Division is requiring year 2000 compliance on all bid documents led by the city/parish. In addition, as annual contracts are reviewed and awarded, it is required that potential vendors submit written documentation verifying their company will be able to not only certify the goods, but will be able to supply their goods in the year 2000.

At least one city/parish agency is using a technique to identify systems tested. They have acquired prominent stickers that are applied to each piece of equipment after it has been certified and tested for the year 2000. This appears to be a good approach and will make any device not tested stand out for easy identification. This technique will probably be used in other areas of the government.

The challenge facing city/parish officials today does not only obtain readiness for our own operation, but readiness for the community. This message must get out to our communities to prevent interruption of services to all citizens. Another major concern is the potential for civil litigation for failed systems. We must strive for a balance in legislation that does not destroy the communities that we serve. One thing is clear with this situation: No one has ever gone through this, and no one can predict the outcome.

There is one thing that we have learned: This is a very complex and complicated issue that has far-reaching impact. Systems that were not originally suspect are now being reviewed as we find out more about the issues surrounding the year 2000. This is especially true for embedded systems. Just to identify what devices have embedded chips is very cumbersome at best. If there were a central repository of equipment and devices that an organization could reference with a search engine, it sure would make things a lot easier.

With that said, I thank you for allowing the city of Baton Rouge to testify here today and will be glad to answer any questions that you might have.

[The prepared statement of Mr. Walker follows:]

CITY OF BATON ROUGE
PARISH OF EAST BATON ROUGE
REPORT ON YEAR 2000

The City of Baton Rouge/Parish of East Baton Rouge began addressing the Year 2000 problem seven years ago. At that time, our Information Services Steering Committee prepared a technology plan for mainframe computers, financial/administration, public safety applications, networks, and personal computers. While today, we cannot say that we are Year 2000 compliant in all areas of technology, Baton Rouge has made considerable progress in remediation of problems caused by representing the year with two digits. Our progress in some areas has been hindered due to limited available solutions from major corporations.

In 1998, Mayor Tom Ed McHugh announced a "Call For Action" to enhance local government and community awareness of potential problems for the year 2000. Coinciding with his announcement, governmental and community seminars addressing these potential problems have been brought to Baton Rouge. The Mayor has actively supported and promoted these seminars while continuing to look for ways to ensure the community's stability. Another example of raising community awareness is an arrangement we are working on with the National Association of Counties to carry a satellite broadcast on the Year 2000. The City/Parish will make this broadcast available to the public during the month of October.

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and their status for Year 2000 compliance. This provides City/Parish agencies with a quick reference guide to eliminate duplication of effort.

Our mainframe computers, personal computers, servers, networking equipment, operating software and application software have been documented for Year 2000 compliance, which is included for your review. This documentation is being used to help each City/Parish agency in planning and problem resolution. We have also reviewed numerous embedded systems and thus far have received verbal assurances from the associated vendors. As we continue to work with the City/Parish agencies, these embedded systems will be documented and written acknowledgement of Year 2000 compliance will be obtained from the appropriated vendors.

Another policy implemented has to do with future purchases and City/Parish annual contracts. Our Purchasing Division is requiring Year 2000 compliance on all bid documents let by the City/Parish. In addition, as annual contracts are reviewed and awarded, it is required that potential vendors submit written documentation verifying their company will be able to not only certify the goods, but will be able to supply their goods in the year 2000.

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The challenges facing City/Parish officials today is not only obtaining readiness for our own operation, but readiness of the community. This message must get out to our communities to prevent interruption of services to all citizens. Another major concern is the potential for civil litigation for failed systems. We must strive for a balance in legislation that does not destroy the communities that we serve. One thing is clear with this situation; no one has ever gone through this and no one can predict the outcome.

There is one thing we have learned; this is a very complex and complicated issue that has a far-reaching impact. Systems that were not originally suspect are now being reviewed as we find out more about the issues surrounding the year 2000. This is especially true for embedded systems. Just to identify what devices have embedded chips is very cumbersome at best. If there were a central repository of equipment and devices that an organization could reference with a search engine, it sure would make things much easier.

With this said, I will entertain any questions you may have for the City of Baton Rouge.

EAST BATON ROUGE INFORMATION SERVICES Y2K REPORT

CATEGORY Finance/Administration

TYPE Application Software

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
Finance Accounting	Y	Y	Y	Vendor contract required Y2K compliance
Moderate Rehabilitation	Y	Y	Y	
Special Assessments	Y	Y	Y	
Council Administrator	Y	Y	Y	
Citizen's Service	Y	Y	Y	
Revenue	Y	Y		Projected Implementation date of December 1, 1998
Payroll/Personnel	Y	Y		Projected Implementation date of November 1, 1998
Fixed Assets	Y	Y	Y	Vendor contract required Y2K compliance
Inventory	Y	Y	Y	Vendor contract required Y2K compliance
Check Reconciliation	Y	Y	Y	Vendor contract required Y2K compliance
Jury Management	Y	Y	Y	
Purchasing	Y	Y	Y	Vendor contract required Y2K compliance
Garnishments	Y	Y	Y	

TYPE DEC Software

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
DEC VMS Cluster	Y			DEC status B - Year 2000 ready
Decnet	Y			DEC status B - Year 2000 ready
DEC Open VMS	Y			DEC status B - Year 2000 ready

DEC TERM SVR	Y	DEC status B - Year 2000 ready
DEC NAS 200	Y	DEC status B - Year 2000 ready
DEC LSE/SCA	Y	DEC status B - Year 2000 ready
DEC Cobol	Y	DEC status B - Year 2000 ready
DEC Datatrieve	Y	DEC status B - Year 2000 ready
Decforms	Y	DEC status B - Year 2000 ready
DEC FMS	Y	DEC status B - Year 2000 ready

CATEGORY LAN

TYPE Corel

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
Corel WordPerfect 8 Standard	Y	Y	Y	
Corel WordPerfect 7	Y	Y	Y	
Corel WordPerfect 6.1	Y			Upgrade planned
Corel WordPerfect 8 Professional	Y	Y	Y	

TYPE IQ Software

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
IQ v.5.3	Y	Y	Y	

TYPE J. River

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
ICE/TCP 95 v.4.3.1	Y	Y	Y	

TYPE Lotus

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
Lotus 123 for DOS 2.4	Y			Upgrade planned
Lotus 123 (all other versions)	Y	Y	Y	

TYPE Microsoft

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
Exchange Server 5.5	Y	Y	Y	
MS-DOC 6.22	Y	Y	Y	Microsoft reports minor issues

Access 97 v.8.0	Y	Y	Y	
Excel 95 v.7.0	Y	Y	Y	
Excel 95 v.8.0	Y	Y	Y	
Office 97 Standard Ed.	Y	Y	Y	
Visual FoxPro v.5.0a	Y	Y	Y	
Frontpage 98	Y	Y	Y	
Windows 95 v.4.00.950	Y	Y	Y	Microsoft reports minor issues
Windows for Workgroups v.3.11	Y	Y	Y	Microsoft reports minor issues
PowerPoint 95 v.7.0	Y	Y	Y	
Outlook 98 v.8.5	Y	Y	Y	
Internet Expl v.4.01 16bit	Y	Y	Y	
Office 97 Professional Ed.	Y	Y	Y	
PowerPoint 97 v.8.0	Y	Y	Y	
Office 95 Professional Ed.	Y	Y	Y	Microsoft reports minor issues
Office 95 Standard Ed.	Y	Y	Y	Microsoft reports minor issues
Windows NT Server Std/Ent v.4.0	Y	Y	Y	Microsoft reports minor issues
Internet Expl v.3.0,3.01,3.02 32bit	Y	Y	Y	Microsoft reports minor issues
Windows NT Workstation v.4.0	Y	Y	Y	Microsoft reports minor issues
Intellipoint v.2.0,2.0a,2.1,2.2	Y	Y	Y	
Outlook 97 v.8.0,8.01,8.02,8.03	Y	Y	Y	

TYPE Netware Software

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
Netware 3.12 (6)	Y	Y	Y	Y2K Patch installed
Netware 4.10 (7)	Y	Y		Upgrade to 4.11
Netware 4.11 (15)	Y	Y	Y	Service pack 5.0 installed
Netware 3.11	Y			Upgrade to 4.11

TYPE Novell Hardware

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
DELL SP5133-2 (4)	Y	Y	Y	Certified
DELL POWEREDGE 4100	Y	Y	Y	Certified
ADVENT	Y			Will be replaced by the 1st Quarter 1999
DELL 466X2	Y			Will be replaced by the 1st Quarter 1999
DELL EL2100	Y	Y		BIOS Upgrade
DELL GMT5133	Y	Y		BIOS Upgrade
DELL OPTIPLEX GXA (2)	Y	Y	Y	Certified
DELL OPTIPLEX GXMT513	Y	Y	Y	Certified
DELL POWEREDGE 2100 (2)	Y	Y	Y	Certified
DELL POWEREDGE 2300	Y	Y	Y	Certified
DELL SP450	Y			Will be replaced by the 1st Quarter 1999
DELL POWEREDGE 4200 (3)	Y	Y	Y	Certified
DELL SP560 (4)	Y	Y		BIOS Upgrade

GATEWAY 2000 P5-133	Y	Y		Requires software patch
GENERIC (4)	Y	Y		Requires software patch
TIGER	Y	Y		Requires software patch

TYPE NT Hardware

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
GATEWAY(2)	Y			Requires software patch
GENERIC (2)	Y			BIOS Upgrade
INTERGRAPH	Y			BIOS Upgrade
NCSI (2)	Y			BIOS Upgrade
GATEWAY P5100 (2)	Y			BIOS Upgrade
DIGITAL MPCB40	Y	Y	Y	
DIGITAL	Y	Y	Y	
DELL	Y	Y	Y	Certified

TYPE NT Software

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
NT 3.51 (3)	Y	Y		Upgrade to 4.0
NT 4.0 (9)	Y	Y	Y	Service pack 3.0 installed on 7 units

CATEGORY Public Safety

TYPE Application Software

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
Criminal History	Y	Y	Y	
ADSI TP Monitor	Y	Y	Y	
Fire Reporting	Y			Will be replaced by a new version
Warrant Control	Y			Contracted with vendor for mods - December 1998
Inmate Mgmt System	Y			Will be replaced by a new version
Traffic Accident	Y			Projected implementation date of December 1998
Alarm Billing	Y	Y		
Arrest System	Y			Historical archive - no longer updated
EMS Reporting	Y			Projected implementation date of December 1998
Computer Aided Dispatch	Y			Contracted with vendor for mods - December 1998
Message Switch	Y	Y	Y	
Records Info Mgmt	Y	Y	Y	
Pawn Shop Control	Y			Will be replaced by a newer version
Property and Evidence	Y			Contracted with vendor for mods - December 1998
Outside Information	Y			Contracted with vendor for mods - December 1998
Offense Reporting	Y			Historical archive - no longer updated
CAD Batch System	Y			Contracted with vendor for mods - December 1998
Master Index	Y			Contracted with vendor for mods - December 1998

Bicycle Registration		Y			Projected implementation date of December 1998

TYPE Digital Software

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
UnixWare 2.1.2	Y			
MicroFocus COBOL	Y			

TYPE Hardware

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
Digital Priorie 6200	Y	Y	Y	
STATUS R/15	Y			Will be replaced by an IBM RS/6000

TYPE STRATUS Software

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
MicroFocus COBOL	Y			Will be replaced by a Y2K version on IBM
FTX 2.3.1.1	Y			Will be replaced by AIX

CATEGORY WAN

TYPE 3-COM

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
Link Builder Hub (6)	Y			Compliant

TYPE ADAK

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
ADAK-421 ISDN PAD SET (5)	Y			No year 2000 issues

TYPE AT&T

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
AT&T PAD 30 ISDN ROUTER (2)	Y			Replace by 1st Quarter 1999
AT&T PAD 6 ISDN ROUTER	Y			Replace by 1st Quarter 1999

TYPE Bay Networks

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
Baystack 102 Hub (6)	Y			No year 2000 issues
Bay Remote Annex	Y			Year 2000 compliant
XLR1297SF CPU Module	Y			No year 2000 issues
XLR1216TX Switch	Y			No year 2000 issues
Accelar 1200	Y			
Baystack 350F 10/100 (3)	Y			No year 2000 issues
Baystack 350T-HD 10/100 (5)	Y			No year 2000 issues
Baystack ARN Router (15)	Y			Upgrade to BAYRS 12.0 Rev2 by 1st Quarter 1999

Baystack AN Router (10)	Y				Upgrade to BAYRS 12.0 Rev2 by 1st Quarter 1999
Site Manager	Y				Upgrade to version 6.0 by 1st Quarter 1999

TYPE Gandalf

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
LANLINE 5240i ISDN BRIDGE (2)	Y			No year 2000 issues

TYPE MICOM

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
MICOM MUX Type 2 (4)	Y			No year 2000 issues

TYPE RACAL

SOURCE	REVIEWED	TESTED	IMPLEMENTED	NOTES
RNX 6100 Router (6)	Y			Replace by 1st Quarter 1999
RNX 6600 Router	Y			Replace by 1st Quarter 1999
RNX 6500 Router	Y			Replace by 1st Quarter 1999
INX 5000 Hub (6)	Y			No year 2000 issues
OMNIMUX (2)	Y			Replace by 1st Quarter 1999
ISX 5300 T1 (7)	Y			No year 2000 issues
EXCALIBUR DUP 56K (30)	Y			No year 2000 issues

Mr. HORN. Well, you have made some very fine suggestions we will get to in the questioning, because you put your finger on a number of key things that would help everybody.

Ms. Tarver, Mary Beth Tarver, is the first vice president for the Louisiana Parish Government Association, which are called counties in the rest of the country.

Ms. TARVER. That is correct.

Mr. HORN. And so you represent their statewide association?

Ms. TARVER. Yes, sir.

Mr. HORN. Delighted to have you here.

Ms. TARVER. Thank you.

STATEMENT OF MARY BETH TARVER, FIRST VICE PRESIDENT, LOUISIANA PARISH GOVERNMENT ASSOCIATION

Ms. TARVER. Good morning, Mr. Chairman, and thank you and other committee members for joining us in New Orleans on this Y2K action day. I am the first vice president of the State Organization, but I represent Sabine Parish, a rural parish in Louisiana. I am a full-time police juror, I am an instructor at Northwestern, and I do teach computer applications and online courses. And that is probably why I was asked to appear before this committee to provide information about the challenges that local governments are facing and what is being done.

The impact of the Y2K problem was one of the major issues that was discussed at the recent National Conference in Portland, OR. That conference, which was held in July, offered the attendees an opportunity to see what was happening across the country and how people were addressing the issue.

On May 11th, Senator Bennett addressed the committee, and he stated that there were three problems. And I am finding that parish government doesn't realize that there are three problems. They addressed only the first one, the software problem. They are really not looking at the hardware with the embedded chips, and they are really not looking at the connectivity as a whole.

Most rural governments and their agencies probably won't have a serious problem with their computers because they are not using the early custom-based mainframe systems. Most of them have the network desktop units that are new enough to utilize the four digits to signify the year, and any of the problems they are having can be fixed with patches by their software provider. But I don't know if they realize that there are still computers on the shelf, sometimes they just look for an inexpensive computer that still has the 2-year digit information. So sometimes if you are not careful and you don't certify it, you may be buying a problem.

Parish governing bodies need to be aware of the broad range of the possible operational areas, and this is where our organization hopes to come in. They need to know that the vehicles may not start when needed, the traffic lights can malfunction, the jail security can be affected, 911 cannot work properly. They also need to be aware that the agencies that are under them, like the hospitals, the health units, the detention centers all need to certify that they have conducted an inventory and are Y2K compliant and have a contingency plan for just in case.

A scenario could be if an elderly woman in a rural area calls 911 for help and they can't respond, who is ultimately liable? Or if the pumps refuse to start in south Louisiana if there is a flood, or if we have a fire alarm. And as you travel across the United States, I am sure you heard these in Dallas and in New York, and you are going to hear more of the problems that will be facing the local governments. We need to remember that they have got to be addressed.

When I found out that I was going to address this panel, I called several of the parishes across the State, and I found that most of the larger parishes are using their in-house computer programmers to take care of it. Many of the smaller rural parishes use their software vendors, but had not addressed the issue, as I said earlier, of connectivity and the embedded chip. And then, of course, there were several that had not even realized they had a problem and had not even begun addressing it.

I was recently named the contact person for local government. So you definitely did what you came to do. You said that you wanted to stimulate. Well, you did, because after the letter came out, I was named. It has been that recent.

Mr. HORN. That is what it takes.

Ms. TARVER. That is what it takes. I just wanted you to know that you had succeeded.

The Louisiana Parish Government Association has plans for supporting and conducting workshops that are going to address the Y2K bug. Some of the small business development centers across the State are conducting seminars, and we are joining in with them very quickly, so be sure to encourage our members to attend in the local regional areas.

And as Mr. Walker stated, the mayor is sponsoring a "Local Government and the Year 2000 Computer Bug." That is going to be downlinked to many of the universities and colleges, possibly, around the State. Tapes are going to be made available to any of the parishes that would like to view this, to help them.

Awareness is half the battle. And one of our goals is to provide parish government a checklist that will assist them in addressing the Y2K problem. We, as the State organization, help provide some leadership, guidance and assistance, but of course, the buck's going to stop with local government.

I would like to thank the committee for the opportunity to discuss this issue. I hope that I have addressed what you had asked us to do. And after the testimony, I will be glad to answer any questions, or if I can't answer them, I will work on finding someone who can. Thank you.

[The prepared statement of Ms. Tarver follows:]

Good morning - My name is Mary Beth Tarver, a resident of Sabine Parish located in the West Central part of Louisiana. The large metropolitan areas of Shreveport to the north, Lake Charles to the south and Alexandria to the east flank rural Sabine Parish. To the west is Toledo Bend Reservoir, formed by the Sabine River and of course Texas. I serve as an elected member of the Sabine Parish Police jury and also serve as 1st Vice President of our state organization, The Police Jury Association of Louisiana. I am a full time Instructor at Northwestern State University in Natchitoches where I teach computer applications and online courses. I was asked to appear before this committee to provide information about the challenges local governments are facing and what is being done regarding the Y2K problem

The impact of the Y2K problem was one of the major issues discussed at the recent National Conference of Counties in Portland, Oregon. That conference, held July 17-21 offered attendees an opportunity to hear from those who have been addressing this problem in different parts of the United States.

In a May 11, 1998 floor speech, Senator Bob Bennett, (R-Utah) and Committee Chairman for the Special Committee on the Year 2000 Technology Problem, stated that there were three major areas of concern with the Y2K problem—software, hardware, and connectivity.

1. The software concern—Most local governing bodies are now dependent on computer technology to pay bills, to generate invoices, to control inventory, etc. What will be the situation if these programs fail or are otherwise rendered unavailable?
2. The possible hardware problem - the massive number of embedded chips. Where are they? What havoc could their malfunction cause?
3. The connectivity concern: The possibility of getting bad or inaccurate data from other sources that could contaminate an entire database. Database programs are those most likely to be affected, but operating systems, back-up

programs, accounting systems and spreadsheets—anything that uses dates to calculate or schedule events can be affected.

Most rural governments and their agencies will not have a serious problem since they do not use the early, custom-based mainframe systems. Most have networked desktop units that are new enough to utilize 4-digits to signify the year, and any problem can usually be easily fixed with "patches" for their software provider. It is most important that this Committee and local governments understand that there is computer hardware and software still available to consumers that allows for only two-digit year identification. That is the crux of the problem. You have the Y2K problem if your computer sees only YY and not YYYY for date calculations. The problem thus happens on January 1, 2000, when YY will represent (00) and your system thinks it is 1900 not 2000.)

It is believed that only 1-2% of the 25 billion embedded chips has the potential to create a problem. The problem for parish governments is locating those chips, and determining it they need to be replaced. The cost of tackling this millennium bug situation could be a large financial burden for rural parishes that do not have a resident computer programmer.

Parish governing bodies need to be aware of the broad range of possible operational areas that can be affected by this Y2K bug. Some of these areas that may be affected by this computer chip situation are:

1. Vehicles that may not start when needed
2. Traffic lights that may malfunction
3. Jail security that could be affected
4. 911 monitoring systems that may not work properly
5. Elevators that may stall
6. Heating and cooling systems that may not work properly

It is the responsibility of local governing bodies to be sure that all entities answerable to them provide documentation that they

1. have conducted an inventory
2. are Y2K compliant
3. and have a Y2K contingency plan in place for "just in case"

Examples of answerable agencies include: hospitals, health units, detention centers, jails, transportation, libraries etc.

What happens if local governments are not Y2K ready? The legal profession, primarily tort attorneys, already sees the Y2K problem as a windfall opportunity for them from liability claims due to failed systems.

Imagine New Year's Day, 2000. An elderly woman calls 911 for help and there is no response. She dies as a result of not receiving prompt care and attention. Who is ultimately liable????

The fire alarm sounds but the local firemen cannot get the trucks to start—There is a flood in South Louisiana, the pumps refuse to start-
the embedded chips were not 2000 compatible...and the local governing body responsible did not make sure they were ready for the new millennium.

I could continue for some time with these potential problem areas but I am sure that this committee has had these "what if scenarios" already presented at hearings across the United States. Local governing bodies are not alone in this situation as all of us, are facing this crisis. It must be remembered, however, that the buck stops with the local governing body, but will it really stop?—Litigation from the Y2K problem could go on forever!

In discussing this issue with many larger parishes they report using full time, in-house programmers to tackle the Y2K problem. On the other hand many of the smaller, really rural parishes have not addressed the issue and some have not yet even realized that they may have a problem.

Louisiana has a task force established to deal with this issue at the state level. Our State Police Jury Association has just now begun addressing the Y2K problem. Mary Beth Tarver, 1st Vice President was recently named the contact person for Local Government.

The Louisiana Police Jury Association has plans for supporting and conducting workshops that will address the Y2K bug. NACo, our National Organization has a Y2K resource kit available to every parish and county in the United States. On October 7, 1998 NACo is also sponsoring a Satellite broadcast entitled "Local Government and the Year 2000 Computer Bug. The Louisiana State Organization plans to coordinate with the colleges and universities around the state to provide a downlink for this broadcast and plans to distribute videotapes to those who were interested but were unable to attend.

Awareness is half the battle. One of our goals is to provide parish governments a checklist that will assist them in addressing the Y2K problem in the most economical way possible. However, it must be understood that each local governing body must accept their responsible to assure that Y2K does not become a problem. We as the State Organization can only provide leadership, guidance and assistance.

Remember where the buck stops! Politicians at all levels like to remind everyone that local government is the backbone of our American democracy. Therefore, on January 1, 2000 should Y2K become a tragedy...local government officials will no doubt have to carry a major share of the blame... we must have done everything possible to be ready ... contingency plans must be available... and the effort must have been documented...

Again I thank the committee for the opportunity to discuss this issue and I hope that my remarks addressed your concerns about the challenges facing parish officials and the actions being taken in preparing for this century date change. If there are any questions I will attempt to answer them now, or will provide you the answers as soon as possible.

Mary Beth Tarver, 1st Vice President
Police Jury Association of Louisiana

Mr. HORN. Well, we thank you very much for coming and stirring up the provinces.

Our next and last presenter is Theresa—now, you are going to have to help me, Theresa, on that.

Ms. COMEAUX. Comeaux.

Mr. HORN. OK. As in the Governor of New York?

Ms. COMEAUX. Yes.

Mr. HORN. And you are the vice president of regulatory compliance, Blue Cross and Blue Shield, representing Century Solutions. Now, who is Century Solutions?

STATEMENT OF THERESA COMEAUX, VICE PRESIDENT, REGULATORY COMPLIANCE, BLUE CROSS AND BLUE SHIELD, REPRESENTING CENTURY SOLUTIONS

Ms. COMEAUX. Thank you, Mr. Chairman, for allowing me to attend this meeting and speak. After hearing all of the other members or witnesses, I feel much better, and I feel like we are going to be providing the same service, and we do have, in our area, Renea Austin and the city of Baton Rouge participating in Century Solutions. And I will give you some background on what that is.

Blue Cross and Blue Shield of Louisiana is a domestic mutual insurer. We are also, of course, an independent licensee of the Blue Cross Association. We are owned by our policy holders, and we serve about 560,000 Louisianians. Because of that mission and being owned by our policy holders, we believe that we have a special challenge here to be sure that the citizens of Louisiana are taken care of, as we move through our own process of identifying our own systems and going through all the steps that you have heard all the other speakers talk about. And I compare that to Maslow's Hierarchy of Needs: When you satisfy your basic needs, you can then look outward and begin to understand how you need to help others.

As we came to the conclusion that we feel very confident that our internal systems will, our problem will be solved, we began to look at that connectivity issue that you have been hearing about. And as an example of that, one of our largest groups in the State, who is a major customer, the only customer is the Department of Energy, sent us a letter, of course, asking us whether we were going to be Y2K compliant, because the Department of Energy was requiring that they make sure that all of their systems were compliant.

Mr. HORN. Is that the State Department of Energy or the U.S.?

Ms. COMEAUX. The State department.

And in that conversation that I had, I called the person directly rather than just responding with a letter, because I wanted them to be sure that they understood that the letter they received was not going to be a certification that our systems were compliant, and I described that.

Blue Cross can provide and be sure that we can process your claims on January 1, 2000. What we cannot be sure of and what we are attempting to ensure is that all of our downstream relationships that go into serving that particular customer are also Y2K compliant.

Century Solutions was born out of that connectivity issue and understanding how we are interfacing with the city, the State, and we also, of course, serve the Federal Employee Program as the insurer for over 50,000 members here in Louisiana. And we felt that as part of the Blue Cross mission, that it was imperative that we begin to work on the awareness issue. And part of that was sponsoring an awareness seminar in Baton Rouge that, of course, was where the mayor is called to action. And I have to say that our mayor in Baton Rouge is up to speed on this issue and very much behind the awareness.

At that point, we asked and invited all of the businesses in Louisiana to participate in the Y2K user's group. And the purpose of that was to, first of all, bring awareness; second of all, to provide or assist people in finding solutions and to exchange information freely, and I think that is the missing piece here. We are inundating each other with letters requesting that you verify Y2K compliance. And I don't know if you have been reading any of those, but there is always the caveat that, although we can be sure of our own systems, we cannot be sure of all of our downstream relationships, which is very true.

So we believe that in this environment, our mission is, of course, not to be competitive, we don't allow vendors in there to sell specific products, but we do want vendors in there in the event that someone needs a particular solution. So Century Solutions is our Steering Committee. Chris LeBlanc works with us on that, the city of Baton Rouge, and we have major businesses, and we have small businesses, people who just really want to just participate in the awareness also, sharing that information in best practices. And as you will note, in some situations, there are companies and industries and governments who have best practice information that are afraid to share that, because they may be held liable for someone else's use of that information. I believe that we really need to do something about that.

That is the birth of Century Solutions. We are participating in the New Orleans technology meeting on August 26th. We have worked with the Acadiana Group to bring them up too at their initial meeting and want to help sponsor other user groups around the State and have their participation on our Steering Committee. Thank you.

[The prepared statement of Ms. Comeaux follows:]

BlueCross BlueShield of Louisiana
An independent licensee of the Blue Cross and Blue Shield Association.

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M. Theresa Comeaux
Vice President
Regulatory Compliance and
Chief Planning Officer

August 18, 1998

Congress of the United States
House of Representatives
Committee On Government Reform and Oversight
2157 Rayburn House Office Building
Washington, DC 20515-6143

Dear Mr. Chairman and Members of The Committee:

I am writing on behalf of Century Solutions, a Year 2000 Users Group established by Blue Cross and Blue Shield of Louisiana. Our intent in establishing this Users Group is to increase executive awareness and to provide a forum for Y2K project leaders, project participants, IS professionals, and other interested parties to share ideas, discuss problems, and explore potential solutions. We want to provide a focus on community issues that will affect all businesses, such as Y2K compliance of state agencies, utilities, communications, etc.

Our first meeting was held on July 30, 1998 and was an extraordinary success. Baton Rouge's Mayor-President, Tom Ed McHugh, kicked off the meeting by urging a "community call to action". We had 84 participants representing 41 companies. We will continue meeting on the last Thursday of each month through 1999 (dates will change in November and December due to holidays).

By far the most significant challenge facing the business world today is contingency planning for potential crises as relates to the Year 2000 problem. As of tomorrow, there are only 500 days left to complete this monstrous process. And, contingency plans must be developed for more than just mainframe computer systems. The Year 2000 problem has the potential to affect:

- Medicine dispensers
- IV machines
- Pacemakers
- Fuel pumps
- Vehicle test equipment
- Precision maintenance equipment
- HVAC's
- Food distributors
- 911 Systems
- Fire alarms
- Power plants
- Traffic management systems
- Point-of-Sale equipment
- *plus many more*

To further complicate matters, the project deadline cannot be extended, the problem is not being reported by users, and most critically, we are all facing the same deadline. In contingency planning for major disasters, there is a basic premise that the affected area will rely on and utilize services from another area. However, on January 1, 2000 we will all be affected. Therefore, conventional contingency planning will not work.

Many businesses are addressing Y2K contingency planning through a "triage" concept, where they define their mission critical systems and determine alternate ways of handling these functions. Every business certainly has a responsibility to understand its exposure and to develop contingency plans. But it is not enough for a company to just look internally. It is imperative that we begin looking outward so that we can address contingency planning with a community-minded focus. After all, if you have a backup process in place for your Accounts Receivable system, but your facility does not have electricity, what have you accomplished? We need to come together as businesses with our communities to determine how our community and our states will survive. It is critical that we begin thinking of the big picture in terms of which members of our society are most vulnerable and how we can come together to minimize that risk.

There are many ways we can encourage businesses to begin thinking not only on the effect the Y2K problem will have on them, but the effect it will have on their community, including:

- Understand the full potential of this problem and take it seriously
- Continue to develop and pass legislation at the local, state, and federal levels that allows businesses to easily share solutions with each other without being held liable, such as the Good Samaritan legislation currently being posed at the federal level
- Develop area Y2K User Groups such as Century Solutions to provide a forum for and encourage this sharing of information and solutions
- Be honest in our business partner and customer communications about our Y2K readiness
- Develop strategies to share the much sought after programming resources, especially for community critical agencies
- Understand that Y2K is not a computer problem

In summary, we have a lot of work to do in a very short time. In order to minimize the most critical disruptions to our society, we must work together in solving the Year 2000 problem.

Mr. HORN. Explain for me who the Acadiana Group is?

Ms. COMEAUX. Acadiana Group is located in Lafayette. It is a user's group that is also doing the same thing and participating in the Steering Committee for Century Solution.

Mr. HORN. These are all nonprofit organizations?

Ms. COMEAUX. No. These are businesses, small, large, State agencies, city agencies; it is a real cross population that we are dealing with. And I think that is the imperative and absolutely critical issue that we bring all of these players together. And that some people believe that if you are Y2K compliant, it gives you a competitive edge, and I think that they have really missed the point if they don't understand we need to be out there sharing resources, sharing information. If you have resources available coming into 1999, I believe that there should be some way that we all share those resources. The computer programmers, they can name their game and go anywhere in the United States at this point. And I think that those of us who are ready, need to help identify those who aren't and be sure that they are, because this is a community, a U.S. issue, country issue.

Mr. HORN. Well, I think you are absolutely correct on that. The administration sent us up a draft bill, which the chairman of our full committee and I asked to put it in, and Mr. Burton is the prime author, and myself and Mrs. Morella and a very bipartisan group are on that bill, and we hope we can get it through the Judiciary Committee and onto the floor as rapidly as possible.

Ms. COMEAUX. We do too.

Mr. HORN. We need to encourage that and not have people fearful of violating the antitrust laws in the case of businesses. Because you are right on target about cooperating endeavors in this thing, we are all in it together. I thank you for that testimony.

Let me go back now and just go down the line on a couple of questions I would like you all to respond to.

What percent of your critical mission's systems, as you have identified them, will be fixed by the end of 1998? Do you have that, in terms of just what's the best guess?

Ms. COMEAUX. I would defer to Claire Wicker, our project director for the year 2000, and introduce you to the chairman, and if you could comment on that for me?

Ms. WICKER. Right now, we are 80 percent complete on our mainframe conversion, and we plan to be 100 percent complete by the end of this year, including future date testing. For our nonmainframe systems, which would be implementing embedded chips——

Mr. HORN. Well, you are going to have to give the testimony. So why don't you go next to her, because you weren't sworn in.

Ms. WICKER. OK.

Mr. HORN. We don't need a lot of information, just the figures.

Ms. COMEAUX. I think that we will have completed all of our future date testing by the end of this year, and 1999 will be a year in which we will have an opportunity for those things that have not, those circumstances that were not proven out in that testing to be addressed. And I think that at that point, I think our critical issue right now is our third-party relationships and going through,

and once again, this same letter campaign and verifying our embedded chips.

Mr. HORN. Well, are there any critical missions systems that you do not think will be done in time?

Ms. COMEAUX. No, sir, not that we have control over.

Mr. HORN. Well, then, you, Ms. Tarver, I gather, have a number of them at this point who didn't even know about it. They are in a very serious situation.

Ms. TARVER. We got some in a real serious situation, and as I said earlier, it is not dealing with the computers necessarily but the embedded chips that are the major issues.

Mr. HORN. That will be the next round.

Ms. TARVER. Well, the only good thing is that the juries all have such old equipment that they probably don't even have a chip on half of them in the rural parishes, so we probably don't have to worry.

Mr. HORN. They are pre-chip?

Ms. TARVER. They are pre-chip.

Mr. HORN. Like pre-caveman. So you will have some problems on critical missions. So my next question will be, of these critical missions systems as are self-identified by you, be it a payroll or be it a safety situation, the question is to what degree our contingency plans are underway, if you feel we just can't repair this thing?

Ms. TARVER. I truly cannot answer that at this point, because I have not polled all of the juries across the State. I do feel that a lot have addressed it in the large metropolitan areas, as we talked about earlier. Lincoln Parish, Caddo, you have got several across that I have checked with that are already addressing a lot of the issues. It is mostly the rural parishes, and we hoped shortly to get a checklist out that will at least have the inventory of everything that they need to do, and then we are planning to call on all of these areas that have already done all of this that can maybe streamline us so that we will be able to address the critical areas.

Mr. HORN. Mr. Walker, what is your feeling on the critical mission systems within the city of Baton Rouge, do you think most of those will be taken care of in time?

Mr. WALKER. I guess there is a lot of issues dealing with that, with not only our operations, but other operations that feed us, such as the 911 system.

Mr. HORN. Do you want to explain that for the record?

Mr. WALKER. Yes, sir. We are tied in with Bell South. When a 911 call comes into our center, we get an address verification, telephone numbers which feed our computer-aided dispatching system that dispatches our fire, police and emergency medical teams. But talking about our mainframe mission critical systems that we are working on internally, if things go as planned, we hope to be close to 100 percent by the end of this year. Now, that does not include embedded systems, which we still have a lot of question marks around, such as traffic signals, fire truck operations, 911 operations and things of that nature. And we are still looking at trying to get assurances that these systems will be operational in the year 2000.

Mr. HORN. Are there any systems where you are saying, hey, I don't think we are going to make it, and what is our contingency plan for it?

Mr. WALKER. No, sir.

Mr. HORN. So we haven't got to the contingency plan stage, because you think you are optimistic and can finish the critical mission systems?

Mr. WALKER. Just by the very nature of our work, in some areas of the government, there already are contingency plans in place such as 911 services. They have backup centers and have the ability to operate, go back to calls, as long as the phones operate, and they have backup radio systems and telephones and things of that nature. So we do have some contingency plans in some areas, but we do have to work on those in other areas.

Mr. HORN. Mr. Gusman.

Mr. GUSMAN. Congressman, as I indicated in my testimony, the city is year 2000 compliant. The only issue we have is actually implementing our human resource system, but we have already acquired it, we have installed it, we have done a lot of testing. But as you know, when you talk about mission critical, it is critical that paycheck be right. So we have done a lot of testing to ensure that when our human resource system does come online, that it will be accurate and produce what we want it to produce. But other than that, we are year 2000 compliant.

Mr. HORN. You don't see a need for any contingency systems?

Mr. KILBRIDE. No, sir. Most of the stuff that we have is ready. The little systems that we are finishing up right now, we envision that we are going to be completely finished by the end of the year. And like Mr. Gusman said, the big project that is here on the table is the human resources, and it is scheduled for February 1999, and we are comfortable that is a good date.

Mr. HORN. How about the State of Louisiana, Ms. LeBlanc?

Ms. LEBLANC. Mr. Horn, I think your original question addressed the end of this year, and I guess as of our June reporting status from our State department, one-third of our mission critical applications that were defined had been completed in their testing phase. The September reporting cycle, I think, will give us a better picture of exactly where the State is at this time, and I can give a better representation of it at that time. But to be honest with you, the Executive orders define July 1st of next year as the compliance date.

So to your original question, I don't think that our State departments' mission critical systems will be completed by the end of this year. As far as contingency planning is concerned, the State of Louisiana is taking a little bit different approach from what I am hearing the other members of this panel saying. We are requiring contingency planning for all of our identified mission critical applications regardless if they are Y2K compliant or not.

Those contingency plans must be in place and defined by September 30th of next year, and so regardless if you say you are compliant or not, you must have a contingency plan in place because of the interdependency upon all of our business partners and the potential for problems to appear that we have not planned for. So we are taking a little bit different approach on contingency planning for our identified mission critical systems. We have also identified seven critical departments that we are keeping a close watch on. We feel that those departments provide the services to the citi-

zens of Louisiana that are critical, and for those seven top departments, we are keeping a close monitoring watch on them.

Mr. HORN. Very good. How about it, Mr. McManus, where do you think you are on the USDA Center?

Mr. MCMANUS. Chairman Horn, as I stated in my statement, our application code is 100 percent Y2K compliant. As we speak, we are actually running our daily operations on Y2K compliant code.

Mr. HORN. So all of your critical mission systems are in good shape?

Mr. MCMANUS. Yes, sir, critical and non-critical.

Mr. HORN. So you don't need a contingency plan?

Mr. MCMANUS. Well, we are being, as Ms. LeBlanc stated, we are being directed to do contingency plans also, but we are concentrating not necessarily on replacing the systems, because many of our systems we couldn't replace in the timeframes we have left to do it in. We are concentrating mostly on external situations, such as power, communications and so forth, and that is the area that our contingency will be directed toward. I mentioned earlier that we have an auxiliary power source at the Center, and we have tested it, and we plan to test it several more times.

Mr. HORN. How long will that last you? Is that simply motors generating, diesel?

Mr. MCMANUS. We have four diesels, it only requires three of those diesels to run the facilities, so we have a reserve generator, and we feel like we can operate on diesel power indefinitely. I mentioned to you earlier that we are a tenant of NASA, and as such, there is an unlimited supply of diesel fuel right on the facility. We have already made arrangements with NASA to provide that. We have a 10,000 gallon capacity which will run the generator for approximately 72 hours, and we have made arrangements with NASA to supply us with additional fuel as necessary. It is right there on the facility.

Mr. HORN. How about it on Blue Cross and hospitals. Most of them have emergency generators, I take it. Has anybody figured out how long they last?

Ms. COMEAUX. I wanted to mention that when Chris spoke just a few minutes ago. We are doing the same type of contingency planning there, and we looked at 4 weeks, and we looked at what will our mission critical—we did a business impact study, what could we do without if we didn't have power, how long could we go before these would begin to impact customers directly. So we are doing that same type of planning there. We also explored and had that on the table for our 1999 budgeting process which we are in now, and we are looking at potentially bringing on two diesel generators, but we have to make sure that Entergy can agree to let us on power grid.

The hospitals have their emergency generators, and they are participants with us and Century Solutions, but I am not sure that we have spoken directly with them on that. But contingency planning is part of Century Solutions' mission, and that would be one of the breakout sessions at our next meeting to help people understand that your contingency planning isn't just directed internally, but it is directed externally and should—is driven off of your ability or dependency on outside providers.

Mr. HORN. Well, I thank you.

Mr. Willemssen, you want to add anything to this discussion?

Mr. WILLEMSSEN. A couple points, one being, and it has been touched on briefly but I want to emphasize, because it wasn't touched on consistently, the importance of addressing infrastructure items, both from a local perspective and a State perspective. Because if you don't have power, water and telecom, all the other things we have talked about today really won't matter. I don't know for sure the existing regulatory relationships in this geographical area. I know in some cases, some things are under your direct control; in other cases, they are not. I suggest that in those cases where they are not, you get written assurances from the provider, and to the extent that they are not willing to provide information that you consider publicizing that fact, to put as much pressure as possible on these absolutely critical infrastructure items. The more we have looked into it, the more concern we have about some of the embedded chips issues, especially in water and waste water systems that need to be further investigated.

The other point that I would make that was briefly touched upon was business continuity and contingency planning. I would point out that we have put out guidance in that area that has been adopted by the Federal Government and has, again, briefly been touched upon. Our guidance focuses on ensuring the continuity of key business areas or business processes and the supporting systems, so that the scope and aim of it is that a particular business area and it is not so systems specific, although, obviously, you have to address systems issues. So I would encourage the panelists to take a look at that at their convenience.

Mr. HORN. Mr. Ortego, do you want to add something to this discussion?

Mr. ORTEGO. Yes, sir. He definitely made a point about Bell South, our local telephone provider, and they have not stepped up to make and declare themselves compliant. They will step up, they said, by June 1999, they will have authorization. We have a contingency plan to illiterate drive case to FMS and other parts of the country, because we must pay these people what is right, but Bell South will not step up and certify their systems as of this date.

Ms. LEBLANC. As the State of Louisiana, one of our departments is the Louisiana Public Service Commission, and they are working with all of the utility companies within the State of Louisiana. The major players have made presentations and given us target dates for completion. Yesterday, we heard a presentation from Bell South with target dates for completion within the State of Louisiana. I have also attended an Entergy, which is our primary electric provider here in the State of Louisiana.

Our concerns are more with the rural types of utility companies who are providing services to some of our hospitals that are located in remote areas and also to some of our remote citizens. We believe that this is such an outreach program, we are trying to establish the network. For every person we touch, we ask them to touch someone else to educate them on the year 2000 problems, so that we can reach those rural people out there that are providing the services to the citizens of the State.

Mr. HORN. So you feel the regulatory commissions will be on top of this in time?

Ms. LEBLANC. We are working directly with them in order for them to reach out to all of the utility companies that are in the State of Louisiana. They have contacted all of the utility companies and sent out letters and information-type letters on what is year 2000, trying to make them aware of this, and they are reaching out to them. They are obviously working with the major providers first, but they are reaching out to the rural electric, utility, water companies that are sometimes very small, small businesses that are providing services to some of the rural areas.

Mr. HORN. Mr. Gusman, as I recall, you found Bell South cooperative, at least with the city of New Orleans, so you are not having a problem on that?

Mr. GUSMAN. My conversations with them, they showed us that they were getting compliant, but we didn't get something in writing.

Mr. HORN. Well, that was my next question. Get it in writing.

Mr. GUSMAN. I will.

Mr. HORN. Let me move to, I know we have to do this hurriedly sometimes, but data exchange with many people that you all interact with. To what degree have you found, maybe starting with Mr. Ortego, to what degree have you found that a lot of your people that interchange with you are not as in good shape as you are, and how much of a problem is that for you?

Mr. ORTEGO. Sir, I don't want you to assess their shape. Each of our contacts identify their needs. We are prepared to accept their data, either two or four-digit format, and to convert back into a four-digit year if necessary. And Mr. McManus will give you exact percentages having reached roughly 90 percent; is that correct?

Mr. MCMANUS. Yes, we have. Over 500 interfaces are identified in our systems, at about approximately 290 different locations, and we have made contact and have established dialog with approximately 280 of those 290 locations. We are working to get the other 10 on board. We are also establishing user test dates with those vendors to exchange data, to exchange information and so forth so that they can test their systems. I mentioned in my testimony that our separate mainframe platform that we are going to use to validate Y2K will be available through the end of the century and beyond to assist our users and the client agencies who we interface with in order to test their equipment as they come in.

Mr. HORN. So you are confident, then, that situation will be taken care of?

Mr. MCMANUS. Yes, sir.

Mr. HORN. What is the feeling in the State of Louisiana?

Ms. LEBLANC. In the State of Louisiana, for data exchanges, I guess we look at not only from an electronic data exchange, but we are also emphasizing to our State departments to look at your critical business suppliers, the people who deliver products to you. Do you need to order additional supplies for that time period.

As I mentioned in my testimony, we are also working with the Federal Government, and we have provided presentations to one of our State departments on how to compete out the data exchanges that the Federal Government is asking for. And we have requested

that they complete that information. We also have identified, in our department status meetings, that this is no longer an information systems technology problem, this is a business problem which will affect all of your business functions. So the establishment of a management team, which includes executive management and a telecommunications purchasing person, different facets for the departments.

We think we will address all of the issues that will deal with your business partners, not just your electronic interfaces. So that is the focus that we are trying to give to the State departments.

Mr. HORN. OK. Anything else to be said on data exchanges, any other ideas?

Mr. MCMANUS. If I could just reiterate on what Ms. LeBlanc said, we are doing the same thing with our supplies, with critical business services for the Center. And as a contingency, we have contacted each, there are approximately 20 main vendors that we deal with on a daily basis for critical business services, and we requested them to make statements saying that they will not have disruption of service and what have you. And as a contingency to that, when ordering our critical supplies, we plan to order additional supplies for the end of 1999, in the event there is a disruption of service.

Mr. HORN. Yes, that is a major problem nationally in terms of the economy, and then, if you use what we call the Japanese inventory system, they store it and send it to you on time, and if those power grids aren't working, you got a real problem Nationwide. What happened at Flint, MI is a drop in the bucket compared to the power grid going out in a number of States where assembly lines are dependent upon that energy supply as well as the inventory for those assembly lines.

So let me get to the one a number of you mentioned, which is the difficulties in dealing with embedded chips and systems. What do you see is the biggest problem in dealing with that, what have you found? If we are saying to the parishes of Louisiana and other hospitals, what do you tell them to warn them about how to go about it?

Ms. COMEAUX. Well, at this point, with our hospitals, we have provided a strategy and are putting out a statement to them advising them that they need to be aware of this. I do know that having worked with Our Lady of the Lake, which is a major hospital, as well as Woman's Hospital directly in Baton Rouge, that they are very aware of the issue.

Again, our concern comes when we are talking about the more rural facilities and our own embedded chip problem within, we have a facility that runs, that houses 1,200 employees up in Baton Rouge, and what we are finding is that in some cases, those vendors that those systems were purchased from are not available, where we have received letters from them indicating that they are Y2K compliant, we are asking them to come out and specifically test those to be sure.

Mr. HORN. Any other advice?

Ms. TARVER. I don't know if it is advice, but we were told that there is about 25 billion of them out there and only 1 to 2 percent are the problems. And our problem is locating the ones with the

problems and the cost of locating those with the problems for the rural areas. The cost can be just real astronomical, and a lot of them don't have the budget money to do this, and that is probably the reason why it has not been addressed by local governments.

Mr. HORN. Well, I think that it is Nation and worldwide. The Pentagon has that problem with chips, and we just hope they find the right one at the right time. They were going to decentralize this to the basis, and I thought, that would be wonderful, the Colonel wakes up in the morning and says please take care of the embedded chip problem. In the first place, what is an embedded chip, where do you find them? The manufacturer's out of business and so forth and so on.

So any advice would be welcome here. Anything you want to contribute on embedded chips and where you find them and what do you do with them when you see them?

Mr. WALKER. No, sir. I think we have the same problem in trying to identify where these chips are and what devices there are. I can give you a for instance. In July, I attended a seminar, we had not even thought about fire trucks, fire engines, that there would be problems in fire engines to pump water. And we looked at our, we did go back and look at our fire engines and found out that we did have older style trucks, and they did not have the digital chips in them. However, we overlooked the ladder extensions, and now we find that they are remote controls to enable them to raise and lower ladders.

I think just the ability to identify these systems, as I say, is very cumbersome. It is very hard for us to identify where these embedded chips are and what their purpose is. And I think another problem in that area, of course, is the inability for us to be able to test them. We have no way of doing that, and we are totally relying on vendors to give us those assurances.

Mr. HORN. I think you or one of your colleagues here mentioned we need an exchange of information center for a lot of this. And I think you are absolutely right, this is something that Mr. Cox and his assistant to the President to coordinate the executive branch, and the General Services Administration would be a good place to put them to have people with an 800 number or something call in and get the information they need. There is no use in everybody reinventing the wheel if one of you has checked it out, gone to the manufacturer. And I have had situations where the manufacturer is out of business, that is one thing, and No. 2, or the manufacturer doesn't know what is in that model because it is 30 years old or 20 years old. It is just no use covering all this ground that we ought to get the answer and the right answer and everybody can share it and have it. So any other thoughts?

Mr. GUSMAN. The thing that we did, anything that possibly could have a chip or have any kind of year 2000 problems, we did make sure that we sent letters to all the vendors, even if we did not think that that person had a chip in it, just to make sure. And you are right, some of the stuff, we have some situations that she made reference to, and some of the stuff we had was really old and doesn't have a chip, so that we have a combination of new stuff that is year 2000 compliant plus old stuff that you think is not, but we need to check it, and we sent letters to the vendors, and we are

still going through that process. And we are probably going to be identifying chips until the year 2002.

Mr. HORN. Fish and chips. Anything to add to that?

Ms. LEBLANC. I would like to add two things, perhaps, that haven't been mentioned. Because this embedded chip is so immense, and it has been a recent thing, the State of Louisiana is recommending to all its State departments that you perform triage at this time. There is absolutely no way that we can identify all the embedded chips. So look at your critical business functions, what possible effect might it have, what type of equipment might be there, and go after that.

The second thing that we are recommending to all of our State departments, is on January 1st, or when that clock strikes, you have procedures in place that will be able to test your critical equipment. All the letter writing is wonderful, and believe me, when I get a letter back from a vendor saying it is compliant, I applaud that vendor that he is willing to say that. But if that is a piece of medical equipment that is being used for diagnosis of a patient in one of the emergency rooms at our charity hospitals, I feel like that we need more than that letter coming from that vendor. So what we are recommending to all of our hospitals, all of our departments, is for your critical equipment on December 31st, that night, you have procedures in place where you test that equipment before it is actually used.

Mr. HORN. It is a good point. And we will get to litigation next.

Mr. MCMANUS. Chairman Horn, we some time ago recognized the frugality of the chip problem, and I don't feel like my problem was as severe as some that I have heard that have testified here, because all of my equipment was self-contained in the facility. So on the NFC side, we feel like we have got a pretty good handle on it. The most complex thing we did was taking the inventory. It was very difficult to do that. It involved a lot of people, and as we stated, a lot of times, it is difficult to know what equipment has chips and what doesn't.

So the way we approached it is anything that we thought had it, anything that had an electronic display or any kind of electronic capacity at all, we listed it, and then we eliminated after assessment. We feel like we are about 95 percent compliant in that area. We have replaced almost everything.

The few things I mentioned in my testimony, there are some postage meters, some microfilm equipment and a few things like that that we plan to have replaced by the end of this year. We also have about 700 work stations left to replace that are not Y2K compliant. But all of this is in procurement and scheduled to be replaced by the end of the year. We feel like we are in pretty good shape as far as the embedded processes.

In the facility itself, in the areas that we can't control, for example, we lease a facility from NASA, the Energy Management Systems, all of the fire suppression systems, the chilled water systems, all of that, they have assured us that they are Y2K compliant.

We are in the process of forcing them, so to speak, to make a check on the chilled water to make sure. We want them to run the chilled water system with an advanced date just to prove that it will work in the year 2000, because that is critical to our main-

frame. Without the chilled water, we lose the mainframe, and you can't process. It will be like losing power, it wouldn't matter what else we did, if we lost that chilled water. So it is the most critical, I think. And it is something we can't replace with our auxiliary power sources. The chilled water, we are dependent on that.

The energy management systems, we are in three buildings, three separate facilities, and two of the three have embedded chips controlling the energy management systems. The heating and air conditioning functions in both of those buildings are scheduled to have those systems replaced by the end of this year, also. The third building is a warehouse facility, and it is all manual thermostats, it is not really a problem.

Mr. HORN. Mr. Ortego.

Mr. ORTEGO. I want to pick up about what Ms. LeBlanc said about not necessarily depending upon vendor certifications. We have noticed that some of our PC's, same make, same model, same batch number, one machine compliant, one machine not compliant. Be cautious, don't count on the vendor certification. You have to test them yourself.

Mr. HORN. And have you developed a test at this USDA Center that has been used to test at other centers within USDA or other agencies? How do you get the right tests?

Mr. ORTEGO. I am not sure if it is being used at other agencies. I am assuming it is.

Mr. HORN. Where did you get yours? In other words, did you develop it, or did you have a consultant do it?

Mr. MCMANUS. No, sir. It was a software that we purchased to test the bios in each personal computer.

Mr. HORN. And move past the January 1, 2000 date and see if it works?

Mr. MCMANUS. Correct.

Mr. HORN. You are absolutely correct on that, because agencies that have invested in this, even when they were told they were compliant, have found they weren't compliant. Whether that is deliberate or not deliberate is hard to say.

Mr. MCMANUS. We acquired the software and went back and tested these machines. We have about 2,200 work stations at the Center, and we had 932 that weren't compliant. We have replaced 250 and we have approximately 700 left to go.

Mr. HORN. So 932 were not compliant out of how many?

Mr. MCMANUS. Out of 2,200.

Mr. HORN. And that is where you found you could have the same model number and everything else?

Mr. MCMANUS. In the newer machines we found that. We had a lot of old equipment that we scheduled for replacement anyway, and we took this opportunity to replace it, but we have some newer machines that were not compliant.

Mr. HORN. Did you ask the manufacturer how come this happens? You think the same model number would be similar parts in there.

Mr. MCMANUS. That is how we found out that they don't control, even though the equipment is listed in the same lot, even, the chips are different, chips can be different.

Mr. HORN. Well, that is weird in terms of the assembly line. I mean, do they just have a choice based on mood or something, let's throw this chip in today, they will never find this. Any other comments on this? Mr. Willemssen, any thoughts?

Mr. WILLEMSSEN. Two quick ones. One, to reiterate Ms. LeBlanc's point on embedded chips, there's too many, and therefore, you have to set the priorities based on your business area needs.

The second thing I would point out is, because we have a bit of a health perspective here also, the best data base that I have seen on biomedical devices is one maintained by the Department of Veterans Affairs, one which currently isn't publicly available, but we hope that will change fairly soon. And I just want to mention that to the panelists here, that when that does get up and running, you will see some fairly rich data, much richer than what is currently publicly available through the FDA data base on biomedical devices.

Mr. HORN. Now, let me ask you, are any of you being sued or have a notification of being sued in any of your situations? No, no, no, no, no, no, no, OK. Because some States we have been told that they were already on notice, either State governments, city governments, non-profits, businesses, whatever, that they might well have a lawsuit headed in their direction.

So there is legislation in, and Congress, it is just a matter of timing as to when you want it to take effect, and some of us feel we ought to try to get the thing done within the next few months and not let people off the hook, but just focus on getting the job done, and then we will deal with the litigation.

What about your recruitment of people to help you with this task, how difficult has that been?

Ms. COMEAUX. Because we started in 1995, and we did add staff at that time, we fully funded our program at that time, we have not had, there is a continuing turnover, just due to the fact that the salary levels that people can demand on a contract basis just have escalated. But our internal staff, we had a dedicated millennium team at that point, that we have not experienced that particular problem related to the millennium and feel like we will make our own internal systems and third party relationships.

Mr. HORN. When we were in Dallas, we were told that the city government didn't have a problem with losing staff because those who have been working for them looked at their long-term aspects, the retirement plan, et cetera, rather than to leave and get a short-term contract and have not much going after January 1, 2000. So would you say that is part of why your people have stuck by you?

Ms. COMEAUX. We do have a very long-term staff. But at that point, we did add probably 24 to 25 people at that time in 1995, and have seen turnover in those people and also brought in contract programmers where we were not able to bring somebody on full time. And you are right, we have long-term employees who are not going to go trenching across the country for just a salary.

But I still think that those companies who are now just getting into it will be providing salaries that will really drain staff, and I guess the concern from my perspective in working with the Federal employee program and in implementing the provisions of HIPPA,

it is very interesting that HIPPA has exempted itself from meeting, from working on the administrative simplification, which is, we feel like the staff that we have there as the millennium grinds down, we will be directly put on the administrative simplification provisions. And it seems as if there should be some recognition at the government level that companies are in the same position as government entities, and that if you are going to lengthen the time for coming into the administrative simplifications provisions for HIPPA, that it should be something that you also do across the board.

Mr. HORN. How about the parish on its staffing?

Ms. TARVER. Well, the parish doesn't have anyone on staff at this time. We are dependent on our NACO, our national organization, who are doing an outstanding job in providing information.

Mr. HORN. Have they provided workbooks or what?

Ms. TARVER. They have got a Y2K resource kit that is available. As I have said, on October 7th they are doing the downlink for all of the States. You can go to their Web page and get information.

Now, I have found that the local juries, a lot have not done this and have requested this, but as I said, this was really a push on July 17th through 21st, so therefore, a lot of them have gotten back and are just now addressing these concerns. Some of them heard "embedded chips" for the first time at this conference. So they are becoming more aware, but certainly awareness is the major issue with us.

But I don't know of any plans to add anyone to staff. Like I told you earlier, we are probably going to work with seminars that are being held and trying to jump on the bandwagon with some that are already well organized and that have the resource material and see if we can't help cosponsor some of these across the regions.

Mr. HORN. Mr. Walker, has Baton Rouge been able to hold onto the people that have to deal with this problem?

Mr. WALKER. We have had some turnover in our operation.

Mr. HORN. Where do they go, do you know, are they being bought off by private companies or other city governments or what?

Mr. WALKER. Specifically, we have had one go to another local government, and we had one go to private industry. Actually, a couple have gone to private industry, and we have got a number of them being recruited by private industry right now. They are continuing to tell me that they are getting unsolicited job offers a good 50 percent above their current salaries, and it has been an extreme——

Mr. HORN. Which would mean what, translated into a typical salary there? Are you talking about a $75,000, $100,000 contract?

Mr. WALKER. No, sir, we don't make that much in the city of Baton Rouge. Current programmers, I would say with 2 to 3 years experience, are making close to $40,000 a year, and they are being offered $50,000 to $60,000 to make a jump right now, and it has been extremely difficult for us to recruit new employees. We have a number of open positions now, and in fact we have got a couple of student workers that are going to LSU that have been working for us for awhile. And we have talked to them about the possibility of coming to work for the city of Baton Rouge after they graduate, which they are near graduation right now, and they just kind of

laugh at us. We are not competing with the private industry and, of course, it is a widespread problem.

Mr. HORN. I can believe that, having run a public agency for 18 years.

Mr. GUSMAN. Congressman, it is also a problem for the city of New Orleans. I know one of our top people was making $40,000, double the salary and some more with expense accounts, he is gone. We have lost four other people. Mr. Kilbride may want to comment more on that, but it has been hard to fill them.

Mr. KILBRIDE. As we found it, the younger people particularly were more apt to move on and ignore the benefits for the long haul. Two new programmers that we pay in the 20's are going to banks and to software houses making in the 40's, and we just can't compete with those salaries.

Historically, we had a low turnover for a long time until about a year and a half ago, and they started soliciting to all of the city programmers because they are available, they are paid low, so that they can entice these people to come into private industry. I lost two to the banking industry and I lost three to the software houses.

Mr. HORN. As you know, the Federal Government has brought out of retirement people to do COBOL, a programming language out of the sixties, and brought them back, let them keep their retirement, let them keep the contract they made, et cetera, to get the job done.

Mr. KILBRIDE. One of the things I have been able to do is that I have enticed two of the people who left to go to the banking industry, they do work for me part time. One of them has a job that he works 4 days a week for the bank, so he is available to come back to us on Fridays. At least we get 20 percent of this individual's time and are able to do it that way.

Mr. HORN. How about the State of Louisiana? How is your setup in Baton Rouge?

Ms. LEBLANC. Well, I am sure you probably know State employees are one of the highest paid people. Well, we know that is not exactly true, and we have in the past year, on the serious side of this, we have had a massive loss of resources. Not only are we losing them to other government entities but we obviously are losing them to private companies.

We try to do three things to work on this resource problem. We have instituted a program, what is called premium pay, that information systems will get information classification, personnel, be it an additional premium pay for working on the year 2000 problem. The problem with that is that because of budgetary concerns, not all departments were able to institute premium pay. So therefore, as there is some shifting of resources to one department to another within the State, that does not bode well for experienced programmers working on mission critical applications.

Mr. HORN. Is there one centralized computer center for the State government, or does each agency have their own?

Ms. LEBLANC. The State of Louisiana has a very decentralized, and that is why it is so difficult to try not only to get a handle on where the State is, but also to try to do things like sharing resources, doing things like that and all, because we are so decentralized.

The second thing that we have done is that we are asking the Governor to incorporate some emergency type situations if necessary, which will allow for the sharing of resources. If there are some departments that are compliant, we see that they will be meeting their mission critical dates, then we would like to ask that department to share their resources across to some other critical departments.

And a third thing, just as you have done, is bringing the retired programmers out to work with our Department of Civil Service and work out a way to bring retired programmers back. But staff is a critical issue for us. Within the last year we have lost quite a few programmers because of the year 2000. And when they go out on the Web site and see themselves making twice as much money just by contacting someone, you can't blame them.

Mr. HORN. Yes, that is for sure.

You have a comment, Mr. Kilbride?

Mr. KILBRIDE. I would like to make one more comment. You made reference to the fact that, you know, the resource issue is going to kind of free up in 2000. We don't think so, because all of the things that we should be doing today are still going to be on the table in the year 2000, so it may be in the year 2003 or the year 2005 before you start seeing a reduction in the need for programmers. I think it is going to be a good remedial well into the next millennium.

Mr. HORN. Which raises the point, since we are on a fine campus here, what are we doing to have the users of programmers work with the producers of programmers, namely the educational system, either the community colleges or the universities? We have before us, coming up on the floor in the Senate and the House, legislation to bring in a whole bunch of foreign programmers because presumably American students, A, don't like to get into it or, B, can't handle it, whatever. You know, it just rubs me the wrong way, because these are, as you say, $40,000, $50,000, $60,000 jobs in the various Silicon Valleys. I don't know if you have one of those valleys here in New Orleans, but most major cities you have got the type of industry going in. Fairfax County, across from us in Washington, DC, that is Silicon Valley east. It isn't just limited to Santa Clara County in California.

A lot of these firms are located for one reason or another in the urban area, and I just think the educational institutions ought to be working with each other. First place, the firms in these areas, if you have some, can supply you with the latest generation of equipment. And I have found over the years, no Federal, State government budget really necessarily gets you the latest generation. You might get one behind or two behind. But it is in their self interest and it is in education's self interest to, I think, settle down and provide opportunities for the people in a region. And I don't know if that is happening here, but it ought to happen here.

Ms. TARVER. If I could address that just a little bit, a partnership between foreign industry and the universities and colleges is being strived for because of the lack of funds that are available. I know at Northwestern where I teach, you are supposed to carry a five-class load, if you are an overall instructor as I am. I am down right now for seven.

Mr. HORN. We call it the freeway proletariat in California. Go ahead.

Ms. TARVER. Well, I am just down for seven classes, and one was taken away. I was down for eight at the beginning of this semester. And when I asked, we have a faculty meeting today, and I asked what was I going to teach because I knew I would be here, and he told me he would let me know tomorrow.

All of the universities and colleges are having this; I think that one of the reasons maybe some of the things haven't been addressed that should, is that a lot of the universities have adjunct teachers. These are ones that are teaching for $1,000 a course. And a lot of times you have a hard time finding people that will be able to do this that are out there in this field of programming, because what we have said of salaries elsewhere that are so demanding. I know Northwestern has lost several of their "Webmasters" that have gone to the Silicon Valleys of Dallas and other areas.

Like you, I hate to see going out of the United States, because I really do think that we have these people here somewhere, and I am wondering if it is not lack of communication that they are not located, but maybe it is something that needs to be addressed.

Mr. HORN. Well, it starts, as we know, in really elementary school, interest in science, math; high school interest in science and math. We need good teachers there if we are going to have good students come out there. So with the onslaught of population, we need to get those resources and pay them appropriately to do the job.

And I know how exploited the part-time faculty are, and particularly the gentlewoman sitting next to you is one of the reasons that they should all be ashamed of themselves because they don't have health plans in institutions for part-timers. I don't know if they help you, but they don't in most places, and that is a scandal.

Ms. TARVER. No. That is one of the reasons——

Mr. GUSMAN. Congressman, on your point about the technology, the University of New Orleans actually is at the forefront of this. I have worked with the computer here, Mr. Dupont in particular. Right up the street on the lakefront they have a research center, and there is going to be the Navy Technology Center there, which represents, when it gets through, about 5,000 jobs in that computer industry. So they are really doing a good job here under Chancellor O'Brien, and of course the congressional delegation that we have, bringing it all together. So you were right, we need to keep those jobs here and keep them with people who are going to live and work here.

Mr. HORN. Right. Well, I am delighted to hear you are doing it, because this is an ideal university to do it with, as an urban university that cares about people that grow up in the urban environment.

So let's see, we have Mr. McManus, I think, rehired four former programmers in order to get the job done.

Mr. MCMANUS. Yes, sir, that is true. Three of the four had already been working as re-employed annuitants on and off under the reduced salary. I am assuming you know how that works. Whatever grade level you hire them back at, you have to remove their pension from that, and that is the salary they get paid. But

OMB recently allowed us to file for waivers of that, and we could bring them back up to whatever their hightest salary was.

So I was able to keep those three on to do Y2K, plus I was able to bring a manager back out of retirement who was a branch manager in our organization that was responsible for all of our data base administration at one time. And that individual is now heading up our time machine effort and doing all of the year 2000 testing and doing an incredible job for us. She, in fact, had a high offer close to six figures with a contractor, and we were able to convince her to come to work for us at a little smaller salary.

Mr. HORN. All the free food stamps you have left over or what?

Mr. MCMANUS. As far as losing personnel, we have lost what I call key people, but I don't think it has impact on our Y2K efforts. The dinosaurs, that we call ourselves, the COBOL programmers, mostly the people that are leaving are the younger folks. The older folks are the ones that we are using, are not the problem.

We did have a problem with contractors. I am not up to the strength I was authorized to go to, as far as contractor assistance. I put in my testimony that we had minimal contractor assistance. That wasn't by design, we just can't get them. So you can't get them to do the job we needed done with COBOL.

Mr. GUSMAN. Mr. Chairman, obviously, retention of prudence in the Federal Government is always an opportunity. But the point McManus made about the contractors, it is so competitive and there is so much turnover. We have also had a problem that if you hire a contractor, another company buys them and moves them almost immediately. We have not been able to get continuity from our contractors.

Mr. HORN. You mean they break their contract with you?

Mr. GUSMAN. Well, they have no contract with me, you see. We bring them in to labor our task, to get the work done, and another company outbids this company and they move them elsewhere. Continuity has been a major problem. Now, one thing we could offer our Federal employees is that we were good employers in 1998, and we will be good employers in the year 2001, so we have managed to retain our people. The contractors have such a high turnover, it is almost a disruption.

Mr. HORN. Mr. Willemssen, I think you have something to add to this.

Mr. WILLEMSSEN. A couple of things: One is, I probably heard as much concern at your hearing today in the personnel area on a consistent basis as any I have heard to date, and I think that is reason for concern, because in my opinion it will not get better; it will likely get worse. Second, the watchword in the personnel area, from my perspective, is flexibility. Unfortunately, flexibility and the term "bureaucracy" don't necessarily mix well. But I think flexibility is what many of our organizations are going to have to emphasize more than ever.

Related to that, I think again one of the things that was mentioned at your hearing on Monday by the city of Dallas is one of those items that may be used by others. The city of Dallas, the representative mentioned that they were trying to retain their existing staff through a series of bonus mechanisms; that as long as they stayed for consecutive quarters, each quarter they would get an-

other bonus, capped off shortly after January 2000 with a balloon bonus if they stayed the whole way.

It is an interesting concept and something that really needs to be considered, because it is, from my perspective, more important that you retain what you have at this point in time, especially for some of those older programs and older systems, and you have got to look at whatever flexibility you can use.

Mr. HORN. That is a very good point.

Mr. MCMANUS. We have managed 1,800 Federal people and approximately 200 or 300 contractors, I have never counted the contractors. We have stayed away from bonuses or paying people retention allowances, because the 300 people that we had working the Y2K problem, the rest of my staff had to pick up the extra burden caused by these people focussing on this. And as far as the ones that I assigned to work this problem and neglect the others it would simply be unfair. We simply stayed away from it.

Mr. HORN. Well, I have had problems with bonuses also. I think if they are doing good work, raise their pay and don't fiddle around with bonuses.

Let me ask Mr. Gusman and Mr. Walker, we recently had a witness in Dallas that was the assistant city manager of the city of Lubbock, TX. He stated they were having a Y2K drill to essentially test the systems and infrastructure, to help ensure the city is prepared for the year 2000. I thought that was a pretty good idea, and I have wondered if either one of you have given any thought to performing some type of test or drill like an emergency thing we do, just to see if all the systems are working in your cities. Has any thought been given to trying that out?

Mr. GUSMAN. I know that we do a substantial amount of testing before we implement the system. I don't know if that takes the place of the drill, but Mr. Kilbride?

Mr. HORN. Well, if I might, one of the problems there is FAA about 6 months ago thought they could fix their radar with just testing, and gee, it looked terrific. They put it into the tower and it was chaos, and they didn't have the operational factors going there that you have and the judgments that have to be made, and so they had to go back to the drawing board. So I guess, you know, it isn't just testing one part of the total, it is trying to get all of those parts working and seeing what happens and where the breakdown comes.

Mr. KILBRIDE. In computer infrastructure, we have purchased the software that allows us to do that testing for the year 2000, which allows us to set dates into the future and run our production environment to make sure that it does work. But it has been mentioned several times today, there's a lot of those embedded chips in systems, you can't change the dates so you can't test it. You have to wait until that day shows up, and naturally, test it.

But as far as our system test, from a computer perspective, we have purchased some software that does allow us to set that day, run the production environment for that day, and then you can see what the outcome of it is. It is really going to be, they say September 9th, 1999 is the day that is going to be a problem for rollover actually. We are going to see what happens when it rolls over, so you can set it for the end of 1999 and let it roll over. So we do have

the software that we can do those kinds of testing. We did purchase that.

Mr. HORN. Any other thought?

Mr. WALKER. Just what we have talked about, however, we are not sure, we don't know how to test it in a live environment. We don't know how to take a 911 system that is in such a critical nature and take it out and change the date and we will see what happens, because so much is time sensitive in that area. But that is something we have discussed, and I would like to talk to that city to see how they are accomplishing this test.

Mr. HORN. We will get the Lubbock witness and all for you on that.

Mr. WALKER. Thank you.

Mr. HORN. Any other thoughts over here?

Mr. MCMANUS. Congressman Horn, we too used software to simulate year 2000 in our front end testing and user testing as we were converting ours too, but the reason we established a separate mainframe to do year 2000 testing I think was more in the line with where you were coming from, to test every component simultaneously, operating systems, all systems, software, any applications. That software is good, and it did show some problems, it did help us test these systems. But the software will only change the date for that particular system, not for all system software, and so that is why we have invested in this separate platform to actually do extended day testing.

Mr. HORN. Well, along that line, as you know, the Federal Government as a whole has had a really dismal performance level in this area. We are making for the next quarterly report—they got an "F" for their accomplishments to date.

But I think things are changing, so it leads me to ask you, as part of the National Finance Center leadership, you are saying they are pretty nearly compliant. What are we doing with your Center to help the other agencies within the Department of Agriculture to also become compliant? Because as you know, Secretary Glickman has expressed his concerns in this area, that there are several areas within the department that need some real help. Are you ready to sort of get them in shape?

Mr. MCMANUS. Yes, sir, we have been doing a tremendous number of customer briefings in Washington and in other areas. Locally, I have spoken before several groups. We have got a Web page out there, we have got a Y2K newsletter that we publish. We entertain, I get calls all day long from all over the country. We have user testing going on.

I spoke about the interfaces earlier. We were providing support to all of our client agencies and what have you, and we will be available through 1999. We are keeping this separate mainframe that we established up and running through 1999 and possibly into 2000 if it is necessary to support that testing effort. And we are available to assist in any way we can.

Mr. HORN. Well, I will tell you, I would love to have a copy of your latest newsletter to put it in the record.

Mr. MCMANUS. It is in the folder.

Mr. HORN. Without objection, well, we will put it in at this point.

[The information referred to follows:]

USDA

UNITED STATES DEPARTMENT OF AGRICULTURE

OFFICE OF INSPECTOR GENERAL

Washington D.C. 20250

DATE: July 10, 1998

REPLY TO
ATTN OF: 11009-1-FM

SUBJECT: Review of Year 2000 Conversion Project
at the National Finance Center

TO: Sally Thompson
Chief Financial Officer
Office of the Chief Financial Officer

We have completed this phase of our review of the National Finance Center's (NFC) Year 2000 (Y2K) conversion efforts. As part of this effort, NFC identified 6 mission critical systems, comprised of 143 applications, for conversion. NFC also identified additional aspects of its operations (e.g. mainframe operating systems, Local Area Networks (LAN), facilities, and telecommunications) which may be impacted by the millennium change. We reviewed the management and overall status of the project, concentrating on the renovation process for 13 selected applications. We also reviewed how data exchanges were being addressed, and NFC's efforts regarding business continuity and contingency planning.

Overall, we believe that NFC has and continues to place the proper priority on resolving Y2K problems. NFC has completed renovation of its mission critical applications on schedule, placing NFC in a firm position for carrying out validation testing in a timely manner. NFC management officials have been instrumental in achieving the current progress. Renovation of all NFC's mission critical systems is a key accomplishment in the overall process of resolving Y2K problems.

Project Status Reports

The NFC Year 2000 project status updates are provided to the Office of the Chief Financial Officer (OCFO) on a biweekly basis and to the Office of the Chief Information Officer (OCIO) on a monthly basis. The reports to OCFO include the detailed status of NFC's six mission critical systems, and also include some additional information relating to its other Y2K activities, such as conversion of the mainframe computer operating system, LAN and related issues, facilities, and telecommunications. Although these activities are critically important to the continued functionality of the center,

NFC has not cited them as mission critical systems in its reports to the Chief Information Officer. We noted that NFC established its reporting process in accordance with guidance issued by OCIO. In a separate report to OCIO, we recommended that the Department implement a standard definition of the term "system" to ensure consistent reporting of Y2K activities. OCIO agreed with our recommendation and advised us that it is reviewing the reporting process and plan to make changes to increase consistency and accuracy. NFC plans to revise its reporting methodology to incorporate the new guidelines.

During our review, we noted that the NFC time machine was operational, and testing of renovated applications has started. The NFC schedule calls for completion of validation by December 31, 1998, well ahead of the Office of Management and Budget deadlines. NFC has taken the initiative and is preparing overall plans and schedules to ensure that the scheduled date is achieved. In our opinion, development of this plan, including the methodology and schedule, is a critical step to ensure that time machine testing is effectively accomplished, and completed in a timely manner. NFC has added additional resources to this area to assure the validation phase progresses in an effective and timely manner.

Data Exchanges

In its June 1998, status report, NFC reported having 591 data exchanges with 322 external entities. NFC indicated that negotiations had been carried out with 218 of the 322 external business partners, signaling a significant improvement over the 29 negotiations reported in the May 1998, status report. The intent of the negotiations was to establish each partners' responsibilities for renovating and operating compatible data exchanges with NFC. During our review, NFC developed a central data exchange tracking system to compile and report progress in this area and assigned specific management personnel the responsibility of overseeing data exchange activities.

Business Continuity and Contingency Planning

In its May 1998, status report to OCFO, NFC reported it was evaluating the new General Accounting Office guidance pertaining to business continuity and contingency planning. The guidance is designed to assist agencies in determining the proper course of action for contingency planning. NFC officials advised us they plan to form a business continuity work group, consisting of staff members experienced in NFC's disaster recovery process to address contingency plans for mission critical systems. Further, NFC personnel agreed and plan to develop contingency plans for other risk areas, such as voice and data telecommunications, transportation, facilities, and other infrastructure services.

RECOMMENDATION

Revise Y2K status reports to designate the computer operating system, LAN and facilities, and telecommunications as mission critical systems.

Please provide your written reply within 10 days detailing the actions taken or planned for the above recommendation.

If you have any questions or need additional information, please contact me at 720-6945 or have a member of your staff call Thomas F. Heidaman, Regional Inspector General, at (816) 926-7657.

for Robert W. Young
JAMES R. EBBITT
Assistant Inspector General
For Audit

DATE: August 12, 1997

REPLY TO
ATTN OF: 50601-1-FM (3)

SUBJECT: USDA Review Of Year 2000 Conversion Project

TO: Irwin T. David
Acting Chief Financial Officer
Office of the Chief Financial Officer

ATTN: Gary Barber
Audit Liaison Officer
Office of the Chief Financial Officer

The Office of Inspector General has completed its initial review to ascertain the National Finance Center's (NFC) progress in addressing the Year 2000 conversion project. Our primary objectives were to determine if NFC had (1) developed an overall strategy, (2) assessed the impact of the Year 2000 computing problem, and based on this assessment, prioritized the conversion or replacement of affected systems and/or hardware, including system interfaces, (3) devoted sufficient resources to accomplish the plan, and (4) developed a contingency plan for critical systems and activities.

Based on our review of the NFC Year 2000 conversion project, we believe that NFC is making good progress to achieve Year 2000 compliance. For example, NFC has assessed the year 2000 computing problems and developed an overall project plan, which addresses the key elements needed to achieve Year 2000 compliance. As you know, NFC plans to expend considerable resources on the Year 2000 effort. We plan to continue to monitor NFC in this area as NFC work continues. However, we noted two areas where NFC must continue to closely monitor. These are: (1) The establishment/availability of a test facility to adequately test for Year 2000 compliance and to verify operational readiness, and (2) the development of contingency plans if critical system changes fall behind schedule. We are not making any specific recommendations at this time. We appreciate the cooperation of the NFC staff during our review. The Director, Information Resources Management Division, and her staff were also instrumental in assisting in identification of an issue that we brought to the Acting Chief Information Officer concerning recent personal computer purchases by the Department. If

you have any questions, please have a member of your staff contact Thomas F. Heideman, Regional Inspector General, at (816) 926-7667.

Richard J. Davis

ROBERT W. YOUNG
Deputy Assistant Inspector General
for Audit

cc:

Anne Thomson Reed, Acting, Chief Information Officer
John W. Hall, NFC, Acting Director
Gerry Knepp, Audit Liaison, NFC
Doug Toomey, Year 2000 Project Leader, NFC
D. Davis, Director, AFD
D. Gannon, ARIG, F&ADPO
R. Anton, Senior Auditor, F&ADPO
J. Hughes, Computer Specialist, F&ADPO

Year 2000: The Challenge For The National Finance Center, It's Customers, And Business Partners

Introduction

By now, everyone has heard of the Year 2000 (Y2K) challenge. This is the problem caused by computer systems throughout the industry using 2-digit year fields to store and manipulate dates. Unless corrective action is taken, when the dates being processed roll over from 1999 to 2000, many systems will not function properly.

The National Finance Center (NFC) provides and maintains Payroll/Personnel, Thrift Savings Plan, Administrative Payments, Billings & Collections, Accounting, and Property Management Information Systems. The Y2K challenge potentially impacted all of the NFC's more than 23 million lines of application programs. The NFC, following Government Accounting Office guidelines, developed and is executing a comprehensive Y2K readiness plan to ensure that all needed corrective action is taken and that its customers experience a smooth transition into the new millennium. The Center recently received a favorable review from USDA's Office of the Inspector General for having fixed its mission-critical applications on schedule, and it has moved into the validation testing phase of its readiness strategy.

Methodology

Determining the approach to be used in fixing the Y2K problem was a top priority for the Center. After assessment and testing, a twofold approach was adopted. For those systems the NFC is currently building, reengineering, or replacing, 4-digit year fields are being used in order to make them automatically Y2K compliant. However, there was not sufficient time nor resources to reengineer or replace all existing systems prior to December 1999.

So the issue remaining was to determine the appropriate technique to use for existing systems not scheduled for significant modernization prior to the end of 1999. One option involves expanding all date fields in existing systems from 2 digits to four digits. This option would require changes to all existing programs, interfaces, databases, and data containing date fields. However, this option was not deemed highly feasible due to the time and resources required to make all of these changes by the end of 1999. Another option called "windowing" was examined and tested. It was determined that windowing would accomplish the Y2K fix in a more timely and equally effective manner. Therefore, for systems not undergoing significant modernization, the NFC decided to use a fixed windowing technique.

The windowing technique involves the continued use of the 2-digit year field. When the century is needed, it is determined based on the value of the 2-digit year field. If the year is less than 50, the century is assumed to be 20; otherwise, it is assumed to be 19. For example if the year field is 01, the year is assumed to be 2001; if the year field is 97, the year is assumed to be 1997. This technique allows for changing only those programs that perform certain functions on date fields

such as compares, and elapsed days calculations.

The NFC is using the number 50 as a default cutoff year for windowing. This will work well with most of applications. Date processing is usually performed on transactions that are planned 1 to 5 years in advance or have happened within the past 5 years. Therefore, the use of 50 extends the life of our systems with 2-digit year fields until the year 2045. This is more than enough time to complete the reengineering efforts which will utilize a 4-digit year field. The use of 50 is also consistent with American Management Systems' use of windowing in the Federal Financial System and the Oracle Corporation's database management system.

There are some date fields, such as date of birth, where the default of 50 does not work as well. The tools being used provide the capability to change the default to handle these date fields. For example, for the "date of birth" field in our Payroll/Personnel System, the number 04 is used as the cutoff year for windowing since the oldest employee we service was born in 1904. Other system date fields have been analyzed and the default year has been adjusted as appropriate.

Accomplishments

To date the NFC has upgraded the mainframe operating system and related vendor-supplied software, purchased and installed a standalone IBM mainframe for Year 2000 validation testing, upgraded the Foundation Financial Information System software to Version 5.3, and assured compliance of 23,500,000 lines of application code. The NFC met a self-imposed deadline of June 30, 1998, to have identified, remediated, tested, and returned to production all programs requiring Y2K-related modifications.

Using the standalone IBM mainframe referred to as the "Time Machine," the Center has begun validation testing. Validation testing is defined as substantiating the functional, performance, and integration effectiveness of all components (application software, system software, hardware, etc.) in an independent environment in terms of processing with dates from the 20th and 21st Centuries. Validation testing on the Time Machine encompasses testing each and every production application system along with associated support applications, system software, and hardware. This testing centers on advanced date testing as prescribed by Government-wide standards and some application unique criteria developed internally. Successful validation testing of an application will mean that NFC has proven that this application and all supporting software and hardware can and will function without defect with Year 2000 dates. In fact some of the advanced date scenarios also deal with dates in late 1999 and other key dates beyond the Year 2000 itself. Overall success in Time Machine testing will, in effect, certify NFC Y2K ready.

NFC Y2K preparation will not end with Time Machine certification. NFC will continue to retest in order to ensure the compliance of all systems and processes as they are maintained in the time approaching the actual Year 2000 cut-over. This testing will include, mainframe and midrange computers and software, telecommunications, LAN, personal computer hardware and software, mission-critical systems, and applications and programs. Additionally, the Center has begun testing such things as elevators, fire alarms, copiers, fax machines, and the local power source to ensure compliance.

Customer And Other Business Partners Interfaces

The NFC has been very proactive in providing information to increase customer awareness of necessary actions to be taken to ensure compliance and readiness. Specifically, the NFC has and continues to conduct presentations to user groups, provides quarterly newsletters to customers, continually reports progress to the Office of the Chief Financial Officer, Office of the Chief Information Officer, and Office of Management and Budget, and provides status and other Y2K information on the NFC web site. In addition to the aforementioned, a form letter was sent to customers asking them to identify interfaces that needed changes. The NFC has taken the position that all interface formats will remain unchanged unless a customer requests a change. However, to further emphasize the importance of customer input and action, the NFC sent detailed letters to more than 2,000 customers soliciting cooperation to ensure that any outstanding Y2K issues were identified and resolved between and among the NFC, its customers, and other business partners.

The employee pay process illustrates the complexities and interdependencies between and among the NFC systems and those of its customers and business partners. The pay process involves a series of customers and business partners with a variety of systems and telecommunication links which all must be Y2K capable and compatible in order for the employee to receive their salary payment on a timely basis. The Center wants to be sure that all of the links (software, hardware, and telecommunications) satisfy Y2K processing requirements in a compatible manner. Issues such as formats, interfaces, and compliance methodologies all have a bearing on compatibility and the NFC has strongly encouraged its customers to test common business links. In addition, the "Time Machine" will be available to customers as NFC continues to emphasize the importance of application and interface testing. NFC strongly encourage its customers to schedule testing as soon as possible.

The General Services Administration has assured the Center that all customers connecting to the NFC via the FTS2000 X.25 Packet Switch Service will be Y2K compliant. Customers who are not FTS2000 users have been requested to review the Y2K compliance plan of their service provider to assure that telecommunications functionality will not be a problem. If an agency is not secure with Y2K telecommunications link functionality, the FTS2000 service may be a solution.

Contingency Planning

While we are convinced that Y2K conversion and testing will be successfully completed well in advance of the critical Y2K date, we recognize that business interrelationships may result in problems. The Center continues to evaluate what could go wrong and what alternative operations are available to handle these problems. One problem is identifying the risks involved with other companies' failures to adequately address Y2K issues. For example, the NFC could have problems with the electric power supply if the power company experiences date related problems with their systems. To ensure that an alternative power source is available if needed, the NFC recently conducted an extended period full load test of its auxiliary diesel generators with great success. If there is any possibility of a computer-induced electrical outage, the Center has

demonstrated that it can operate using locally generated power for as long as necessary to ensure uninterrupted service to its customers.

Other examples of possible problems and proposed solutions include: if telecommunication problems between NFC and its customers are experienced, tapes will be sent to handle batch interfaces; if there is a problem with electronic funds transfer transmissions to the Federal Reserve Bank, tapes will be sent; if the Federal Reserve Bank experiences transmission problems to financial institutions, checks will be printed.

Conclusion

Much has been accomplished in meeting our goal to provide continuity of service when we reach that critical date of January 1, 2000. We remain confident that with the support of our customers and other business partners we can complete on schedule the critical work still to be done to transition smoothly into the next millennium.

Status of USDA/OCFO Year 2000 Efforts:
Monthly Report for August 1998

1. Organizational Responsibilities.

No change from previous report.

2. Status.

a. The NFC has six mission-critical systems; all six have completed renovation.

Total Number of Mission-Critical	Number Compliant	Number to Be Replaced	Number to Be Repaired	Number to Be Retired
6	0	0	6	0

b. The status of the mission-critical systems being repaired.

Milestone Date/ Repair Phases	Assessment Plan - Actual	Renovation Plan - Actual	Validation Plan - Actual	Implementation Plan - Actual
Central Accounting	4/97 - 4/97	6/98 - 6/98	12/98 -	12/98 -
Administrative Payments	4/97 - 4/97	6/98 - 6/98	12/98 -	12/98 -
Billings & Collections	4/97 - 4/97	6/98 - 5/98	12/98 -	12/98 -
Payroll/Personnel	4/97 - 4/97	6/98 - 6/98	12/98 -	12/98 -
Property	4/97 - 4/97	6/98 - 6/98	12/98 -	12/98 -
Thrift Savings Plan	4/97 - 4/97	6/98 - 6/98	12/98 -	12/98 -

APPLICATION VALIDATION STATUS (TIME MACHINE)

Mission Critical System	Number of Applications by Phase				
	Total	Test Plans Developed	Establish Test Environment	Application Validation	Y2K Compliant
Central Accounting	31	2	6	1	1
Administrative Payments	31	5	4	3	1
Billings & Collections	4	1	1	1	1
Payroll/Personnel	61	6	2	2	2
Property	6	2	2	2	
Thrift Savings Plan	4				
TOTAL	137	16	15	9	5

c. Description of Progress:

(1) Status of Mission-Critical Systems. There are 137 applications within the six mission-critical systems. Of these, 21 were determined to require no change for Y2K and the remaining 116 have completed renovation. Five applications have completed validation.

Progress on Y2K assessment, upgrading, and testing the Information Technology platforms:

Ninety-eight percent of the critical systems which make up the mainframe, LAN, and other miscellaneous systems have completed the Evaluation Phase.

Ninety-four percent of the critical systems have completed the Corrective Actions Phase and are progressing into the IV&V Certification Phase.

Critical Systems		Total Component	Evaluation not Completed	Modification or Replacement	Preparation Complete
Mainframe	**Hardware**	654	0	0	654
	Software	224	8	18	198
Local Area Network	**Hardware**	183	0	0	183
	Software	18	0	8	10
Miscellaneous Systems	**Hardware**	149	8	9	132
	Software	104	15	16	73
Totals	**Hardware**	986	8	9	969
	Software	346	23	42	281

(2) Status of Nonmission-Critical Systems. There are another 19 applications that are not identified as mission-critical. All of these have been assessed; 9 require no change for Y2K, the remaining 10 have completed renovation, tested, and implemented back into production. Personal computers are also not critical to the mission of the NFC, but could create inconveniences. The status of the PCs at NFC is listed in the tabular form below and additional explanation is listed under (9) Other Evidence of Progress.

Total Number of Nonmission Critical Systems	Number Compliant	Number to Be Replaced	Number to Be Repaired	Number to Be Retired
19	9	0	10	0

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
No. Completed	10	10	10	10
Expected Dates for Completion	4/97	7/98	7/98	7/98

[illegible]		[illegible]	[illegible]	[illegible]	[illegible]
Personal Computers	**Hardware**	2,249	994	1,255	1,255
	Software	265	77	188	0

(3) Data Exchanges. We have identified one interface with state and local governments. This interface is for W-2 information and is provided upon request. This interface contains the year in 4-digit format and only 16 states receive it electronically. We feel there is no need to contact states about this interface. We have notified our customers via newsletter and web page that our incoming interface formats will not change. We have sent out letters to agencies that receive download from our payroll/personnel system offering to accommodate either 2- or 4-digit years and asking them to notify us of their requirements. We have received bulletins from Treasury FMS and IRS stating their plans and timing for the formats of those interfaces. The Thrift Savings Plan (TSP) system accounts for 304 of the interfaces with 150 organizations. It has been determined that no changes will be made to the TSP interface formats until the replacement system is implemented. The Thrift Investment Board has sent letters to the organizations they interface with.

Type of Entity	No. of External Entities	Total No. Exchanges	No. of Contacts Made	No. of Agreements Made
Other Federal Agencies (provide list)	290	556	278	239
State Agencies	16	16	0	0
U. S. Private Sector	22	22	15	8

(4) Contingency Planning. We have established a team to develop a contingency plan. We have issued a task order against the ISAP contract to receive assistance from IBM in preparing our contingency plan.

(5) Other Y2K Implications. We have a representative on the Facilities Assessment Committee, and we are participating in the telecommunications assessment being headed by OCIO. We have tested all personal computers and scheduled the repair or replacement

of those that are not Y2K compliant.

(6) Problems Affecting Progress. None to report.

(7) Governmentwide Systems. The Thrift Savings Plan System has completed renovation. The Direct Premium Remittance System (DPRS) bills and collects premiums for eligible non-Federal employees who elect to participate in the Federal Employees Health Benefits (FEHB). We have been reporting it under the Billings and Collections System. Conversion of DPRS was completed and returned to production in February 1997. DPRS has completed validation on the Time Machine.

(8) Verification Efforts. The NFC has a Quality Assurance Office that is separate from the development organizations. A test platform "Time Machine" has been acquired to provide Y2K simulation for Validation Phase testing. The Office of the Inspector General has conducted an audit of the Y2K Readiness Project, and an independent contractor has conducted an audit of the Thrift Savings Plan (TSP). Grain Inspection, Packers and Stockyards Administration (GIPSA) is developing a Y2K simulation lab of their network environment to allow for Y2K compliance certification. GIPSA will be testing all NFC PC systems in their lab. We have provided them with copies of PC-TRVL Version 1.08, PC-BLCO Version 1.03, PC-TARE Version 1.11a, and PC-TARE Version 2.0.

(9) Other Evidence of Progress.

Mainframe:

The Mainframe consists of CPUs, DASD, Optical Storage, Automated Cartridge Library System, System Printers, Network Interface devices, and software programs.

Of the 654 hardware components,

- 652 (or 99.7 percent) are Y2K compliant, conditional, or tolerant
- 2 (or 0.3 percent) will no longer be used and will be removed from the system

Of the 224 software programs,

- 147 (or 65.9 percent) are Y2K compliant, conditional, or tolerant
- 51 (or 22.4 percent) will no longer be used and will be removed from the system
- 18 (or 8.1 percent) are noncompliant and are in the process of being upgraded
- 8 (or 3.6 percent) are still under investigation

Local Area Network Components:

The Local Area Network consists of servers, hubs, catalysts, concentrators, communications bridges, and software programs.

Of the 183 hardware components,

- 183 (or 100 percent) are Y2K compliant, conditional, or tolerant

Of the 18 software programs,

- 10 (or 55.6 percent) are Y2K compliant, conditional, or tolerant
- 8 (or 44.4 percent) are noncompliant and are in the process of being replaced or upgraded

Personal Computers and Peripherals:

This category include PCs, laptops, printers, scanners, and software.

Of the 2,294 hardware components,

- 1,249 (or 54.4 percent) are Y2K compliant, conditional, or tolerant
- 6 (or 0.3 percent) will no longer be used and will be removed from the system
- 994 (or 43.3 percent) are noncompliant and are in the process of being replaced or upgraded

Of the 265 software programs,

- 188 (or 70.9 percent) are Y2K compliant, conditional, or tolerant
- 77 (or 29.1 percent) are noncompliant and are in the process of being replaced or upgraded

Miscellaneous Systems:

Examples of miscellaneous systems are mail handling, voice response, computer output microfiche, mid-range processors, CD-ROM production, and automated time clock system.

Of the 149 hardware components,

- 120 (or 80.5 percent) are Y2K compliant, conditional, or tolerant
- 12 (or 8.1 percent) will no longer be used and will be removed from the system
- 9 (or 6.0 percent) are noncompliant and are in the process of being replaced or upgraded
- 8 (or 5.3 percent) are still under investigation

Of the 104 software programs,

- 29 (or 27.8 percent) are Y2K compliant, conditional, or tolerant
- 44 (or 42.3 percent) will no longer be used and will be removed from the system
- 15 (or 14.4 percent) are noncompliant and are in the process of being replaced or upgraded
- 16 (or 15.4 percent) are still under investigation

Summary:

3,235 hardware components

- 2,204 (or 68.1 percent) are Y2K compliant, conditional, or tolerant
- 20 (or 0.6 percent) will no longer be used and will be removed from the system
- 1003 (or 31 percent) are noncompliant and are in the process of being replaced or upgraded
- 8 (or 0.2 percent) are still under investigation

611 software programs

- 374 (or 61.2 percent) are Y2K compliant, conditional, or tolerant
- 95 (or 15.5 percent) will no longer be used and will be removed from the system
- 119 (or 19.3 percent) are noncompliant and are in the process of being replaced or upgraded
- 23 (or 3.9 percent) are still under investigation

3. Costs. Y2K costs for Telecommunications and Vulnerable Systems and Processes are not tracked separately from other Y2K costs.

Fiscal Year	1996	1997	1998	1999	2000	Total
All Other Information Technology Cost	$1,236,000	$1,472,000	$8,980,000	$1,000,000	$1,000,000	$13,688,000

4. Exception Report on Systems.

   No systems to report as being behind schedule by more than two months.

5. Systems Scheduled for Implementation After March 1999.

   None to report.

Supplement 1. Telecommunications Systems Monthly Report

Number of telecommunications and data networks supporting mission-critical service delivery functions. (Number) + (Narrative)

One. The FTS2000 data network supports the OCFO National Finance Center's (NFC) mission-critical service delivery functions. NFC is primarily a payment data center, and any disruption in the timely delivery of payments via FTS2000 would cause concerns for Agriculture and other cross-servicing agencies.

Has your agency initiated the telecommunications equipment and services inventory? (Y/N)

Yes. NFC has initiated a telecommunications equipment and services inventory. Both OCFO-NFC (New Orleans, LA) and OCFO-HQ (Washington, D.C.) have begun inventory activity.

3. Has your agency submitted a telecommunications inventory plan? (Y/N) + Date Submitted.

Yes. NFC submitted a telecommunications inventory plan on February 2, 1998.

4. Is the inventory proceeding according to schedule? (Y/N) If "No," please explain the reason for not meeting the projected schedule.

The inventory is proceeding according to the inventory plan schedule.

5. Inventory Equipment Summary Information

Equipment Type	Inventory to Date	Percent Known Compliance	Percent Known Non-Compliance	Percent Unknown Compliance Status
ODS Model 1110 Hubs	85	100 percent		
Cisco Fast Hubs	22	100 percent		
Cisco routers	9		100 percent needs software patch	
Cisco Concentrators	8		100 percent needs software patch	
Cisco catalyst	17		100 percent needs software patch	
Cisco catalyst	6	100 percent		

Supplement 1. Telecommunications Systems Monthly Report (Continued)

6. If compliance status is unknown, how do you intend to discover Y2K status and alternatives available? (Narrative)

   NFC compliance status is known.

7. Telecommunications Y2K Compliance Costs

   NFC expects to spend $220,000 in FY 1998 to make Telecommunications Y2K compliant and provide equipment in support of testing.

Supplement 2. Vulnerable Systems and Processes Monthly Report

Buildings/Facilities

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3	0	1	0	2	0

a. Certifications are pending.

b. Update on the status of progress of buildings/facilities:

1. Michoud Assembly Facility
   Building 350
   13800 Old Gentilly Road
   New Orleans, LA 70129

Building 350 is an agency-leased building owned by the National Aeronautics and Space Administration (NASA). This building is mission-critical. A letter was sent to NASA during the week of March 1, 1998, requesting their Y2K status.

2. TANO Building
   4277 Poche Court West
   New Orleans, LA 70129

The TANO Building is a GSA-leased building owned by James Reiss, CEO, TANO Corporation. The TANO Building is considered mission-critical. Contact has been made with Glen Moore, Director, New Orleans Property Management Center, during February 1998. Mr. Moore advised us that GSA would be responsible for ensuring that the TANO Building is Y2K compliant.

3. NFC Warehouse
   4432 Poche Court West
   New Orleans, LA 70129

The warehouse is a GSA-leased building managed by Stirling Properties. The warehouse is considered mission-critical. GSA indicated to us that they will ensure that the warehouse is Y2K compliant.

Testing of the buildings has been scheduled for January 1999.

c. Collocation - N/A.

Scientific/Lab Equipment - N/A

Supplement 2. Vulnerable Systems and Processes Monthly Report (Continued)

Personal Property

An inventory assessment of personal property has been conducted.

Office equipment needed to be repaired or replaced is currently being evaluated.

Aircraft - N/A

Motor Vehicles

11	0	2	2

Agency Owned Vehicles - None

Agency Leased Vehicles

Total number of vehicles - two
Both vehicles will be turned in prior to October 1998.

GSA Vehicles

The Department has not provided information from GSA on their vehicles.
These vehicles do not require remediation. GSA will be contacted to resolve this issue.

Mr. HORN. Ms. LeBlanc, and others that relate to the educational areas, what are some of the unique advantages that are facing higher ed institutions? Do you have a sense of that, or is it just simply Louisiana State University worries about that and don't bother me?

Ms. LEBLANC. We have tried to coordinate higher education. The Board of Regents is responsible for it. We have three major university systems, which is Southern University, Louisiana State University, and the third is the remaining systems. And they are trying to coordinate this effort, and within their coordination they are trying to do sharing of resources, just like we are trying to do at the State's level.

One of the things that you mentioned that I have taken note of is the possibility of trying to work with higher education and trying to help with staffing, they are trying to help us with that. But I guess from a higher ed view, each department is responsible, but they will be reporting their Y2K status. So in September, we will have a better feel for higher ed.

Mr. HORN. I stress particularly the community colleges. That is the whole purpose of them. They are supposed to be giving both a liberal arts education and vocational education related to the industry in the area. And I would hope that they get the mandate and somebody follows up on it, because that is where the change has to come. You can get BS's out of the universities with science degrees. And people in computer programming, as I said, they are often a couple of generations late in terms on what they practiced on and what their professors know, with rare exception. So this is a good chance, as some of you thought, to link up and get them all working together.

Well, I have enjoyed this. Is there any last word any of you have that I was too stupid to ask? There we are.

Ms. COMEAUX. Not too stupid to ask. But I do want to emphasize, and I think that what you are hearing today is that once again we, in our environment, are feeling confident and think we have a plan. And as that confidence grows, we begin to look outward, and I think that we really need some assistance on these connectivities issues and need to build that into our thinking, not just from a governmental perspective, but from the main industries in an area perspective.

Conspicuously absent in our user groups are all of our chemical industries that line the Mississippi, and we haven't heard from them and we haven't had any contact from them to join any of these user groups, and we are heavily dependent upon them. Also, they are heavily dependent upon embedded chips. So building some way that people are able to share that information—and in the sharing of resources, you don't just talk of it at the governmental level. I mean, certainly private industries and those who have a plan in place should be contributing to making sure that all citizens are taken care of.

Mr. HORN. Very good point, especially on the pollution regulation and everything else. A lot of that is probably related to various embedded chips that control the flow; same with the oil refineries.

Any other thoughts? Yes, sir.

Mr. KILBRIDE. One of the things that I have recognized in discussions we have had today, that even though we are comfortable with what we are doing, you can't let your guard down. There is always going to be things like the fire trucks. It is going to be an ongoing process until the year 2000 and even into the future. You have to stay alert and stay with it.

Mr. HORN. I think those are wise words. Ms. LeBlanc.

Ms. LEBLANC. I would like to commend you on your efforts thus far, but from the State's perspective I would like to request assistance for one more thing. And that is, in order for the year 2000 to be the priority that it needs to be for the State of Louisiana, there needs to be some relaxing of some of our federally mandated programs and dates that we are required to do. I have also heard this request from other States at a recent conference that I attended, so any assistance——

Mr. HORN. Could you give me an idea of some of those? What are you thinking of?

Ms. LEBLANC. There are some mandated welfare-type programs that I know that our Department of Social Services has to meet within the next year that has now—although it is not a priority over Y2K, they are having to split their resources. And I will be glad to go back and get the specific programs.

Mr. HORN. We will save a place in the record at this point, without objection, and put that list in here.

[The information referred to follows:]

L'AMI mandate Revised: 08/20/1998

Federal mandate:

1) FSLA-U-6427 - Food Stamp welfare reform changes. Completed Jan 1, 1997.

2) FSLA-U-7393 - TANF data collection. Revision needed by Oct 1, 1998, completed Feb 1, 1998.

3) FSLA-U-XXXX- FS annual COLA October increase. Due every Oct 1 yearly.

4) FSLA-U-XXXX - SDX/BENDEX COLA changes due for Jan 1999. Due every Jan 1 yearly.

5) FSLA-U-0025 - Utility Standard conversion changes for Food Stamps. These changes would reduce workloads, reduce difficulties in obtaining verifications and make the codes more meaningful. Completed as of Feb 27, 1998.

6) FSLA-U-XXXX - TANF High Performance Bonus Report. User request needed. Due date Nov 30, 1998.

Ms. LEBLANC. But I will be glad to go back and get those dates and those specific programs for you. But we feel like some of those types of things, any assistance that you could give us with those types of programs would be a great help to us.

Mr. HORN. OK. Any other comments at this end?

Well, if not, I want to thank you all. You have been very helpful. I think we have got some good succinct answers, that we can deal with some of this.

I want to thank the staff, and our hosts here at the University of New Orleans. I will start with Lynn Acardo of the University of New Orleans, Assistant Chancellor, I believe. She is way in the back of the room. And we thank you and the Chancellor and all the people in this beautiful building. I can't believe it is 2 years old even; you keep it spotless. And Naomi Moore, also at the University of New Orleans. Naomi, are you around back here somewhere, OK. Well, we appreciate all that you have done.

And then I would like to thank the people that prepared the hearing in terms of substance, and let us start with the chief counsel and staff director of the Subcommittee on Government Management, Information, and Technology, J. Russell George, back there in the corner put his hand up. And the counsel immediately to my left and right is Megen Davis, who is on leave to us from the General Accounting Office and has been a great asset in this hearing and others that we are holding. And we also want to thank Matthew Ebert, our clerk, and Mason Alinger, who is here as staff assistant on the support service. Mason, where are you? There he is; he is working. And we thank our court reporter, who is Anna Coker, and we thank you for coming.

With that, we are in recess until our series of hearings in the Midwest.

[Whereupon, at 12:15 p.m., the subcommittee was adjourned.]

OVERSIGHT OF THE YEAR 2000 PROBLEM: LESSONS TO BE LEARNED FROM STATE AND LOCAL EXPERIENCES

TUESDAY, SEPTEMBER 1, 1998

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON GOVERNMENT MANAGEMENT,
INFORMATION, AND TECHNOLOGY,
COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT,
Lakewood, OH.

The subcommittee met, pursuant to notice, at 10 a.m., in the Lakewood City Hall, Lakewood, OH, Hon. Stephen Horn (chairman of the subcommittee) presiding.

Present: Representatives Horn and Kucinich.

Staff present: Randy Kaplan, professional staff member; Matthew Ebert, clerk; and Faith Weiss, minority professional staff member.

Mr. HORN. A quorum being present, the Subcommittee on Government Management, Information, and Technology will come to order.

We are delighted to be in the district of our ranking Democrat, your former mayor of the city of Cleveland and now a very hard-working Member of the House of Representatives, and a person who has devoted a lot of time to how you improve government effectiveness and efficiency. We are delighted to have him on this panel as the ranking member and to come to his district to hold one of these very important hearings on the year 2000 computer problem.

Time is running out and as we sit just a few miles from the Rock and Roll Hall of Fame, we must face the music. January 1, 2000 must not become the day the music dies. We know that the year 2000 computing problem affects just about every aspect of Federal, State and local governmental operations. It also affects private sector organizations and could affect the lives of most individuals.

Over 2 years ago, the subcommittee held the first congressional hearing on the year 2000 problem and since that time, we have held numerous hearings to assess the status of the Federal Government's Y2K fixes. Today's hearing marks the fourth in a series of field hearings on the year 2000 problem, focusing on non-Federal entities and going to major cities in the United States. This is being done in the context of the recent action of the Speaker of the House, Mr. Gingrich, when he named the Subcommittee on Government Management, Information, and Technology, along with the Science Committee Subcommittee on Technology as the House

Task Force on the year 2000 problem. The chief objective of this Task Force is to inspire action at the Federal, State and local level and the non-governmental level. No one organization, no one city, no one State, even a nation can solve the year 2000 problem alone. Data exchanges and interdependencies exist at all levels of government and throughout the private sector. A single failure in the chain could have severe repercussions.

For example, State disability determination systems provide data on whether an individual qualifies for disability benefits, how long he or she should receive benefits and how much the beneficiary should receive. The Social Security Administration uses this data to approve the disbursement of the disability payment. The Department of the Treasury, however, cuts the check and sends it to the local bank. The local bank deposits the check into the individual's account. The bottom line is if any one of these entities has problems from the State office through the local bank, a deserving individual will not receive payment. Now multiply that situation by millions of people in just this one Federal program who receive benefits, and you can appreciate the magnitude of just one aspect of a Y2K issue.

Accordingly, the testimony we receive today will help us to understand the extent of the problem at the State and local levels as well as the private sector. Our witnesses include representatives from government, health care and telecommunications industries, utilities and the financial sector. We welcome our witnesses and look forward to their testimony.

I am now delighted to ask the ranking Democrat on the panel to give his opening statement. Again, we thank him and his office and all the people that have been involved in making sure that this hearing is scheduled and successful. I am delighted to yield to the gentleman from Ohio.

Mr. KUCINICH. Thank you very much, Mr. Chairman.

Before I make my remarks, I would like to ask, with the permission of the Chair—the mayor of the city of Lakewood, who is our gracious hostess in Lakewood, OH here, has just entered the room. She has pressing matters that will make it difficult for her to remain, but she has asked if she could proceed at this moment prior to my statement and I will so yield to her, with your permission.

Mr. HORN. Absolutely. We are delighted to welcome you, Mayor.

Mr. KUCINICH. And if I may introduce Mayor Cain, this is Mayor Madeline Cain of the city of Lakewood.

Mr. HORN. Please join us at the witness table. We will not swear you in.

Mr. KUCINICH. Mayor Cain, again, on behalf of the committee, we certainly want to thank you for your willingness to host this important committee hearing.

STATEMENT OF MADELINE CAIN, MAYOR, CITY OF LAKEWOOD, OH

Ms. CAIN. Thank you. Congressman Kucinich and Congressman Horn, we welcome you to the city of Lakewood.

As a former legislator, I know how important it is for local communities in our district to have the opportunity to provide testimony on critical issues, and so it is indeed an honor for the Lake-

wood community to work with you this morning in hosting this important committee hearing, and I want to express the gratitude of my own staff, who will be here today, for the opportunity to learn today, to listen, and also to hear important input that will assist you in your efforts as you continue to deliberate this important 2000 effort.

I think it is extremely impressive that the Congress of the United States has recognized how important this matter is to this country; and this hearing, I think, is going to have a significant impact, as will your deliberations in Washington, in assuring that those who need to pay attention are indeed paying attention, and that indeed January 1, 2000 will be a day of celebration as opposed to a day of disaster in this country.

And so I welcome you and I appreciate your efforts. Thank you.

Mr. HORN. Well, we thank you. It is wonderful to be in this very nice auditorium looking at those bucolic scenes at the end of the room. That is the sort of America I grew up in. Of course we change rapidly and I notice Ohio goes with the change.

Ms. CAIN. That is right.

Mr. HORN. So we congratulate you on being Mayor. Were you a State legislator before?

Ms. CAIN. I was, State representative.

Mr. HORN. Well, there is nothing tougher than being the mayor of any city.

Ms. CAIN. I have learned that.

Mr. HORN. I remember years ago when I was a guest of John Lindsey when he was mayor of New York and we went up to see Governor Rockefeller with him, and Rocky turned to John and he said, "You know, John has got the toughest job, I do not. They can never find me, I am either in Albany or I am here and they do not know where I am here. John, they surround with pickets and everything else." And that was true. As we entered the city hall to see the mayor of New York that morning, there were three different groups picketing him and the saw horses were up to keep a certain distance.

Ms. CAIN. That is right.

Mr. HORN. But I noticed you did not have any of that today.

Ms. CAIN. Not today. Thank you very much.

Mr. HORN. So Lakewood must sort of be that bucolic scene down there.

Ms. CAIN. Most days it is.

Mr. HORN. Thank you.

Ms. CAIN. Thank you. Thank you again for coming to Lakewood.

Mr. KUCINICH. Thank you, Mayor Cain. And Mayor Cain, being mayor gets easier the farther away you are from the office.

Thank you very much, and thank you, Mr. Chairman, for holding this important hearing in Lakewood, OH on potential computer problems faced by State and local governments and businesses with the century date change.

I want to thank all of our witnesses who are here and I would like to begin my remarks by putting this hearing in perspective. For the last few years, Chairman Horn has been, in some cases, almost a singular voice in the United States calling out across this country about the need to pay attention to the Y2K problem and

what it will mean for businesses and for government. He has been a driving force in getting the Federal Government to be able to come to compliance in certain critical areas and in measuring that compliance and in urging further compliance, so much so that I would say that he has been instrumental in bringing about the vigilance of the Federal Government on this. And for that reason, I am honored to be on this panel with him. And I just want you to know, all who are in attendance, how important this hearing is, because of the work that the chairman has done. And I sincerely mean that and I salute him for his efforts.

As we know, these computer problems could result in serious disruption of critical services to the public. We have talked in the past about the dangers to telecommunications, water, and power services. Emergency and rescue services also rely on telecommunications and power as well as our transportation infrastructure which can be affected.

I want to thank the witnesses for their willingness to discuss ongoing preparation for the century date change at the State and local levels and in the private sector.

I am very concerned about the year 2000 computer bug. I have participated with Chairman Horn in a number of congressional hearings on this subject, enough to know that we cannot ignore the threat. I recently held a seminar on its effect on small business in the Cleveland area. Evidence to date strongly suggests that our States, cities and local areas could face serious disruption in services if we do not encourage the fixing of this so-called millennium bug. It is clear that both public and private sectors face substantial threats. This hearing should help raise awareness of preparations for any impact of the computer problems we face in the year 2000 and I think that the overall thrust of the work that has been done is not to scare people—I mean we do not want to proceed from fear, but to alert people that preparations have to be made.

In the work that we have done, we have brought technical experts, community leaders and small business owners together here in Cleveland to discuss the problem as we have done today. Fortunately, we still have time to fix it, we must identify the potential problems and provide adequate resources to resolve them and to have alternative plans ready.

I am pleased that the Clinton administration has taken a strong stand by sending a year 2000 bill to Congress which I support. This bill will promote much needed information sharing between public and private organizations on the year 2000 solutions.

Again, I want to applaud the chairman's efforts in bringing this issue into the national spotlight. With his energy and enthusiasm, this subcommittee has been traveling around the country to call attention to the problem. Americans have done a lot, but there is much more to do. I look forward to this hearing today, Mr. Chairman, and I would like to thank everyone for being here. Thank you.

Mr. HORN. Well, again, we thank you for not only what you have accomplished and will accomplish in this hearing, but also for the energy and dynamism you have brought to the Committee on Government Reform and Oversight, so we appreciate your experience as a local official of one of the largest cities in America, it is the

kind of experience we need in Congress. We have got a lot of lawyers there and that is fine, I am not against lawyers, I just want them in their proper place. But if they are going to come to Congress, they need to come with some background and experience, and you have come with that experience and we welcome it.

Mr. KUCINICH. Thank you.

Mr. HORN. Now we have a very interesting panel here. And let me give you the ground rules, gentlemen. We swear in all witnesses, we are an investigative committee of the House. Your testimony will automatically become part of the record, the full text, when we have introduced you. We would like you to sort of look us in the eye and summarize it. Staff and some of us have had a chance to go through most of the testimony and we would like to have more time for questions and dialog between the panel and this kind of thing, because that is where we learn a lot, rather than what is simply in the prepared testimony.

So if you will rise and raise your right hands, we will swear you in.

[Witnesses sworn.]

Mr. HORN. The clerk will note that all four witnesses have affirmed the oath and we will begin with Mr. Willemssen, Joel Willemssen, Director of Accounting and Information Management Division, U.S. General Accounting Office. He has been our lead witness at every hearing, so he is seeing America too.

STATEMENTS OF JOEL WILLEMSSEN, DIRECTOR, ACCOUNTING AND INFORMATION MANAGEMENT DIVISION, U.S. GENERAL ACCOUNTING OFFICE; RONALD VIDMAR, DEPUTY DIRECTOR, COMPUTER SERVICES DIVISION, OHIO DEPARTMENT OF ADMINISTRATIVE SERVICES, ACCOMPANIED BY DONALD BISHOP, ADMINISTRATOR OF THE OHIO DATA NETWORK; DONALD MASON, COMMISSIONER, PUBLIC UTILITIES COMMISSION OF OHIO; AND STANLEY KOZLOWSKI, YEAR 2000 MANAGER, CUYAHOGA COUNTY INFORMATION SERVICES CENTER

Mr. WILLEMSSEN. Thank you, Mr. Chairman, Ranking Member Kucinich, thank you for inviting GAO to testify today on the year 2000 or Y2K issue.

I will briefly summarize our statement on where the Federal Government currently stands, issues confronting State and local governments and briefly touch on the critical data exchange issue.

Regarding first, the Federal Government; overall, the 24 major agencies are making slow progress in fixing their systems. As we testified before you in June, Mr. Chairman, Federal agencies would need to dramatically increase their pace in order to make it in time. We are currently looking at the most current set of quarterly reports that agencies have submitted to see if that pace is quickening. Nevertheless, with the daunting testing challenge remaining, it is unlikely that all Federal agencies can make it in time.

One example I will point out is FAA. Since testifying before you in February, FAA has made great progress in managing its year 2000 problem and has completed some critical steps in defining which systems need to be corrected and how to accomplish this. But given their late start and with little time left, FAA has a tre-

mendous number of systems that they must still correct, test and implement and it is doubtful that they can do that in the time remaining. And therefore, FAA, similar to other agencies, must focus on business continuity and contingency planning to ensure that operations will continue in the likely event of some systems failures.

Turning to State and local governments, they also face a major risk from the year 2000 induced failures to the many vital services they provide such as benefit payments, transportation and public safety. To effectively manage their year 2000 projects and mitigate Y2K risks, State and local governments must perform the same types of activities that the Federal agencies must do. Those activities include such things as priority setting, progress reporting and contingency planning.

Now your hearings across the country have also identified what we feel are some best practices that could be adopted by others. For example, we found in the State of New York, they have identified a top 40 list of the highest priority systems that they want to fix regardless of what gets in their way. Similarly, when we were in Dallas, we saw that the city of Lubbock was planning a Y2K alert day this month where they were going to run some failure scenarios as if it was December 31, 1999 turning over to January 1, 2000 and with those failure scenarios see what kind of contingency plans they will need in place. So I think that one thing that these hearings, among many—one good thing is that it has shown some of these best practices in addition to getting the word out more across the country on what needs to be done.

Last, let me turn to the critical data exchange issue. Beyond the individual challenges that the Federal agencies, and State and local governments face, they have got to be concerned about the year 2000 readiness of their business partners. And in doing that, it takes a great deal to get on top of the data exchange issue. Our recent report on data exchanges shows that there are hundreds of thousands of these exchanges between Federal agencies, State and local governments, and the private sector. To successfully address this issue takes a great deal of work. Beyond just inventorying what your data exchanges are, you must assess those exchanges, reach agreements with your data exchange partners on the format and timing of how you are going to exchange data and then test those agreements. That is a very time-consuming process.

At the time our work was completed on the report we did on data exchanges, there was a great deal of work remaining. We made a number of recommendations to the Office of Management and Budget to address that. OMB has agreed to put in many of those recommendations, so we are hopeful that this issue can be addressed. But again, with the limited time remaining and the sheer magnitude of what we are looking at, again, it is unlikely that all of these can be properly addressed.

That concludes a summary of my statement and after the panel is finished, I will be pleased to address any questions you may have. Thank you again.

[The prepared statement of Mr. Willemssen follows:]

Mr. Chairman and Members of the Subcommittee:

Thank you for inviting us to participate in today's hearing on the Year 2000 problem. According to the report of the President's Commission on Critical Infrastructure Protection, the United States--with close to half of all computer capacity and 60 percent of Internet assets--is the world's most advanced and most dependent user of information technology.[1] Should these systems--which perform functions and services critical to our nation--suffer disruption, it could create a widespread crisis. Accordingly, the upcoming change of century is a sweeping and urgent challenge for public- and private-sector organizations alike.

Because of its urgent nature and the potentially devastating impact it could have on critical government operations, in February 1997 we designated the Year 2000 problem as a high-risk area for the federal government.[2] Since that time, we have issued over 50 reports and testimony statements detailing specific findings and recommendations related to the Year 2000 readiness of a wide range of federal agencies.[3] We have also

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[1]Critical Foundations: Protecting America's Infrastructures (President's Commission on Critical Infrastructure Protection, October 1997).

[2]High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997).

[3]A list of these publications is included as an attachment to this statement.

issued guidance to help organizations successfully address the issue.[4]

Today I will briefly discuss the Year 2000 risks facing the nation; highlight our major concerns with the federal government's progress in correcting its systems; identify state and local government Year 2000 issues; and discuss critical Year 2000 data exchange issues.

RISK OF YEAR 2000 DISRUPTION TO THE PUBLIC IS HIGH

The public faces a high risk that critical services provided by the government and the private sector could be severely disrupted by the Year 2000 computing crisis. Financial transactions could be delayed, flights grounded, power lost, and national defense affected. Moreover, America's infrastructures are a complex array of public and private enterprises with many interdependencies at all levels. These many interdependencies among governments and within key economic sectors could cause a single failure to have adverse repercussions. Key economic sectors that could be seriously affected if their systems are not Year 2000 compliant include information and telecommunications;

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[4]Year 2000 Computing Crisis: An Assessment Guide (GAO/AIMD-10.1.14, September 1997), which addresses the key tasks needed to complete each phase of a Year 2000 program (awareness, assessment, renovation, validation, and implementation); Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, August 1998), which describes the tasks needed to ensure the continuity of agency operations; and Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, Exposure Draft, June 1998), which discusses the need to plan and conduct Year 2000 tests in a structured and disciplined fashion.

banking and finance; health, safety, and emergency services; transportation; power and water; and manufacturing and small business.

The information and telecommunications sector is especially important. In testimony in June, we reported that the Year 2000 readiness of the telecommunications sector is one of the most crucial concerns to our nation because telecommunications are critical to the operations of nearly every public- and private-sector organization.[5] For example, the information and telecommunications sector (1) enables the electronic transfer of funds, the distribution of electrical power, and the control of gas and oil pipeline systems; (2) is essential to the service economy, manufacturing, and efficient delivery of raw materials and finished goods; and (3) is basic to responsive emergency services. Reliable telecommunications services are made possible by a complex web of highly interconnected networks supported by national and local carriers and service providers, equipment manufacturers and suppliers, and customers.

In addition to the risks associated with the nation's key economic sectors, one of the largest, and largely unknown, risks relates to the global nature of the problem. With the advent of electronic communication and international commerce, the United States and the rest of the world have become critically dependent on computers. However, there are indications of Year 2000 readiness problems in the international arena. For example,

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[5]Year 2000 Computing Crisis: Telecommunications Readiness Critical, Yet Overall Status Largely Unknown (GAO/T-AIMD-98-212, June 16, 1998).

a June 1998 informal World Bank survey of foreign readiness found that only 18 of 127 countries (14 percent) had a national Year 2000 program; 28 countries (22 percent) reported working on the problem; and 16 countries (13 percent) reported only awareness of the problem. No conclusive data were received from the remaining 65 countries surveyed (51 percent). In addition, a survey of 15,000 companies in 87 countries by the Gartner Group found that the United States, Canada, the Netherlands, Belgium, Australia, and Sweden were the Year 2000 leaders, while nations including Germany, India, Japan, and Russia were 12 months or more behind the United States.[6]

The Gartner Group's survey also found that 23 percent of all companies (80 percent of which were small companies) had not started a Year 2000 effort. Moreover, according to the Gartner Group, the "insurance, investment services and banking are industries furthest ahead. Healthcare, education, semiconductor, chemical processing, agriculture, food processing, medical and law practices, construction and government agencies are furthest behind. Telecom[munications], power, gas and water, software, shipbuilding and transportation are laggards barely ahead of furthest-behind efforts."

The following are examples of some of the major disruptions the public and private sectors could experience if the Year 2000 problem is not corrected.

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[6]Year 2000 World Status 2O98 Update - A Summary Report (Gartner Group, Report #M-04-6957, July 21, 1998).

- Unless the Federal Aviation Administration (FAA) takes much more decisive action, there could be grounded or delayed flights, degraded safety, customer inconvenience, and increased airline costs.[7]

- Aircraft and other military equipment could be grounded because the computer systems used to schedule maintenance and track supplies may not work. Further, the Department of Defense could incur shortages of vital items needed to sustain military operations and readiness.[8]

- Medical devices and scientific laboratory equipment may experience problems beginning January 1, 2000, if the computer systems, software applications, or embedded chips used in these devices contain two-digit fields for year representation.

- According to the Basle Committee on Banking Supervision--an international committee of banking supervisory authorities--failure to address the Year 2000 issue would cause banking institutions to experience operational problems or even bankruptcy.

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[7]FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998).

[8]Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998).

Recognizing the seriousness of the Year 2000 problem, on February 4, 1998 the President signed an executive order that established the President's Council on Year 2000 Conversion led by an Assistant to the President and comprised of one representative from each of the executive departments and from other federal agencies as may be determined by the Chair. The Chair of the Council was tasked with the following Year 2000 roles: (1) overseeing the activities of agencies; (2) acting as chief spokesperson in national and international forums; (3) providing policy coordination of executive branch activities with state, local, and tribal governments; and (4) promoting appropriate federal roles with respect to private-sector activities.

MUCH WORK REMAINS TO CORRECT THE FEDERAL GOVERNMENT'S YEAR 2000 PROBLEM

Addressing the Year 2000 problem in time will be a tremendous challenge for the federal government. Many of the federal government's computer systems were originally designed and developed 20 to 25 years ago, are poorly documented, and use a wide variety of computer languages, many of which are obsolete. Some applications include thousands, tens of thousands, or even millions of lines of code, each of which must be examined for date-format problems.

The federal government also depends on the telecommunications infrastructure to deliver a wide range of services. For example, the route of an electronic Medicare payment may traverse several networks–those operated by the Department of Health

and Human Services, the Department of the Treasury's computer systems and networks, and the Federal Reserve's Fedwire electronic funds transfer system. In addition, the year 2000 could cause problems for the many facilities used by the federal government that were built or renovated within the last 20 years and contain embedded computer systems to control, monitor, or assist in operations. For example, building security systems, elevators, and air conditioning and heating equipment could malfunction or cease to operate.

Agencies cannot afford to neglect any of these issues. If they do, the impact of Year 2000 failures could be widespread, costly, and potentially disruptive to vital government operations worldwide. Nevertheless, overall, the government's 24 major departments and agencies are making slow progress in fixing their systems. In May 1997, the Office of Management and Budget (OMB) reported that about 21 percent of the mission-critical systems (1,598 of 7,649) for these departments and agencies were Year 2000 compliant.[9] A year later, in May 1998, these departments and agencies reported that 2,914 of the 7,336 mission-critical systems in their current inventories, or about 40 percent, were

[9]The Social Security Administration's (SSA) mission-critical systems were not included in these totals because SSA did not report in May 1997 on a system basis. Rather, SSA reported at that time, and again in August 1997, on portions of systems that were compliant. For example, SSA reported on the status of 20,000-plus modules rather than 200-plus systems.

compliant.[10] However, unless agency progress improves dramatically, a substantial number of mission-critical systems will not be compliant in time.

In addition to slow governmentwide progress in fixing systems, our reviews of federal agency Year 2000 programs have found uneven progress. Some agencies are significantly behind schedule and are at high risk that they will not fix their systems in time. Other agencies have made progress, although risks continue and a great deal of work remains. The following are examples of the results of some of our recent reviews.

- Last month, we testified[11] about the Federal Aviation Administration's (FAA) progress in implementing a series of recommendations we had made earlier this year to assist FAA in completing overdue awareness and assessment activities.[12] These recommendations included assessing how the major FAA components and the aviation industry would be affected if Year 2000 problems were not corrected in time and completing inventories of all information systems, including data interfaces. Officials at both FAA and the Department of Transportation agreed with these recommendations, and the agency has made progress in implementing them. In our

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[10]The agencies latest quarterly reports were due in mid-August. We are in the process of obtaining and analyzing these reports.

[11]GAO/T-AIMD-98-251, August 6, 1998.

[12]Year 2000 Computing Crisis: FAA Must Act Quickly to Prevent Systems Failures (GAO/T-AIMD-98-63, February 4, 1998) and FAA Computer Systems: Limited Progress on Year 2000 Issue Increases Risk Dramatically (GAO/AIMD-98-45, January 30, 1998).

August testimony, we reported[13] that FAA had made progress in managing its Year 2000 problem and had completed critical steps in defining which systems needed to be corrected and how to accomplish this. However, with less than 17 months to go, FAA must still correct, test, and implement many of its mission-critical systems. It is doubtful that FAA can adequately do all of this in the time remaining. Accordingly, FAA must determine how to ensure continuity of critical operations in the likely event of some systems' failures.

- In October 1997, we reported that while SSA had made significant progress in assessing and renovating mission-critical mainframe software, certain areas of risk in its Year 2000 program remained.[14] Accordingly, we made several recommendations to address these risk areas, which included the Year 2000 compliance of the systems used by the 54 state Disability Determination Services[15] that help administer the disability programs. SSA agreed with these recommendations and, in July 1998, we reported that actions to implement these recommendations had either been taken or were underway.[16] Further, we found that SSA has maintained its place as a federal leader in addressing Year 2000 issues and has made significant progress in achieving

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[13]GAO/T-AIMD-98-251, August 6, 1998.

[14]Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997).

[15]These include the systems in all 50 states, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

[16]Social Security Administration: Subcommittee Questions Concerning Information Technology Challenges Facing the Commissioner (GAO/AIMD-98-235R, July 10, 1998).

systems compliance. However, essential tasks remain. For example, many of the states' Disability Determination Service systems still had to be renovated, tested, and deemed Year 2000 compliant.

- Our work has shown that much likewise remains to be done in the Department of Defense and the military services.[17] For example, our recent report on the Navy found that while positive actions have been taken, remediation progress had been slow and the Navy was behind schedule in completing the early phases of its Year 2000 program.[18] Further, the Navy had not been effectively overseeing and managing its Year 2000 efforts and lacked complete and reliable information on its systems and on the status and cost of its remediation activities. We have recommended improvements to the Department of Defense and the military services' Year 2000 programs with which they have concurred.

In addition to these examples, our reviews have shown that many agencies had not adequately acted to establish priorities, solidify data exchange agreements, or develop contingency plans. Likewise, more attention needs to be devoted to (1) ensuring that the government has a complete and accurate picture of Year 2000 progress, (2) setting

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[17]Defense Computers: Year 2000 Computer Problems Put Navy Operations At Risk (GAO/AIMD-98-150, June 30, 1998), Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program (GAO/AIMD-98-53, May 29, 1998), GAO/AIMD-98-72, April 30, 1998, and Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998).

[18]GAO/AIMD-98-150, June 30, 1998.

governmentwide priorities, (3) ensuring that the government's critical core business processes are adequately tested, (4) recruiting and retaining information technology personnel with the appropriate skills for Year 2000-related work, and (5) assessing the nation's Year 2000 risks, including those posed by key economic sectors. I would like to highlight some of these vulnerabilities, and our recommendations made in April 1998 for addressing them.[19]

- First, governmentwide priorities in fixing systems have not yet been established. These governmentwide priorities need to be based on such criteria as the potential for adverse health and safety effects, adverse financial effects on American citizens, detrimental effects on national security, and adverse economic consequences. Further, while individual agencies have been identifying mission-critical systems, this has not always been done on the basis of a determination of the agency's most critical operations. If priorities are not clearly set, the government may well end up wasting limited time and resources in fixing systems that have little bearing on the most vital government operations. Other entities have recognized the need to set priorities. For example, Canada has established 48 national priorities covering areas such as national defense, food production, safety, and income security.

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[19] Year 2000 Computing Crisis: Potential for Widespread Disruption Calls for Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998).

- Second, business continuity and contingency planning across the government has been inadequate. In their May 1998 quarterly reports to OMB, only four agencies reported that they had drafted contingency plans for their core business processes. Without such plans, when unpredicted failures occur, agencies will not have well-defined responses and may not have enough time to develop and test alternatives. Federal agencies depend on data provided by their business partners as well as services provided by the public infrastructure (e.g., power, water, transportation, and voice and data telecommunications). One weak link anywhere in the chain of critical dependencies can cause major disruptions to business operations. Given these interdependencies, it is imperative that contingency plans be developed for all critical core business processes and supporting systems, regardless of whether these systems are owned by the agency. Our recently issued guidance aims to help agencies ensure such continuity of operations through contingency planning.[20]

- Third, OMB's assessment of the current status of federal Year 2000 progress is predominantly based on agency reports that have not been consistently reviewed or verified. Without independent reviews, OMB and the President's Council on Year 2000 Conversion have little assurance that they are receiving accurate information. In fact, we have found cases in which agencies' systems compliance status as reported to OMB has been inaccurate. For example, the DOD Inspector General estimated that almost three quarters of DOD's mission-critical systems reported as compliant in

[20]GAO/AIMD-10.1.19, August 1998.

November 1997 had not been certified as compliant by DOD components.[21] In May 1998, the Department of Agriculture reported 15 systems as compliant, even though these were replacement systems that were still under development or were planned for development.[22] (The department removed these systems from compliant status in its August 1998 quarterly report.)

- Fourth, end-to-end testing responsibilities have not yet been defined. To ensure that their mission-critical systems can reliably exchange data with other systems and that they are protected from errors that can be introduced by external systems, agencies must perform end-to-end testing for their critical core business processes. The purpose of end-to-end testing is to verify that a defined set of interrelated systems, which collectively support an organizational core business area or function, will work as intended in an operational environment. In the case of the year 2000, many systems in the end-to-end chain will have been modified or replaced. As a result, the scope and complexity of testing--and its importance--is dramatically increased, as is the difficulty of isolating, identifying, and correcting problems. Consequently, agencies must work early and continually with their data exchange partners to plan and execute effective end-to-end tests. So far, lead agencies have not been designated to take responsibility for ensuring that end-to-end testing of processes and supporting

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[21]Year 2000 Certification of Mission-Critical DOD Information Technology Systems (DOD Office of the Inspector General, Report No. 98-147, June 5, 1998).

[22]Year 2000 Computing Crisis: USDA Faces Tremendous Challenges in Ensuring That Vital Public Services Are Not Disrupted (GAO/T-AIMD-98-167, May 14, 1998).

systems is performed across boundaries, and t ndependent verification and validation of such testing is ensured. We hav forth a structured approach to testing in our recently released exposure draft

In our April 1998 report on governmentwide Yea 0 progress, we made a number of recommendations to the Chair of the President's cil on Year 2000 Conversion aimed at addressing these problems. These included

- establishing governmentwide priorities and er ng that agencies set agencywide priorities,
- developing a comprehensive picture of the na Year 2000 readiness,
- requiring agencies to develop contingency pla r all critical core business processes,
- requiring agencies to develop an independen fication strategy to involve inspectors general or other independent orga ons in reviewing Year 2000 progress, and

[23]GAO/AIMD-10.1.21, Exposure Draft, June 1998

- designating lead agencies responsible for ensuring that end-to-end operational testing of processes and supporting systems is performed.

We are encouraged by actions the Council is taking in response to some of our recommendations. For example, OMB and the Chief Information Officers Council adopted our guide providing information on business continuity and contingency planning issues common to most large enterprises as a model for federal agencies.[24] However, as we recently testified before this Subcommittee, some actions have not been fully addressed--principally with respect to setting national priorities and end-to-end testing.[25]

STATE AND LOCAL GOVERNMENTS FACE SIGNIFICANT YEAR 2000 RISKS

State and local governments also face a major risk of Year 2000-induced failures to the many vital services--such as benefits payments, transportation, and public safety--that they provide. For example,

- food stamps and other types of payments may not be made or could be made for an incorrect amount,

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[24]GAO/AIMD-10.1.19, August 1998.

[25]Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO/T-AIMD-98-205, June 10, 1998).

- date-dependent signal timing patterns could be incorrectly implemented at highway intersections, and safety severely compromised, if traffic signal systems run by state and local governments do not process four-digit years correctly, and

- criminal records (i.e., prisoner release or parole eligibility determinations) may be adversely affected by the Year 2000 problem.

Recent surveys of state Year 2000 efforts have indicated that much remains to be completed. For example, a July 1998 survey of state Year 2000 readiness conducted by the National Association of State Information Resource Executives, Inc., found that only about one third of the states reported that 50 percent or more of their critical systems[26] had been completely assessed, remediated, and tested.

In a June 1998 survey conducted by the Department of Agriculture's Food and Nutrition Service, only 3 and 14 states,[27] respectively, reported that the software, hardware, and telecommunications that support the Food Stamp Program, and the Women, Infants, and Children program, were Year 2000 compliant. Although all but one of the states reported that they would be Year 2000 compliant by January 1, 2000, many of the states

[26]Critical systems were defined as "systems that effect public safety, public health, and financial and personnel aspects of government services."

[27]The Food and Nutrition Service included the District of Columbia, Guam, Puerto Rico, and the Virgin Islands in its survey. The Food and Nutrition Service did not verify the information provided by the states.

reported that their systems are not due to be compliant until after March 1999 (the federal government's Year 2000 implementation goal). Indeed, 4 and 5 states, respectively, reported that the software, hardware, and telecommunications supporting the Food Stamp Program, and the Women, Infants, and Children program would not be Year 2000 compliant until the last quarter of calendar year 1999, which puts them at high risk of failure due to the need for extensive testing.

State audit organizations have identified other significant Year 2000 concerns. For example, (1) Illinois' Office of the Auditor General reported that significant future efforts were needed to ensure that the year 2000 would not adversely affect state government operations,[28] (2) Vermont's Office of Auditor of Accounts reported that the state faces the risk that critical portions of its Year 2000 compliance efforts could fail,[29] (3) Texas' Office of the State Auditor reported[30] that many state entities had not finished their embedded systems[31] inventories and, therefore, it is not likely that they will complete their embedded systems repairs before the Year 2000, and (4) Florida's Auditor General has issued several reports detailing the need for additional Year 2000 planning at various

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[28]Bureau of Communications and Computer Services Third Party Review (July 1, 1998).

[29]State Auditor's Report On Vermont's Year 2000 Preparedness For The Period Ending April 1, 1998 (May 5, 1998).

[30]A Review of Oversight for the State's Embedded Systems Year 2000 Repair Efforts (SAO Report No. 98-056, August 10, 1998).

[31]Embedded systems are special-purpose computers built into other devices. They are used in, for example, security systems, prison control units, and certain medical equipment.

district school boards and community colleges.[32] State audit offices have also made recommendations, including the need for increased oversight, Year 2000 project plans, contingency plans, and personnel recruitment and retention strategies.

In the course of these field hearings, states and municipalities have testified about Year 2000 practices that could be adopted by others. For example:

- New York established a "top 40" list of priority systems having a direct impact on public health, safety, and welfare, such as systems that support child welfare, state aid to schools, criminal history, inmate population management, and tax processing. According to New York, "the Top 40 systems must be compliant, no matter what."

- The city of Lubbock, Texas is planning a Year 2000 "drill" this month. To prepare for the drill, Lubbock is developing scenarios of possible Year 2000-induced failures, as well as more normal problems (such as inclement weather) that could occur at the change of century.

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[32]Examples of these reports include, Report on Audit of the Alachua County District School Board For The Fiscal Year Ended June 30, 1997 (Report No. 13219, April 21, 1998) and Operational Audit of the District Board of Trustees Broward Community College For The Period July 1, 1996 through June 30, 1997 (Report No. 13222, April 30, 1998). The Year 2000 work for these reports was performed in early 1998.

- Louisiana established a $5 million Year 2000 funding pool to assist agencies experiencing emergency circumstances in mission-critical applications and which are unable to correct the problems with existing resources.

Regarding Ohio, our review of the state's Year 2000 Internet World Wide Web site found that it had developed a detailed Year 2000 certification checklist. The checklist included items such as the first potential failure date, date fields, interfaces, and testing. However, according to Ohio's Year 2000 Administrator, implementation of this checklist is voluntary.

According to Ohio's Year 2000 Internet World Wide Web site, while many of the state's agencies estimated that they would complete their Year 2000 remediation in late 1998 or early 1999, several critical agencies are not due to be compliant until mid-1999. For example, Ohio's (1) Department of Education reported it was 35 percent complete as of June 1998 and planned to be complete in July 1999, (2) Department of Health reported that it was 70 percent complete as of August 1998 and planned to be complete in July 1999, and (3) Department of Transportation reported that it was 70 percent complete as of April 1998 and planned to be complete in June 1999.

FEDERAL/STATE DATA EXCHANGES CRITICAL TO DELIVERY OF SERVICES

To fully address the Year 2000 risks that states and the federal government face, data exchanges must also be confronted--a monumental issue. As computers play an ever-increasing role in our society, exchanging data electronically has become a common method of transferring information among federal, state, and local governments. For example, the Social Security Administration exchanges data files with the states to determine the eligibility of disabled persons for disability benefits. In another example, the National Highway Traffic Safety Administration provides states with information needed for driver registrations. As computer systems are converted to process Year 2000 dates, the associated data exchanges must also be made Year 2000 compliant. If the data exchanges are not Year 2000 compliant, data will not be exchanged or invalid data could cause the receiving computer systems to malfunction or produce inaccurate computations.

Our recent report[33] on actions that have been taken to address Year 2000 issues for electronic data exchanges[34] revealed that federal agencies and the states use thousands of such exchanges to communicate with each other and other entities. For example, federal

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[33]Year 2000 Computing Crisis: Actions Needed on Electronic Data Exchanges (GAO/AIMD-98-124, July 1, 1998).

[34]To perform this review, we developed and sent a data collection instrument to survey 42 federal departments, all states, the District of Columbia, and Puerto Rico.

agencies reported that their mission-critical systems have almost 500,000 data exchanges with other federal agencies, states, local governments, and the private sector.

To successfully remediate their data exchanges, federal agencies and the states must (1) assess information systems to identify data exchanges that are not Year 2000 compliant; (2) contact exchange partners and reach agreement on the date format to be used in the exchange; (3) determine if data bridges and filters are needed and, if so, reach agreement on their development; (4) develop and test such bridges and filters,[35] (5) test and implement new exchange formats; and (6) develop contingency plans and procedures for data exchanges.

At the time of our review, much work remained to ensure that federal and state data exchanges will be Year 2000 compliant. About half of the federal agencies reported during the first quarter of 1998 that they had not yet finished assessing their data exchanges. Moreover, almost half of the federal agencies reported that they had reached agreements on 10 percent or fewer of their exchanges,[36] few federal agencies reported having installed bridges or filters, and only 38 percent of the agencies reported that they had developed contingency plans for data exchanges.

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[35]A bridge is used to convert incoming 2-digit years to 4-digit years or to convert outgoing 4-digit years to 2-digit years. A filter is used to screen and identify incoming noncompliant data to prevent it from corrupting data in the receiving system.

[36]This does not include the status of agreements reported by the Federal Reserve. The Federal Reserve controls the data exchange software used by its partners and does not need to reach agreement with exchange partners on formats.

Further, the status of the data exchange efforts of 15 of the 39 state-level organizations that responded to our survey was not discernable because they were not able to provide us with information on their total number of exchanges and the number assessed. Of the 24 state-level organizations that provided actual or estimated data, they reported, on average, that 47 percent of the exchanges had not been assessed. In addition, similar to the federal agencies, state-level organizations reported having made limited progress in reaching agreements with exchange partners, installing bridges and filters, and developing contingency plans. However, we could draw only limited conclusions on the status of the states' actions because data were provided on only a small portion of states' data exchanges.

To strengthen efforts to address data exchanges, we made several recommendations to OMB. In response, OMB agreed that it needed to increase its efforts in this area. For example, OMB noted that federal agencies had provided the General Services Administration with a list of their data exchanges with the states. In addition, as a result of an agreement reached at an April 1998 federal/state data exchange meeting,[37] the states were supposed to verify the accuracy of these initial lists by June 1, 1998.[38] OMB

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[37]Initial agreements between the federal government and the states on steps to address Year 2000 data exchange issues were reached at an October 1997 state/federal summit, sponsored by the federal Chief Information Officer Council and National Association of State Information Resource Executives, Inc., and hosted by the Commonwealth of Pennsylvania.

[38]According to the National Association of State Information Resource Executives, Inc., as of early August 1998, 16 states had completed the verification of their federal/state data exchanges and an additional 9 states had completed 80 percent of the verification.

also noted that the General Services Administration is planning to collect and post information on its Internet World Wide Web site on the progress of federal agencies and states in implementing Year 2000 compliant data exchanges.

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In summary, federal, state, and local efforts must increase substantially to ensure that major service disruptions do not occur. Greater leadership and partnerships are essential if government programs are to meet the needs of the public at the turn of the century.

Mr. Chairman, this concludes my statement. I would be happy to respond to any questions that you or other members of the Subcommittee may have at this time.

GAO REPORTS AND TESTIMONY ADDRESSING THE YEAR 2000 CRISIS

FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998)

Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, August 1998)

Internal Revenue Service: Impact of the IRS Restructuring and Reform Act on Year 2000 Efforts (GAO/GGD-98-158R, August 4, 1998)

Social Security Administration: Subcommittee Questions Concerning Information Technology Challenges Facing the Commissioner (GAO/AIMD-98-235R, July 10, 1998)

Year 2000 Computing Crisis: Actions Needed on Electronic Data Exchanges (GAO/AIMD-98-124, July 1, 1998)

Defense Computers: Year 2000 Computer Problems Put Navy Operations At Risk (GAO/AIMD-98-150, June 30, 1998)

Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, Exposure Draft, June 1998)

Year 2000 Computing Crisis: Testing and Other Challenges Confronting Federal Agencies (GAO/T-AIMD-98-218, June 22, 1998)

Year 2000 Computing Crisis: Telecommunications Readiness Critical, Yet Overall Status Largely Unknown (GAO/T-AIMD-98-212, June 16, 1998)

GAO Views on Year 2000 Testing Metrics (GAO/AIMD-98-217R, June 16, 1998)

IRS' Year 2000 Efforts: Business Continuity Planning Needed for Potential Year 2000 System Failures (GAO/GGD-98-138, June 15, 1998)

Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO/T-AIMD-98-205, June 10, 1998)

Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program (GAO/AIMD-98-53, May 29, 1998)

Year 2000 Computing Crisis: USDA Faces Tremendous Challenges in Ensuring That Vital Public Services Are Not Disrupted (GAO/T-AIMD-98-167, May 14, 1998)

Securities Pricing: Actions Needed for Conversion to Decimals (GAO/T-GGD-98-121, May 8, 1998)

Year 2000 Computing Crisis: Continuing Risks of Disruption to Social Security, Medicare, and Treasury Programs (GAO/T-AIMD-98-161, May 7, 1998)

IRS' Year 2000 Efforts: Status and Risks (GAO/T-GGD-98-123, May 7, 1998)

Air Traffic Control: FAA Plans to Replace Its Host Computer System Because Future Availability Cannot Be Assured (GAO/AIMD-98-138R, May 1, 1998)

Year 2000 Computing Crisis: Potential For Widespread Disruption Calls For Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998)

Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998)

Department of the Interior: Year 2000 Computing Crisis Presents Risk of Disruption to Key Operations (GAO/T-AIMD-98-149, April 22, 1998)

Tax Administration: IRS' Fiscal Year 1999 Budget Request and Fiscal Year 1998 Filing Season (GAO/T-GGD/AIMD-98-114, March 31, 1998)

Year 2000 Computing Crisis: Strong Leadership Needed to Avoid Disruption of Essential Services (GAO/T-AIMD-98-117, March 24, 1998)

Year 2000 Computing Crisis: Federal Regulatory Efforts to Ensure Financial Institution Systems Are Year 2000 Compliant (GAO/T-AIMD-98-116, March 24, 1998)

Year 2000 Computing Crisis: Office of Thrift Supervision's Efforts to Ensure Thrift Systems Are Year 2000 Compliant (GAO/T-AIMD-98-102, March 18, 1998)

Year 2000 Computing Crisis: Strong Leadership and Effective Public/Private Cooperation Needed to Avoid Major Disruptions (GAO/T-AIMD-98-101, March 18, 1998)

Post-Hearing Questions on the Federal Deposit Insurance Corporation's Year 2000 (Y2K) Preparedness (AIMD-98-108R, March 18, 1998)

SEC Year 2000 Report: Future Reports Could Provide More Detailed Information (GAO/GGD/AIMD-98-51, March 6, 1998)

Year 2000 Readiness: NRC's Proposed Approach Regarding Nuclear Powerplants (GAO/AIMD-98-90R, March 6, 1998)

Year 2000 Computing Crisis: Federal Deposit Insurance Corporation's Efforts to Ensure Bank Systems Are Year 2000 Compliant (GAO/T-AIMD-98-73, February 10, 1998)

Year 2000 Computing Crisis: FAA Must Act Quickly to Prevent Systems Failures (GAO/T-AIMD-98-63, February 4, 1998)

FAA Computer Systems: Limited Progress on Year 2000 Issue Increases Risk Dramatically (GAO/AIMD-98-45, January 30, 1998)

Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998)

Year 2000 Computing Crisis: Actions Needed to Address Credit Union Systems' Year 2000 Problem (GAO/AIMD-98-48, January 7, 1998)

Veterans Health Administration Facility Systems: Some Progress Made In Ensuring Year 2000 Compliance, But Challenges Remain (GAO/AIMD-98-31R, November 7, 1997)

Year 2000 Computing Crisis: National Credit Union Administration's Efforts to Ensure Credit Union Systems Are Year 2000 Compliant (GAO/T-AIMD-98-20, October 22, 1997)

Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997)

Defense Computers: Technical Support Is Key to Naval Supply Year 2000 Success (GAO/AIMD-98-7R, October 21, 1997)

Defense Computers: LSSC Needs to Confront Significant Year 2000 Issues (GAO/AIMD-97-149, September 26, 1997)

Veterans Affairs Computer Systems: Action Underway Yet Much Work Remains To Resolve Year 2000 Crisis (GAO/T-AIMD-97-174, September 25, 1997)

Year 2000 Computing Crisis: Success Depends Upon Strong Management and Structured Approach (GAO/T-AIMD-97-173, September 25, 1997)

Year 2000 Computing Crisis: An Assessment Guide (GAO/AIMD-10.1.14, September 1997)

Defense Computers: SSG Needs to Sustain Year 2000 Progress (GAO/AIMD-97-120R, August 19, 1997)

Defense Computers: Improvements to DOD Systems Inventory Needed for Year 2000 Effort (GAO/AIMD-97-112, August 13, 1997)

Defense Computers: Issues Confronting DLA in Addressing Year 2000 Problems (GAO/AIMD-97-106, August 12, 1997)

Defense Computers: DFAS Faces Challenges in Solving the Year 2000 Problem (GAO/AIMD-97-117, August 11, 1997)

Year 2000 Computing Crisis: Time is Running Out for Federal Agencies to Prepare for the New Millennium (GAO/T-AIMD-97-129, July 10, 1997)

Veterans Benefits Computer Systems: Uninterrupted Delivery of Benefits Depends on Timely Correction of Year-2000 Problems (GAO/T-AIMD-97-114, June 26, 1997)

Veterans Benefits Computer Systems: Risks of VBA's Year-2000 Efforts (GAO/AIMD-97-79, May 30, 1997)

Medicare Transaction System: Success Depends Upon Correcting Critical Managerial and Technical Weaknesses (GAO/AIMD-97-78, May 16, 1997)

Medicare Transaction System: Serious Managerial and Technical Weaknesses Threaten Modernization (GAO/T-AIMD-97-91, May 16, 1997)

Year 2000 Computing Crisis: Risk of Serious Disruption to Essential Government Functions Calls for Agency Action Now (GAO/T-AIMD-97-52, February 27, 1997)

Year 2000 Computing Crisis: Strong Leadership Today Needed To Prevent Future Disruption of Government Services (GAO/T-AIMD-97-51, February 24, 1997)

High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997)

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Mr. HORN. Well, we thank you for coming and sharing that with us. You have got some very rich information in there. Are you going to be in Indianapolis and Chicago also?

Mr. WILLEMSSEN. Yes, Mr. Chairman, I will.

Mr. HORN. That is fine. The next witness is Mr. Ronald Vidmar, the deputy director, Computer Services Division, Ohio Department of Administrative Services, and he is accompanied by Donald Bishop, administrator of the Ohio Data Network. Is Mr. Bishop with you?

Mr. VIDMAR. Yes.

Mr. HORN. Is he going to testify?

Mr. VIDMAR. He does not plan to testify, but if we are asked questions, he will be available to help me answer.

Mr. HORN. Sure. But have him come up and sit with you there, he might as well be comfortable and if he starts testifying, we will swear him in, unless you can lip sync. Welcome, Mr. Bishop.

So go ahead, Mr. Vidmar.

Mr. VIDMAR. Chairman Horn, Representative Kucinich, we thank you for the opportunity to be here to share our information with you on the millennium problem and we thank you also for your efforts nationally.

The State of Ohio began assessing this problem in early 1996, and a major awareness program was implemented by our staff and national consultants as well. We determined that from a funding standpoint, we had a $61 million problem. That represented money that agencies would require over and above commitments they obviously would be making with their own staff. To date, we have not increased that amount, however, we do anticipate seeking some additional funding in the year 2000–2001 as our fiscal year, that beginning in 1999.

To accomplish this organizationally, we created what we called a competency center, staffed that with qualified people to help State agencies, especially in the area of project management, which even today continues to be our largest problem. That center has done a number of things, analyzed and recommended appropriate tools and methodologies. They have identified the necessary additional computing capacity so we can do parallel testing, coordinate with the State's attorney general on legal issues, obtained extraordinarily creative authority which combined with electronic processes for procurements, have enabled us to get people, vendors, on the job much more quickly to put up the Web site and so forth.

And I might add that the Web sites from all States and from the Federal Government are one of the major tools, in my opinion, in helping us to share in good information from others.

We are estimating today, and we do a report card, as does the Federal Government, that our agencies are about 60 percent complete. This, as it turns out, is based on self-reporting and we are now going into a process of getting under the covers and requiring independent validation and verification of all of our critical systems.

There has been a significant learning curve associated with this process and we have made a number of changes based on our experiences and the experiences of others. I just mentioned a couple of things here that certainly—as has already been mentioned a couple

of times, the extraordinary amount of interdependency we have with other political subdivisions within our own agencies and with our vendors, has been very complicated. We are now finding that where we have required compliance in the majority of contracts we have entered into in the last couple of years, that we now have a number of vendors who are refusing to sign these contracts and in some cases that has caused us to do software changes.

We are also beginning to receive requests—what is good for the goose is good for the gander—requests to warranty our products and interfaces and again this has a legal dimension and can be time-consuming but it is certainly appropriate.

As the project begins to mature, we are beginning to redirect more of our efforts to ensuring that all agencies have appropriate contingency plans and in a few cases, causing some folks to opt for less elegant solutions because as a practical matter, we must ensure that our most critical systems are operable in the year 2000. And we stand ready to relocate resources as is necessary to ensure that this occurs based on priority and criticalness of these applications.

Generally, we feel the project is proceeding according to plans and we have extended, to some extent, our original objectives to include more outreach, especially with county and local governments. Tomorrow we are co-sponsoring a meeting with Ohio's county auditors and county commissioners for the express purposes of exchanging information on this process. We have been working with Ohio's regulatory agencies, one of which will testify here today, to try to understand better and assist, if that is at all possible, private sector organizations within the sectors that we regulate.

We continue to be cautiously optimistic but plan only to increase our efforts as we approach the year 1999 and beyond, if necessary. In the event that this means abandoning good work that can be done in State government prior to that time, we are prepared to do that.

The only concern that I chose to include in this testimony was a concern about a growing public perception that there is kind of an impending disaster. This has a lot to do with what we are reading in the media about worse case scenarios, which is very important in terms of awareness and getting people goosed up, and we appreciate that. At the same time, I think that we have a responsibility in this activity to let the press, and consequently we hope the public know that we are on the job, that we are having successes and letting them know when we do that. For instance, we will make a release at the end of this week indicating that we went to our remote disaster site in Philadelphia, PA where we tested all of the mainframe hardware and all of the systems software that runs on that hardware successfully. Now that represents about 65 percent of the work that is done in the State of Ohio, and it does a couple of things. I think by making it public, No. 1, it gives citizens assurances that our largest computers are going to run after the year 2000, but also gives our agencies assurances that they will have good stable platforms on which to test their applications.

So with that, I will conclude my testimony and am available to answer questions and we will be happy to secure additional information if we do not have it with us at this time.

[The prepared statement of Mr. Vidmar follows:]

HOUSE TASK FORCE ON THE YEAR 2000 PROBLEM

The following testimony was presented to the House Task Force on the Year 2000 Computer Problem in Lakewood, Ohio on September 1, 1998, by Ron Vidmar, Deputy Director of the Ohio Department of Administrative Services for Computer Services.

Thank you for the opportunity to share the status of our work in Ohio on the Millenium problem and for your efforts nationally.

The State of Ohio began assessing this problem in early 1996, and a major awareness program was implemented throughout state government involving industry experts as well as state personnel. As a result of that assessment, the Ohio General Assembly budgeted $61million for more detailed assessment, remediation and testing. This amount provided only for costs that Ohio state agencies anticipated over and above commitments of their own staff time. The remainder of the costs were absorbed within regular agency budgets. It was anticipated at that time that approximately 80 million lines of code would need to be reviewed in order to correct our systems. To date, no additional funding has been requested, although we expect a request in the 2000-2001 budget, which begins in July 1999.

All state agencies were required to complete plans for remediation that included not only computer programs and related interfaces, but also embedded chips and any form of mechanical equipment that could be affected. The Department of Administrative Services along with the Governor's Interagency Management Group were charged with oversight of this project.

To accomplish this, the Department created a Competency Center, staffed with personnel who provided assistance to state agencies, especially in the area of project management, assessed and recommended appropriate tools and methodologies, provided additional computing capacity to enable parallel testing, coordinated with the state's Attorney General on legal issues, sought extraordinary procurement authority, created an electronic interface to get contractors on the job more rapidly, and, in general, served as a clearing house for information related to this problem.

Today, we estimate that Ohio government agencies are 60% complete based on self-reporting. We are, however, in the process of subjecting our most critical systems to assessment by Independent Verification and Validation organizations.

There has been a significant learning curve associated with this project. As the project progressed we learned a number of things based on our own experiences and the experiences of others. Examples would be dealing with the integration of our systems and

subsequent dependence on other organizations and the vendor community. While we have insisted on Y2K compliance in all of our contracts, a handful of vendors have refused to give us those assurances, causing us, in some cases, to make software changes. The legal implications related to this program continue to surface. We are now receiving many requests to warrantee our own products and interfaces, which is appropriate but time consuming.

As the project begins to mature, we are beginning to redirect some of our efforts to contingency planning, and in a few cases opting for less elegant solutions in favor of more practical approaches, knowing that complete remediation will, in some cases be delayed until after the Year 2000 deadline. Finally, we stand ready to reallocate resources if necessary to our most critical systems.

While we feel that this project is proceeding nearly according to plan, we have extended the original objectives to include significantly more outreach through direct contact with other political subdivisions and by working with the state's regulatory agencies to assess, and assist where possible, private organizations within the sectors defined by state regulation. For example, we will co-sponsor a seminar tomorrow, September 2, with the County Auditor's Association and the County Commissioner's Association to share our experiences with county officials. Earlier this summer, we convened all of the state's regulatory agencies to devise a plan for drilling down into the sectors that they regulate.

While we are cautiously optimistic about the outcome of this program, we plan only to increase our efforts through December 31, 1999, and beyond if necessary. In the event that this means delaying or abandoning other important programs – so be it.

We do have a concern, however, that there is a growing public perception of impending disaster, based on bombardment by the media of worst case scenarios; and we fear that some of this prophecy can be self-fulfilling. To this end, we are committed to advising the media, and therefore, we hope the public, of successes as they occur. For example, we will soon release the results of a test that the State of Ohio completed at our remote disaster recovery site in Philadelphia, where we successfully operated all of the hardware and system software that represents the states central mainframe computing center. This is the platform on which approximately 65% of the states computing will be done. This is assurance to the public that the states primary computers will run, and that agencies testing specific applications will have a solid platform on which to test. We will continue to keep the public advised of the status of this program.

I would be happy at this time to answer any questions, or secure information you may desire if I do not have it at this time.

Mr. HORN. Well, we thank you, Mr. Vidmar, that is an excellent written statement and you have given us a very good summary of that and I think you can just see how well organized this State is, you are probably way ahead of most States. I suspect we have got a number of the large States similar to Ohio and Pennsylvania, New York, California where they are working very hard on this. It is an impressive statement.

We now go to Mr. Mason is the commissioner of the Public Utilities Commission of Ohio.

Mr. MASON. Chairman Horn, Congressman Kucinich, on behalf of the Public Utilities Commission of Ohio [PUCO], I want to extend our sincere words of appreciation for today's opportunity to discuss Y2K. It is our collective thought that the more focus of attention spent on this business problem in 1998 and in 1999, the less it will be a focus of attention in the year 2000.

In order to summarize and get to the heart of the PUCO concern, I filed our testimony but I will begin our testimony actually on page 3.

In order to assess the level of preparedness of Ohio utilities, the Commission has directed the staff to conduct an investigation into the adequacy of utility plans to become Y2K compliant. The scope of the investigation covers the jurisdictional electric companies, gas distribution companies, local exchange (telephone) carriers, and water companies.

Our investigation will utilize all publicly available information such as SEC 10–K and 10–Q filings, company annual reports and Web-site information. However, our main source of information for the investigation will come directly from the utility companies in the form of written responses to staff information requests, onsite meetings and periodic updates. Many of the smaller utilities, as well as the utilities beyond the PUCO's jurisdiction such as municipal utilities and rural co-ops, will be addressed through industry associations such as AMP-Ohio, which stands for Municipal Power-Ohio, Buckeye Power, Ohio Gas Association [OGA], and the OTIA, which is the Ohio Telecommunications Industry Association.

We are working with and will continue to rely upon industry groups to the greatest extent possible. For instance, sharing of technical information should be done through industry groups. However, such groups usually do not have any enforcement powers; the role of the PUCO is to facilitate, encourage, and, when necessary, require sharing of information. However, I am pleased to report that we have found the sharing of information to be a common tool.

The objective of the staff's investigation is to assess the Y2K remediation efforts, as well as contingency and emergency planning of the above mentioned utilities.

Our present investigation is a comprehensive review of the companies' responses to an April survey. This analysis is providing our staff a reconnaissance review to become familiar with industry issues and to determine, to the extent possible, which companies seem to be further behind in the remediation process than others. We will request that each company or industry association provide a detailed, onsite presentation and describe their Y2K planning and remediation efforts. The presentations will cover the remedi-

ation plan, budget and manpower requirements as well as actual progress relative to plans. The companies will also report on contingency and emergency planning efforts including reporting on communication linkages established with key external contacts such as NERC, FERC, FCC, and the Governor. Key supplier readiness assessments will also be described.

Each company is being required to provide the staff with quarterly progress presentations or reports from the date of the initial staff presentation until the century date change has occurred discussing progress on major systems remediated and comparisons of projected versus actual timelines. Changes to contingency and emergency plans will also be reported.

It is not the intent of the PUCO to intervene on a technical basis in Y2K actions. We have neither the resources nor the desire to micromanage this process. We see our role as providing a review of plans for reasonableness and completeness and fostering appropriate coordination between utilities, industry groups, and various levels of government.

This investigation is continuing this month with survey review and the scheduling of company presentations. Company presentations to staff will begin October 1998 and be completed by March 1999. The information garnered from these interviews will allow the investigation to re-focus, if necessary, on those companies that appear to be having the biggest problems with their remediation efforts. For those companies where remediation appears to be under control, the investigation will focus on contingency and emergency planning. A draft interim or status report will be prepared from the perspective of this end-of-quarter date.

Our staff will continue to receive updates from the companies in the form of quarterly reports or presentations. These begin in the first quarter for each company after that company's initial presentation to staff has been made. Staff will compile these updates, that is update the interim report, to the commissioners for appropriate action.

I also have included information on how we are handling commercial and transportation issues and again, in the sake of summarizing would like to just go ahead and say I am prepared to answer questions relative to our Commission efforts; however, we would like to also close by restating our appreciation for an ongoing attention by the House Subcommittee of Government Management, Information, and Technology. We are pleased to report that the industries which we regulate and interact have shown a positive spirit of cooperation in the sharing of information across corporate barriers. We think it is efforts such as this which will make Y2K on January 1, 2000 a non-event.

[The prepared statement of Mr. Mason follows:]

TESTIMONY OF DONALD L. MASON, ESQ.
PUBLIC UTILITIES COMMISSION OF OHIO
TO THE HOUSE SUBCOMMITTEE ON GOVERNMENT MANAGEMENT, INFORMATION AND TECHNOLOGY

Chairman Horn, Congressman Kucinich, on behalf of the Public Utilities Commission of Ohio, I want to extend our sincere words of appreciation for today's opportunity to discuss Y2K. It is our collective thought that the more focus of attention spent on this business problem in 1998 and 1999, the less it will be an issue and a focus of attention in 2000.

I will summarize the efforts of the PUCO in terms of 1) internal systems, 2) utility operations and, 3) transportation operations.

In general, the PUCO's Year 2000 internal activities can be segmented into five areas: awareness, assessment, remediation, testing, and contingency.

AWARENESS

The management and staff of the PUCO are aware of the problems that can be caused by date sensitivity in computer hardware and software, as well as the less easily identified problems that can be caused by embedded chips. The Commission is also aware of the problems that can be caused by the failure of suppliers to resolve Year 2000 problems within their operations.

ASSESSMENT

The Public Utilities Commission of Ohio began its assessment of internal operations by first identifying potentially date-sensitive systems. A date-sensitive system was defined as any system in which date data has the potential to cause the system to cease functioning, or in which the date data could cause the system to produce erroneous results. Each date-sensitive system was then evaluated to determine if it was related to health/safety, continuity of operations, business processes, or some other function. Each date-sensitive system was rated as either mission-critical or non-mission-critical. Mission-critical systems are defined as systems which, if unavailable for even a short time, would result in serious impairment of the PUCO's ability to fulfill its statutory responsibilities. Each date-sensitive system was also evaluated to determine if it was related to computer hardware, computer software, embedded chips, supplier stream, or other parts of the system.

Overall, this assessment resulted in the determination that the only mission-critical system in use by the Commission is the telephone system. The telephone system is probably not directly a health or safety issue if unavailable for short periods (a few hours). However, if the telephone communication system

was unavailable for longer periods, it is conceivable there could be health or safety consequences. The telephone system involves the supplier stream for both the telephone utility service and the telephone equipment.

The Public Utilities Commission of Ohio has no other mission-critical systems. Although the failure of systems other than the telephone system would be a major inconvenience, the Commission could meet its statutory responsibilities for as long as two weeks without them.

REMEDIATION

Telephone System

The Ohio Department of Administrative Services is working with telephone utilities to ensure that all agencies of state government are provided with reliable telephone service during the century change.

The PUCO has contacted the providers of its telephone equipment and received assurances that the equipment is able to deal with the century change.

Information Systems

For purposes of remediation, the PUCO has segmented information systems into four categories: hosts and servers, desktops and clients, networks, and data suppliers.

The PUCO has examined all of its host computers and servers and has determined that the hardware and operating systems are, or will be, Year 2000 compliant. Applications written internally have been examined and are, or will be, compliant as well.

The PUCO's desktop/client computers are generally less than three years old. Staff is in the process of testing each device to determine that the clock, BIOS, operating system, and off-the-shelf software are compliant. As older devices and software are encountered, they are replaced or upgraded.

Information provided by vendors of Commission network components is being reviewed and upgrades are being made as necessary.

Staff is in the process of checking data received from outside the Commission to determine if this data is date-sensitive. To date, all date-sensitive data found has been in an appropriate form, including four-digit years.

TESTING

Testing is being conducted on each date-sensitive system during the remediation phase. In addition, once the remediation of known problems has occurred, the agency will conduct an overall test of its information systems. The

current plan calls for that test to occur on a weekend in January 1999. This schedule is intended to permit problems detected to be corrected and the system to be re-tested.

CONTINGENCY PLANNING

Commission contingency planning includes assuring adequate staffing during the December 31, 1999 to January 1, 2000 transition period so that should there be problems not found during testing, there will be someone on site to take corrective action. In addition, staff will be developing alternative manual processes to use in the event of an unforeseen system failure. Contingency planning will be the focus of attention in the third quarter of 1999, as it will become apparent which systems will still be in need of attention.

OHIO UTILITIES

In order to assess the level of preparedness of Ohio utilities, the Commission has directed its staff to conduct an investigation into the adequacy of utility plans to become Y2K compliant. The scope of the investigation covers the jurisdictional electric companies, gas distribution companies, local exchange (telephone) carriers, and water companies.

The investigation will utilize all publicly available information such as SEC 10-K and 10-Q filings, company annual reports and Web-site information. However, the main source of information for the investigation will come directly from the utility companies in the form of written responses to staff information requests, on-site meetings and periodic updates. Many of the smaller utilities, as well as utilities beyond the PUCO's jurisdiction such as municipal utilities and rural electric co-ops, will be addressed through industry associations such as AMP-Ohio, Buckeye Power, Ohio Gas Association (OGA), Ohio Telecommunications Industry Association (OTIA), etc. to the extent possible.

We are working with and will continue to rely upon industry groups to the greatest extent possible. For instance, sharing of technical information should be done through industry groups. However, such groups usually do not have any enforcement powers; the role of the PUCO is to facilitate, encourage, and, when necessary, require such sharing. However, I am pleased to report that we have found the sharing of information to be a common tool.

The objective of Staff's investigation is to assess the Y2K remediation efforts, as well as, contingency and emergency plans of the above mentioned utilities.

Our present investigation is a comprehensive review of the companies' responses to the PUCO's April survey. This analysis is providing our Staff a reconnaissance review to become familiar with industry issues and determine, to

the extent possible, which companies seem to be further behind in the remediation process than others.

We will request that each company or industry association provide a detailed, on-site presentation that describes their Y2K planning and remediation efforts. The presentations will cover the remediation plan, budget and manpower requirements as well as actual progress relative to plans. The companies will also report on contingency and emergency planning efforts including reporting on communication linkages established with key external contacts such as NERC, FERC, FCC, and the Governor. Key supplier readiness assessments will also be described.

Each company is being required to provide the Staff with quarterly progress presentations or reports from the date of the initial Staff presentation until the century date change has occurred discussing progress on major systems remediated and comparisons of projected versus actual timelines. Changes to contingency and emergency plans will also be reported.

It is not the intent of the PUCO to intervene on a technical basis in Y2K actions. We have neither the resources nor the desire to micromanage this process. We see our role as providing a review of plans for reasonableness and completeness and fostering appropriate coordination between utilities, industry groups, and various levels of government.

This investigation is continuing this month with survey review and the scheduling of company presentations. Company presentations to Staff will begin October 1998 and be completed by March 31, 1999. The information garnered from these interviews will allow the investigation to re-focus, if necessary, on those companies that appear to be having the biggest problems with their remediation efforts. For those companies where remediation appears to be under control, the investigation will focus on contingency and emergency planning. A draft interim or status report will be prepared from the perspective of this end-of-quarter date.

The Staff will continue to receive updates from the companies in the form of quarterly reports or presentations. These begin in the first full quarter for each company after that company's initial presentation to Staff has been made. Staff will compile these updates for presentation (i.e., update the interim report) to the Commissioners for appropriate action.

COMMERCIAL AND TRANSPORTATION ISSUES

In addition to our utility regulatory authority, the Commission is vested by the General Assembly with regulatory oversight of the rail and highway commercial transportation modes. Through a combined program of data collection, field inspection, safety grant funding, educational outreach, and when

necessary, assessment of financial penalties, the department focuses on the improvement in the safety of operations of these industries.

The department, as a result of its multi-modal nature, plays a unique role in planning and implementing transportation safety strategies in partnership with other state transportation agencies. While these other agencies have specific missions related to economic development, construction, or enforcement, the Commission has a broader role of creating the regulatory framework, which governs commercial transportation in Ohio.

In performing our responsibilities, we work closely with the Ohio Rail Development Commission, the Ohio Highway Patrol, the Ohio Department of Public Safety, and the Ohio Department of Transportation to incorporate their individual activities into the larger picture of rail and commercial vehicle safety.

Y2K ISSUES

The Commission's focus in Y2K issues for this industry is upon operational safety. In the rail sector federal legislation has placed primary responsibility for all operational aspects of railroads under the Federal Railroad Administration (FRA), a division of the U.S. Department of Transportation. The Commission exercises regulatory authority through cooperative agreements with FRA providing for training and certification of Commission employees in the enforcement of federal regulations. The Commission retains jurisdiction to regulate local safety conditions and issues not covered by federal regulations. The FRA has conducted a series of forums with industry to assess the state of readiness on the Y2K issue, the most recent on July 20, 1998.

The Commission, while recognizing the FRA's primary authority in this area, plans to take steps to insure the railroads operating in Ohio are aware and are appropriately reviewing their operations for Y2K issues. The areas we are concerned with are both the safety-critical and the business systems of railroad that could be affected by embedded chip and software problems. This includes train control signals, crossing warning devices, dispatch operations, shipment tracking, logistics, and other mechanical operations and systems.

With respect to commercial trucking operations, state regulatory jurisdiction is affected by federal preemption of route, rate and service issues. The state retains safety jurisdiction of motor carriers, subject only to constitutional limitations and the federal funding assistance guidelines. The Commission has adopted, with some exceptions, the Federal Motor Carrier Safety Regulations and the Hazardous Materials Regulations as the standard for commercial vehicle operations in Ohio. The U.S. Department of Transportation, through the Federal Highway Administration has been actively involved in Y2K planning, focused primarily upon insuring preparedness of federal and state transportation infrastructure and data systems.

The Commission's focus in this transportation mode is upon operational safety and accident prevention. Toward that end we have identified the following areas of Y2K concern: truck and bus mechanical systems, dispatch, logistics, tracking/global positioning systems, and intelligent transportation systems (ITS).

Y2K Strategies

The Commission has adopted the following strategies to address transportation issues:

1. Coordination with the modal federal agencies at the U.S. Department of Transportation on Y2K activities.

2. Development in partnership with the Ohio Department of Public Safety and other state agencies informational inserts for routine business mailings, as well as public service announcements.

3. Direct mailing of informational materials and Y2K progress survey to Ohio railroads.

4. Development of workshops and other industry outreach through the truck and rail associations.

5. Establishment of informational web page on the Y2K issue.

In closing, I would like to restate our appreciation for the ongoing attention by House Subcommittee on Government Management, Information and Technology. We are pleased to report that the industries, which we regulate and interact, have shown a positive spirit of cooperation and the sharing of information across corporate barriers. We think it is efforts such as that which will make Y2K on January 1, 2000 a non-event.

Mr. HORN. Thank you. I notice you have gone into great detail there and you also have set out a plan with which you can monitor the various agencies under your jurisdiction, and that is most helpful.

Now, Mr. Kozlowski is the year 2000 manager of the Cuyahoga County Information Services Center. Thank you for coming.

Mr. KOZLOWSKI. Thank you. I appreciate being given the opportunity to represent Cuyahoga County in your Y2K hearing this morning.

The county of Cuyahoga secured the services of a year 2000 conversion partner that assessed the impact of the year 2000, provides methods, processes, best practices, project management and year 2000 conversion support for multi-agency data processing and computer services environment.

The county of Cuyahoga prepared an RFP that requested assistance to ensure that the Information Service Center business systems will continue to operate without impact from the year 2000 date rollover and also the leap year issue. Keane, Inc. was selected among the handful of RFP respondents as suitable to provide the services to complete the year 2000 task.

Keane used a combination of processes and tools to define the size and cost to remediate the year 2000 challenge. A resolve 2000 approach is used by Keane to combine proven project management practices, robust technology migration process and comprehensive tool-assisted capabilities to obtain a mixture of technology, management and process needed to support large-scale year 2000 migration projects.

The year 2000 issue is collectively a data processing, non-data processing, ancillary devices, which include embedded computer chips, and a legal issue. The Cuyahoga County year 2000 project team also held monthly year 2000 awareness forums which agencies attended, with pretty good response, in order to raise the awareness of the impending date issue. The county of Cuyahoga prosecutor's office is also actively monitoring any potential legal issues relating to the year 2000 problem and we as a county need to provide our taxpayers with the same level of service they rely upon now and into the next century.

And instead of me going through the 14 pages here, I will summarize.

Phase I has been segregated into two major projects. One being the enterprise project, which addresses enterprise application systems which are driven on a mainframe and the other project is also at the agency level, which consists of 56 county agencies. Phase I for the enterprise project began on May 19, 1997 and was completed July 14, 1997 on time and within budget. And as you can see, we utilized some tools to gather the information necessary and the surveys were distributed last summer to over 550 respondents and the response was excellent from our user agencies.

As far as the phase II deliverable for the enterprise systems, that was completed on October 31, it began July 14 of last year and it was on time within budget as planned. We also utilized the repositories and some of the tools from Viasoft, which is one of the mainframe tool vendors we selected by choice.

As a result of that analysis, the size of the year 2000 effort necessitated a spinoff, as I mentioned, into separate but cohesive projects and selected resources from the primary year 2000 team were assigned to the agency team, and key consultants were hired, of course to replace the vacancies and staff for the implementation phase, which we are presently in for both projects, which is the phase III.

Future reference to our year 2000 project teams I will refer to the Y2K team as the enterprise team and the Y2K agency team would be the agency effort.

Now as far as the agency effort, phases I and II are combined in order to facilitate the year 2000 effort for Cuyahoga County agencies in non-data processing issues. The scope of this phase was to provide Cuyahoga County with the agency-wide assessment of the year 2000 exposures, the risk classification and business applications, prioritization and development of related costs, and also the preparation of a master plan to achieve compliance for business application systems. The agency team worked with subject matter experts to produce the year 2000 definition compliance report. Our subject matter experts are the most knowledgeable in our application areas.

The year 2000 agency phases I and II began November 3, 1997 and was completed on March 3, 1998. A change control option was utilized due to the high volume of countywide documentation necessary to gather and disseminate this part of the project as a result of the NetCensus inventory process. NetCensus is a software tool we utilized throughout the agency to gather information from our desktops and servers, that identified the software and hardware that was tied in to each and every agency.

As I mentioned, we are into the implementation phase which is the phase III for the enterprise project. This is the last phase of the project, of course. The major goals of this final phase included remediation, the testing and implementation of all identified noncompliant mainframe application components, coordinate the desktop hardware compliance with Cuyahoga County Information Services Center Information Group which is our services group, coordinate third party software compliance with vendors and coordinate ancillary remediation with Cuyahoga County Information Facilities Group.

Some of the agencies are listed on page 10 that we are working on for the enterprise systems.

The enterprise year 2000 team is narrowing the behind schedule gap down to 3 weeks. We are presently 3 weeks behind. As of month end July 1998, this project is 53 percent completed. Keane is utilizing a coding factory located at their Cleveland, OH headquarters branch. This team is performing the necessary year 2000 program code modifications for mainframe applications. The year 2000 enterprise team is currently staffed with 29 consultants. Over five full time Cuyahoga County Information Services Center subject matter experts are also assigned to the year 2000 project. Other CCISC, which is our Services Center, resources are involved as we need to facilitate the project effort.

Now as far as the phase III part of the agency year 2000 effort, which is the implementation phase, the following deliverables that

were originally scheduled as part of phase I and II are rolled into phase III: in-depth analysis for each agency, conversion strategy estimates and work plans for each agency, supported agency application upgrade units, updated assessment report, the year 2000 testing approach, risk management and risk mitigation, revised impact analysis report and also the contingency plans for phase III.

The year 2000 agency team is slightly ahead of schedule. As of month end July 1998, this project is 54 percent completed. The year 2000 agency team is currently staffed with eight consultants. Cuyahoga County Information Services Center, which is our services center, has subject matter experts also assigned to the year 2000 team in order to facilitate this project.

Vendor completed responses for the year 2000 was at 66 percent and I am pleased to announce that it is up to 70 percent responses. So we have gotten good turnaround through the Internet and also direct contact from our certified return receipt request to vendors. This represents over 95 percent of our solutions for the year 2000 effort.

Now as we go beyond 2000, our year 2000 project is the largest labor intensive and costly maintenance project challenging our county. Two new operating environments had to be created: a Y2K and QA were initiated by the year 2000 project. The Y2K environment is utilized for Y2K testing. This includes our time sharing option, IMS, DB2 and CICS. The Y2K environment was created so as not to impact the current test environment.

The QA environment was initially created for the year 2000 enterprise project. The purpose of the QA is to improve the quality and reliability of installed products. By using the QA system, CCISC will attest that installed product meets or exceeds our customers' requirements at the agency level or anyone else that is using our facilities or information at the county. The QA environment is a customer production like system and this includes also the TSO, IMS, DB2 and CICS.

Our county also has major initiatives such as a disaster recovery project that support contingencies in the event of a catastrophe. Our countywide health department installed new software and hired technically qualified resources to support the needs of our county end user customers located at the agencies. Our management and technical staff is involved with ongoing comprehensive training and this training builds upon the employees' basic skills to keep our staff abreast with current emerging technologies.

Our county Information Services Center, with the assistance of IBM, upgraded the capacity and software of the county's mainframe and related software. We have enhanced and broadened our technical skills through the acquisition of mainframe and PC software tools and until recently our planning and development staff had the basic IBM utilities to use for development and maintenance of mainframe applications. The year 2000 project warranted the purchase and utilization of current mainframe and PC tools. These same tools will become invaluable as we forge ahead past the year 2000 for development and maintenance.

The year 2000 consultants and ISC staff are using tools such as Xpediter, File-Aid, HourGlass 2000, Comparex and SmartBridge. And we are rolling out Micro-Focus Cobol Workbench which will

also help facilitate the mainframe maintenance and testing for the year 2000 project.

Our Information Services Center is upgrading desktop PCs to Windows 98 this year. Other county agency PCs and software are being replaced or recycled to be year 2000 compliant. Our CCISC PC support staff is assisting our year 2000 agency team with the replacement of obsolete PCs and desktop applications.

We are planning to maintain a base staff of consultants through year 1999. As a matter of fact, we are planning on maintaining the basic support staff through the leap year of the year 2000, which would be March of the year 2000 to ensure a cohesive transition for our county into the new century. Our support staff is participating in the skill transfer from year 2000 consultant so we do not lose the momentum there. This will ensure the cohesiveness and ongoing support after the year 2000 consultants leave our project.

Our improved responsiveness and presence within the county has markedly improved and we are truly being poised to enter a new millennium as one of the leading county technologies in our country.

I would be more than willing to share any detailed information with the committee and will address your questions following this panel session.

[The prepared statement of Mr. Kozlowski follows:]

Introduction

The County of Cuyahoga secured the services of a Year 2000 conversion partner that assessed the impact of the Year 2000, provides Methods, Processes, Best Practices, Project Management and Year 2000 conversion support for multi-agency data processing and computer services environment. Cuyahoga County prepared an RFP that requested assistance to ensure that the Information Services Center business systems will continue to operate without impact from the Year 2000 date rollover and leap year issue. Keane, Inc was selected among the handful of RFP respondent companies as the best suitable service provider to complete the Year 2000 task.

Keane used a combination of processes and tools to define the size and cost to remediate the Year 2000 challenge. A Resolve 2000 approach is used by Keane to combine proven project management practices, robust technology migration process and comprehensive tool-assisted capabilities to obtain the mixture of technology, management, and process needed to support large-scale Year 2000 migration projects.

The Year 2000 issue is collectively a data processing, non-data processing, ancillary devices (imbedded computer chips) and a legal issue. The Cuyahoga County Year 2000 project team held monthly Year 2000 Awareness Forums for all county agencies in order to raise the awareness of the impending date issue. The county Prosecutor's Office is actively monitoring any potential legal issues relating to the Year 2000 problem. We as a county need to provide our taxpayers with the same level of service they rely upon now and into the next century.

The Year 2000 project is structured into three phases. Phase I – Enterprise Planning, Phase II – Strategy Development and Confirmation, and Phase III – Implementation. The following information describes each phase of the Year 2000 project.

Phase I: Enterprise Planning -Determined the scope of the problem, analyzed the Year 2000 Issues, countywide inventory of application components that are affected by the Year 2000. Understand the issues that determined the conversion strategies for each manageable work unit. A Year 2000 survey was distributed among all county agencies to data processing and non-data processing information.
Deliverables Year 2000 repository database containing Year 2000 survey information.
Assessment report outlined the findings from analysis activities, described the extent of the application and organizational impacts, discussed issues that required resolution, provided a high-level estimate of the overall project scope and cost, recommended project strategies and infrastructure preparation.
Master plan for the conversion outlined the high-level plan with an agreed upon approach and action steps for the subsequent phases of the project.
Phase II project plan outlined the project plan for executing the next phase of the Resolve 2000 process, described the tasks, schedules and assignments for the subsequent phase, included budget cost estimates to complete Phase II.

Management presentation by the Keane Year 2000 team for the findings, Phase II approach, and the Year 2000 compliance strategy.
Comments:
Multi-tiered surveys were distributed to each agency within Cuyahoga County and returned to the Information Services Center for analysis and data entry into the Year 2000 repository. The surveys were used to solicit technical, non-technical and business related information for the Year 2000 project.

Phase I began on May 19, 1997 and was completed on July 14, 1997 on time and within budget as planned.

Associated costs for Phase I:

Fixed Price labor cost	$240,000.
(including a recommended change budget)	
Viasoft Tool charge	$ 10,000.
(Estimate 2000)	
Viasoft Tool charge	$ 6,800.
(VIA/Alliance)	
	Total $256,000.

Enterprise Phase II: Strategy Development and Confirmation
Keane conducted a detailed in-depth analysis of all data impacted applications, partitioned the applications into upgrade units or manageable units of work, developed a comprehensive master plan for the most timely and cost effective conversion.

The Year 2000 compliance project is managed as a collection of small, well-defined subprojects. Upgrade units are defined as a package of the components of one or more related applications that will be converted or replaced as a single project. Each upgrade unit becomes a freestanding conversion project, making the unit the basic building block of a Year 2000 project.

Keane's Project Risk Assessment Methodology (PRAM) was used to identify project risks. Using PRAM, a "Risk Profile" was developed for the Year 2000 project. The highest risks identified are:
Cuyahoga County agencies did not perceive the Year 2000 project as their top priority
Coordinating subject matter experts (SME's) available time for testing and signoff's
Test and Quality Assessment environment availability
Business dependencies for high dependency applications
Information Services availability

Profile During Phase II, Keane performed a manual analysis that took 3,033 programs that Phase I identified as having impacted date fields (identified by the Viasoft Estimate tool) and further decided if it should be marked and affected. These programs were crossed referenced, using the Viasoft Alliance tool, to all associated copybooks, databases, data-sets, called modules, and so on. The Alliance tool only scanned what is associated with impacted programs.

Keane analysts manually reviewed the 54,390 data fields 'tagged' in Phase I. The date fields that were found in each program, were reviewed and a determination made as to whether it posed a program processing problem at the change of the century. Each field was classified as keep (carry forward into Phase III remediation; drop (data field does not meet remediation, exclude from Phase III remediation), Further (determine remediation when modifying the program in Phase III) or report (field is for reporting only, carry into Phase III as possible changes, but not likely). The result are summarized: keeps = 31,483 (58%), drops = 12,989 (24%), further 6,629 (12%), report = 3,289 (6%).

We are utilizing 'windowing' and date expansion for Year 2000 date mediation strategies. Windowing takes the date to remediate, and determines what century it belongs by using a year 'window'. Date expansion is being applied to data fields such as date of birth due to the high probability that a person can be older than 99 years.

Conversion and testing tools were acquired to support concurrent high volume changes and testing. They include Xpediter for TSO/IMS (a real-time source testing and debugging tool); File-Aid for IMS/DB2 (facilitates the creation, maintenance and validation of databases); HourGlass 2000 (a date simulation utility that enables programs to be future and back date tested) and Comparex (a file comparison tool).

To determine the prioritization of the upgrade units it was necessary to include the following factors: the number of programs to remediate; complexity factor; fail date; business significance (fatal, critical, necessary), and the database interaction. The complexity factor was a result of the Viasoft code scan tool. It assigns a factor to a data name depending on its use in a program.

Third party, ancillary, and PC analysis vendor information is an ongoing task. Certified, return receipt letters are being sent to these vendors in order to secure a Y2K response. A Microsoft Access database was created to store this repository of information from the vendors.

A conversion plan was developed based upon information from many sources gathered from Phases I & II. During Phase III, each upgrade project in the conversion plan will be reviewed and detailed if necessary. The action plan for each upgrade project includes an initial application startup meeting with Keane, subject matter experts from the Information Services Center and our end-users/customers. A discussion at this meeting includes the status of programs in the upgrade unit(s), detailed application remediation information and timing for testing and implementation events. Reviews are held after all major stages for coding, testing, acceptance testing, conversion, implementation, and post-implementation.

Keane's Resolve 2000 Methodology consists of the following activities/tasks:
Productivity Management
Update Project Master Plan
Test Environment and Repository Management

Conversion execution by upgrade unit
Conduct System/Acceptance Testing
Conduct Integrity Audits
Obtain end-user/customer sign-off
Transition Compliant Systems to Production Support
Post-Implementation Review
Wrap-up

Testing is critical to success of the Year 2000 project. Most organizations do not allocate a sufficient amount of time or resources to insure a successful implementation. The testing effort is planned to be no less than 60% of the Year 2000 effort. A combined partnership with Keane, Subject Matter Experts and end-users/customers is necessary to ensure integrity before migrating changes into Production.

At the conclusion of the Year 2000 Enterprise Phase II project, there were 2,967 affected programs with an average complexity rating of 1.9. The projected number of hours to complete the Year 2000 Enterprise Project was 50,424.
There are 30 systems involved for the Year 2000 Enterprise (mainframe related) remediation.

Phase II Deliverables: Project Plan describes detailed tasks, prioritization, effort hours, resources, and elapsed time.
Master Plan for Phase III (Implementation Plan) consisting Phase I updates and expanded with the additional details from Phase II planning.
Upgrade Project Units of Work assembled with detailed conversion plan information for elements contained within the defined upgrade unit(s).
Risk Management/Risk Mitigation Contingency Plan for Phase III including contingencies that may arise during the project.
Revised Impact Analysis Report that describes the impact of the conversion effort for the Enterprise.
Updated Year 2000 Organizational Report that describes the recommended project organization, roles, and responsibilities of key personnel. This report provides us with an overall view of the impact on the organization of the Year 2000 effort, identifying the resources required internally and externally to complete Phase III (Implementation).

Comments: As a result of Phase II analysis, the size of the Year 2000 effort necessitated a spin-off from the IBM mainframe effort into a separate, but cohesive, Year 2000 Agency Project. Selected resources from the primary Year 2000 team were assigned to the Agency team. Keane consultants were hired to replace the vacancies and staffed for the Implementation Phase (Phase III).

Future reference for the original Year 2000 project team will be referred to as Y2K Enterprise team. The Year 2000 team addressing the agency remediation, including non-data processing related will be referred to as the Y2K Agency team.

Phase II began on July 14, 1997 and was completed on October 31, 1997 on time and within budget as planned.

Associated costs for Phase II:

Fixed Price labor cost	$614,400.
(Including a recommended change budget)	
Viasoft Tool charge	$ 6,500.
(VIA/Alliance)	
Total	$620,900.

YEAR 2000 Agency Project:

Phases I and II were combined in order to facilitate the Year 2000 effort for Cuyahoga County agencies and non-data processing related issues. The scope of this phase was to provide Cuyahoga County with an agency-wide assessment of the Year 2000 exposures, the risk classification of business applications, prioritization, the development of related costs, and the preparation of a Master Plan to achieve compliance for business application systems.

The Year 2000 Agency Team worked with subject matter experts to produce the Year 2000 Compliance Definition report. This document defines the meaning of Year 2000 compliance. The definition crosses all organizational boundaries and is used to communicate the risk for the Year 2000 exposure to agencies and provides standards to measure the compliance status of areas that may be at risk.

The scope of the assessment effort included the following:

Agency Developed/Supported Applications
Vendor Applications
Vendor Hardware
Agency Ancillary Devices
Property Ancillary Devices

Profile Assessment of Agency systems was conducted using the NetCensus tool. The NetCensus tool is a product that automates the inventory process. The NetCensus inventory was offered to each agency. Fifty-six (56) agency/departments elected to participate with the inventory process (85%). Existing inventory information was utilized and verified. Eight (8) agencies declined assistance because they were undertaking their own Year 2000 compliance effort internally. The Y2K Agency Team is monitoring those 8 agencies to confirm their progress.

Twelve of 56 agencies identified applications that were developed by them or by a contractor. These 51 applications totaled 365,530 lines of code. A date field impacted Twelve percent (12%) of the lines of code. The development languages were written in dBase, Foxbase, MS Access and Basic in DOS, Windows (3.x and Windows '95) and Novell environments.

There are 207 third-party application software vendors that have supplied application software to the county agencies. Each agency systems administrator is responsible for the installation of new or upgrade hardware and software.
Information received from hardware, software non-data processing vendors is disseminated to each agency systems administrator. There are thirty-nine (39) third-party computer hardware vendors that have supplied hardware to the county agencies.

The agency/building manager and Keane consultants will collect agency and building ancillary device information through combined on-site visits in Phase III. The ancillary device information is being confirmed with each vendor/supplier via registered letter and follow-up Internet communication by the Keane Year 2000 Agency team.

Phase I & II Agency Deliverables:
Initial Assessment Report - Outlines the findings from both Phase I technical and environmental analysis activities. It describes the extent of application and organizational impacts, discusses issues that need resolution, and offers an initial estimate of the overall project cost. Recommendations are included for project strategies and infrastructure preparation Initial Master Plan for Conversion - This is a high-level plan and estimated costs for the Agency Implementation Phase activities.
Upgrade Packets for Each Upgrade Unit of Work - This plan contains the conversion strategy, estimates, and work plan for each Agency supported business application upgrade unit.
Updated Assessment Report - This report describes the impact of the conversion effort for the agencies.
Organizational Report - This report describes the recommended project organization and the roles and responsibilities of key personnel.
Master Plan for Phase III - Is the initial Master Plan from Phase I that is updated using the refined information gathered in the Phase I portion of the project. The plan describes the tasks, schedule, and assignments for the project.
Year 2000 Testing Approach - Outlines standards and guidelines for Year 2000 testing of Agency supported business applications.
Desktop PC Program Approach - Outlines an approach and strategy that Cuyahoga County Agencies may employ to ensure Year 2000 readiness of their desktop computing environment in accordance with the Cuyahoga County Year 2000 Compliance Definition.
Vendor Compliance Program Approach - Documents the step-by-step procedure for requesting compliance information from the vendor.
Project Office Approach - Outlines the approach, strategy, and organizational structure to be used in the management of the projects and their interrelationships contained in the Master Plan for Phase III.
Comments:
The Year 2000 Agency Phase I & II began on November 3, 1997 and completed on March 3, 1998. A change control option was utilized due to the high volume of countywide documentation necessary for this part of the project as a result of the NetCensus inventory process.

Associated costs for Phases I & II:

Fixed price consultant labor cost $660,800.
(including a recommended change budget)

Total $660,800.

Year 2000 Enterprise Phase III Project – Implementation Phase

Phase III is the last phase of the Year 2000 project. Information compiled from Phases I & II are updated and used for reference in this phase.
The major goals for this final phase include:
Remediate, test and implement all identified non-compliant mainframe application components
Coordinate desktop hardware compliance with County Information Services Center Network group
Coordinate third party software compliance with vendors
Coordinate ancillary device remediation with County Information Services Center facilities group

Cuyahoga County's mainframe applications to Remediate/Replace include:
Board of Elections
Board of Revisions
Child & Family Services (CYCIS)
Child Support (CSEA)
Criminal Court (JIS)
CRIS
Domestic Relations
Information Services Center
Entitlement
Equal Opportunity
Estate Tax
General Accounting
Income Maintenance
Jury
Juvenile Court
Personal Property
Personnel Payroll
Probate Court
Real Property
Reconciliation
Recorders
Redeemed Warrants
Sanitary Engineers
Senior & Adult Services
Sheriff
Social Services

Treasurer
Vendor
Veteran's Services

Year 2000 Enterprise Phase III Project – Implementation Phase (con't)

Profile Phase III includes the change process, acceptance criteria, project objectives and scope, roles and responsibilities for Keane and Cuyahoga County, contingency planning and the results of a Project Risk Assessment Method (PRAM).

Project Plan includes detailed tasks, effort hours, resources, and elapsed time.
Converted Application Programs include impacted objects in each upgrade packet are remediated, tested and approved by subject matter experts and end-users/customers for Year 2000 compliancy.
Conversion/Documentation Repository containing documentation of work on each upgrade unit. The information contains converted application programs, revised job control language (JCL), copybooks, database definitions and information gathered during the process. The repository houses historical information from data and bridge programs, test results, signoffs, recommendations and reports.
Risk Management/Risk Mitigation Contingency Plan for Phase III may result in detailed plans developed to address contingencies, which may arise during the project.
Revised Impact Analysis Report will be produced that describes the impact of the conversion effort on the Enterprise. It contains additional infrastructure or application details uncovered in Phase III.
Updated Year 2000 Organizational Report that describes the recommended project organization and the roles and responsibilities of key personnel. This report provide an overall view of the impact on the organization of the Year 2000 effort, identifying the resources required internally and externally to complete Phase III.
Project Milestones are audited on a quarterly basis to ensure quality and continuous effort.
Business Trading Partners are included in the analysis for the mainframe applications interface to an external package or external agent. The Year 2000 team will ensure that the data passed to these external applications will be Year 2000 compliant, but does not take responsibility for the external interfaces software compliance. Testing the input from the external interface will service as a compliance confirmation of their status.

There are seven steps followed by the Year 2000 project team.
Initial subject matter expert and end-user/customer start-up meeting
Setup of test files, databases, JCL, procedures
Coding and unit testing including baseline testing
Data conversion when applicable
System testing and Quality Assessment verification
Implementation into Production
Post-implementation activities when applicable
Comments:

The Enterprise Year 2000 team is narrowing the behind schedule gap to three weeks. As of month-end July 1998, this project is 53% completed. Keane is utilizing a 'coding factory' located at their Cleveland Ohio headquarters. This team is performing the necessary Year 2000 program code modifications for mainframe applications. The Year 2000 Enterprise team is currently staffed with 29 consultants. Over five (5) full- time Cuyahoga County Information Services Center (CCISC) subject matter experts are assigned to the Year 2000 project. Other CCISC resources are involved as needed in order to facilitate this project effort.

Associated costs for the Enterprise Phase III project:

Consultant labor cost	$5,645,992.
(Including a recommended change budget)	
Total	$5,645,992.

Year 2000 Agency Phase III Project – Implementation Phase

Phase III is the last phase of the Year 2000 project. Information compiled from Phases I & II are updated and used for reference in this phase. The Agency Year 2000compliance project is managed as a collection of small, well-defined subprojects. The complexities of operating a production environment while simultaneously converting the applications within that environment require dividing the applications into separate upgrade units of work. Upgrade units are defined as a package of components of one or more related applications that will be converted or replaced as a single project. Each upgrade unit becomes a freestanding conversion project, making the unit a basic building block for a Year 2000 project.

Profile The following deliverables were originally scheduled for release as part of the combined Phases I and II will be included in Phase III:

In-depth analysis for each agency
Conversion strategy
Estimates and Work Plans for each agency
Supported Agency application upgrade unit(s)
Updated Assessment Report
Year 2000 testing approach
Risk Management and Risk Mitigation
Revised Impact Analysis Report
Contingency Plans for Phase III

The postponement of these deliverables until Phase III was pertinent for several reasons. The accelerated schedule of a combined Phase I & II provided an accurate prediction of the Agency impact and sufficient data to support the scope determined for Phase III. Additional time was necessary for the Year 2000 Agency consultants to create the level of detail required to develop subsequent detailed remediation and compliancy activities. The pursuit of compliancy issues is an ongoing and reiterative process that supports facets of many of these deliverables and would, by its nature, continue well into Phase III.

Deliverables Code Remediation for Agency Developed/Supported Applications includes changing, testing and coordinating Year 2000 impacted programs.
Vendor Compliance for Vendor Applications includes the coordination of vendor software upgrade status with a compliance schedule, coordinate receipt of upgraded software to Agencies, and co-ordinate the installation and testing of upgraded software by Agency personnel.
Vendor Compliance for Hardware includes working with Agencies to insure their PC's, network servers, and midrange hardware are functional and operational upon the arrival of the Year 2000. Compliance information is requested from vendors and presented to Agencies.
Vendor Compliance for Agency Ancillary Devices includes working with Agencies to insure their ancillary devices are functional
Forms are analyzed with Agencies and subject matter experts to determine changes when a form is utilized by an application tagged for Year 2000 remediation.
Agency Supported Custom Application Software is inventoried and analyzed to determine changes for end-user/customer developed and support custom software.
Agency Supported Third Party Application Software is inventoried and analyzed to determine the changes for end-user/customer third-party applications.
Operating System Software is inventoried, analyzed, scheduled and coordinated to determine the changes for end-user/customer Operating System Software.
Year 2000 Agency Phase III Project – Implementation Phase (con't)

Business Trading Partners are included with the analysis for Agency applications interface to an external vendor package or external agent. The Year 2000 team will ensure that the data passed to these external applications will be Year 2000 compliant, but does not take responsibility for the external interfaces software compliance. Testing the input from the external interface will service as a compliance confirmation of their status.

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Year 2000 Agency Team Vendor Strategy:

Prioritization – Agency functions are ranked upon business significance.
Business Function Component Association – Association of vendor products with business functions they support.
Strategic Decisions – Strategies will be chosen for the vendor products. Target resolution dates are determined.

Comments:

The Year 2000 Agency team is slightly ahead of schedule. As of month-end July 1998, this project is 54% completed. The Year 2000 Agency team is currently staffed with 8 consultants. Cuyahoga County Information Services Center (CCISC) subject matter experts are assigned to the Year 2000 as needed in order to facilitate this project effort. Vendor completed responses for the Year 2000 is at 66%. This represents over 95% of our solutions for the Year 2000 effort.

Associated costs for the Agency Phase III project:

Consultant labor cost	$2,603,678.
(Including a recommended change budget)	
Total	$2,603,678

BEYOND 2000

The Year 2000 Project is the largest labor intensive and costly maintenance project challenging our county.
Two new operating environments, 'Y2K and QA', were initiated by the Year 2000 Project. The 'Y2K' environment is utilized for Y2K testing. This includes TSO, IMS, DB2, and CICS. The 'Y2K' environment was created as not to impact the current test environment. The 'QA' environment was initially created for the Year 2000 Enterprise Project. The purpose of 'QA' is to improve the quality and reliability of installed products. By using the 'QA' system, CCISC will attest that the installed product meets or exceeds our customer's requirements. The 'QA' environment is a customer Production-like system. This includes TSO, IMS, DB2, and CICS.

Our county has other major initiatives such as the DISASTER RECOVERY PROJECT that support contingencies in the event of a catastrophe. Our countywide HELP department installed new software and hired technically qualified resources to support the needs of our end-users/customers located at the agencies. Our management and technical staff is involved with ongoing comprehensive training. This training builds upon the employee's basic skills keeping our staff abreast with current and emerging technologies.

The County Information Service Center (CCISC) with the assistance of IBM upgraded the capacity and software of the county's mainframe and related software. We have enhanced and broadened our technical skills through the acquisition of mainframe and PC software tools. Until recently, our Planning and Development staff had the basic IBM utilities to use for development and maintenance of mainframe applications. The Year 2000 project warranted the purchase and utilization of current mainframe and PC tools. These same tools will become valuable as we forge into post Year 2000 development and maintenance.
Year 2000 consultants and CCISC staff are using tools such as Xpediter, File-Aid, HourGlass 2000, Comparex and SmartBridge. We are rolling out Micro-Focus Cobol Workbench that will help facilitate mainframe maintenance and testing for the Year 2000 Project and for use by our CCISC technical staff.

Our Information Services Center is upgrading desktop PC's to Windows 98 by year-end 1998. Other county agency PC's and software are being replaced or recycled to be Year 2000 compliant. CCISC PC support staff is assisting our Year 2000 Agency Team with the replacement of obsolete PC's and desktop applications.

We are planning to maintain a base staff of consultants through year-end 1999 to ensure a cohesive transition for our county into the new century. Our CCISC support staff is participating in the skill transfer from the Year 2000 consultants. This will ensure the cohesiveness and ongoing support after the Year 2000 consultants leave our project.

Our improved responsiveness and presence within the county has markedly improved. We are truly being poised to enter the new millennium as one of the leading county technology leaders in the country.

Mr. HORN. Thank you very much for that information. I am now going to yield the first 10 minutes usually used by the chairman, to the ranking member. It is his home territory and we always enjoy his questions, and occasionally we enjoy the answers. [Laughter.]

But he will get to the core of the problem. So 10 minutes.

Mr. KUCINICH. Thank you very much, Mr. Chairman.

Mr. Kozlowski, it is a pleasure to have you and the other witnesses here. I applaud Cuyahoga County for realizing the significance of the Y2K problem so early. And your testimony indicates that the county engaged a contractor and completed its assessment by early 1998. However, you indicate that several projects in the implementation stage are being postponed, including contingency planning. Does this mean that the county will not be ready for the century date change?

Mr. KOZLOWSKI. No, we are addressing contingency planning, that is a separate project other than 2000, but we are working hand-in-hand as far as knowledge exchange.

Mr. KUCINICH. One of the things that the chairman did in assessing the readiness of the Federal Government is to go department by department in determining the stage of compliance for each individual government operation. I would be interested in hearing your response to the State of compliance of, let us say, the Board of Elections, which by the year 2000 will need to handle a number of major elections.

Mr. KOZLOWSKI. For example, Mr. Kucinich, the Board of Elections remediation has been completed on the mainframe application, they are all set. We are also working with that agency and each agency within Cuyahoga County to develop and finalize project plans which are unique for each agency. That means replacement of PCs, networks and so forth, and software.

Mr. KUCINICH. Have you seen any indications where the very work of bringing a system to compliance has created other problems? In other words, once you get into a system and you start looking at its code, have you seen any indication of other computer problems that turn up once somebody starts to get into that?

Mr. KOZLOWSKI. We look at not only just the agency, also the interfaces that are involved. You know, if they have a business trading partner that they accept data from or pass data to, we look at all the interfaces too.

Mr. KUCINICH. But, you know, opening up a system itself——

Mr. KOZLOWSKI. You mean the physical hardware?

Mr. KUCINICH. Right.

Mr. KOZLOWSKI. OK. We are in touch with the end vendors, the vendors who support that system and based upon that system, if it is compliant or not compliant. If it is not compliant, of course we will either replace it or reuse other equipment within the county that is compliant. So rather than changing motherboards or some BIOS chips, if there is a better solution that is quicker and that will get them up faster, then we take that alternative.

Mr. KUCINICH. I want to review a few other county operations—the child support services, probably which many families depend on for their monthly revenue and survival, what kind of shape is that

in? This is another high transaction operation. What kind of shape is that system in?

Mr. KOZLOWSKI. OK, Mr. Kucinich, is that child——

Mr. KUCINICH. CSEA.

Mr. KOZLOWSKI. CSEA, presently they have 124 programs in quality assessment which relates to a 58 percent overall completion. Their PCs are compliant, their software desktop applications are compliant.

Mr. KUCINICH. What is your hope about their status for the year 2000?

Mr. KOZLOWSKI. We plan on completing them prior to the year end.

Mr. KUCINICH. This year?

Mr. KOZLOWSKI. Yes.

Mr. KUCINICH. And what about the treasurer's office, which as we know is involved in a great number of financial transactions in the county?

Mr. KOZLOWSKI. OK, as far as the treasurer, that is one of the applications that is planned for completion later this year, early next year at the latest.

Mr. KUCINICH. Are there any areas of county operations where you are a little bit concerned that you are falling behind the pace? And I do this just for informational purposes, not for purposes of chastising anybody.

Mr. KOZLOWSKI. OK, as far as I see, some of the challenges we have discovered in the county, of course, I mentioned the quality assessment area or environment. Some of the user agencies are not being as responsive as anticipated due to day to day, you know, putting out their fires and handling day-to-day situations. And of course, you can do all the planning in the world but if they do not understand the importance of trying to work with our project teams and meeting those tight windows that we are trying to establish, then of course that can impact on a project and slide another week or two down the road, and every moment is critical.

Mr. KUCINICH. I noticed in reviewing your testimony that—which is quite extensive—that you have covered a lot of territory and I want to thank you for your testimony and I would like to move on to some of the other witnesses here.

Mr. Mason, Public Utilities Commission. What are the utilities industries doing to assure that our power supply will not be threatened by Y2K, or water or transportation?

Mr. MASON. I would say every utility in Ohio, primarily due to I think the initial Federal efforts but then obviously subsequent State efforts, have gone through the process of awareness, assessment. They have all inventoried, they have all gone fairly well through remediation and testing. The utilities I have talked to so far have not done a lot in terms of contingency planning, only because they believe contingency planning should be based primarily off of however they feel themselves to be after—for example, most utilities feel they will be Y2K compliant by the second quarter of 1999. And so coming up with contingency planning should be based on where they think they are at that point.

What is interesting, and again,—the utilities I have dealt with, and I have taken it to personally call and deal and meet with not

just the Y2K managers, but the appropriate corporate level manager of those utilities. What is very interesting is each one of them have stated that they do not believe that once they become "Y2K certified or validated," that they are going to stop efforts at that point. They believe their efforts have to continue no matter what their state of readiness they believe to be, they believe they have to continue with Y2K compliance clear through the turn of the year and, as indicated earlier, through the leap year dilemma also so that when March comes, that everybody will be on the same calendar.

Mr. KUCINICH. I noticed in your testimony—by the way, the section that you did not present was also very interesting, the section on assessment because in that section, Mr. Chairman, what they presented is something of the architecture of the assessment challenge. And I think that was well put and it is something that others ought to carefully review.

I am interested in who do you rely on in the PUCO for the technical oversight aspects, because as you defined in your testimony, yours is essentially oversight. But when you go and review the utilities' compliance, who has the technical ability to be able to really know if the compliance level is where it should be or if there are any problems that have not yet been met?

Mr. MASON. The people who will be doing the onsite interviews include our auditors and IT staff members. It is an interesting point you reach. Much of what we must rely upon is truthfulness of filings that by law must be filed with us, so as a person goes through and says they are at 70 percent of testing, of whatever, are we there to verify that maybe they are not 60? We cannot do that because obviously that would mean we would have to put our staff in each of the utilities.

Mr. KUCINICH. OK, now let us hold it right here. I am going to assume that the men and women who operate Ohio's utilities are all honorable people. We have a lot of very talented people in that industry, we know that, you know that. We also have a fast changing investment climate where we have had utility mergers affect this State, where the players are constantly changing. Merrill Lynch recently released a report indicating—I will paraphrase it—that across this country they have cautioned investors about in some cases the dilatory response of utilities industry to the Y2K problem as having possible implications for investors.

What I am communicating to you is our concern that if any utility company were to voluntarily disclose its lack of readiness, that it may have adverse impact on its investment status. And I am just simply deriving that from some financial market analysis. So because of that, it seems to me that the PUCO would be best advised, notwithstanding the honorable intentions of the utility leaders in this State, who I believe should be given full credit, but I think with respect to your oversight capacity, I would like you to take back to the Commission the thought that your oversight capabilities might be enhanced if you would take advantage of consulting with some of the leaders of the industry, as some of the other—as some other government entities have done, in order to assure that compliance is being done. People of the State are so heavily reliant on the work that is being done at the PUCO and I think that would

in effect enable a greater degree of confidence. Not that there should not be confidence right now, but a greater degree.

How much time do I have?

Mr. HORN. Actually you ran out, but we are following up the answers. So as long as you are doing that——

Mr. KUCINICH. OK. Do you want to respond and then we will go on to the chairman's questions.

Mr. MASON. Thank you. And the two biggest mergers affecting the State I believe could be—and they are tentative, I hate to speak in terms of fait accompli, but the CSW/AEP and then perhaps the SBC/Ameritech. In each of those cases, I have met with their Y2K managers and in each of those cases, the Y2K manager reports directly to an executive vice president or a board member. It does not appear that any merger will affect the reporting responsibilities in either of those two mergers.

The biggest concern—and I think this really goes to the heart of your question. Your question I believe, Congressman, is the business partners and suppliers of energy and commodity from outside the State. So not only do we have to make sure that who we regulate is doing proper Y2K, but making sure that as a part of their contracts with people outside of our regulatory review are also performing accordingly.

Mr. KUCINICH. I think the gentleman's response is well taken, because, Mr. Chairman, as we know from all the hearings we have held, it is not simply those who have direct accountability with respect to Y2K compliance for systems and software, hardware, but it is also those who are upstream and downstream of you because of the interactivity within and between systems.

Thank you, Mr. Chairman.

Mr. HORN. Well, we thank you, and we will get back to that after I get my 10 minutes in.

Mr. Vidmar, according to the information on your report, in the Ohio Department of Administrative Services, at least 10 departments and agencies have reported they will not be Y2K compliant until some time in 1999. Many departments and agencies still have a long way to go at really all levels of government. The Department of Administrative Services, I noted was only 35 percent compliant as of April 1998, Education 35 percent compliant as of June 1998, Public Utilities Commission 20 percent compliant as of July 1998. Has Ohio set a target completion date for that particular round? What is the process?

Mr. VIDMAR. Mr. Chairman, ideally we would have all of our agencies through remediation by the end of this year. I honestly do not believe that will be possible.

All that not withstanding, we are very conscious of those agencies that are perhaps not—a report like that can be a little bit deceiving in the sense that you have to look at the size of the agency and the scope of the problem. We, for instance, probably are focusing much of our attention and concern on the Department of Human Services, which represents perhaps 50 percent of the State's entire data processing burden. But yes, we are very conscious of those numbers. I cannot give you up-to-date numbers today, but I would be happy to get those for you.

We are doing what we can—I am very happy to announce—not to announce, but to share with you the fact that Governor Voinivich is also monitoring this process personally, as is his interagency management group of cabinet level people. They have invited us to address them at the end of this month and we hope to deal very specifically and openly with any difficulties we see at this time.

Mr. HORN. One area that confronts us all over the Nation is the correctional data base for people that are serving various terms. And the question is will they accidentally be let out. That has already happened in some jails, by the way, around the country. I was just curious the degree to which there is a data base for the various county jails versus Federal, State prisons, or is there one data base throughout Ohio on the correctional aspects?

Mr. VIDMAR. Mr. Chairman, that is a very good question. There are several data bases. Ohio is pretty much a home rule State, there are county sheriffs and they have their own jails and that responsibility. The State of Ohio of course has Federal prisons and accounts for those prisoners. Now the only information that we would have access to with regard to all of those prisoners would probably be the Bureau of—BCI, Bureau of Criminal Identification. But the possibility that that would be a totally accurate file would be a long shot also. But I think that is a very interesting question. And I cannot honestly say we have done anything about outreach to county sheriffs. I would be happy to look into that.

Mr. KUCINICH. If the chairman would yield?

Mr. HORN. Please, go ahead.

Mr. KUCINICH. The chairman raises a very important point, not only for those who would be unintentionally released early, but also for those prisoners who may be expecting to be released on January 2, 2000 and have the computers kick back to the year 1900. [Laughter.]

I yield back.

Mr. HORN. They will lose their Medicare rights if they go back to 1900.

Mr. VIDMAR. If I could add one thing to that. The other thing of course we are concerned about is the high degree of mechanization of State prisons and security and the access. And we are well along in a project to look at embedded chips and security systems in all of the State prisons.

Mr. HORN. In Los Angeles County, we have let them out without going to the year 2000. A judge told me 3 years ago that he saw this smiling face in his court on Thursday, and he said to himself gee, I have seen that person somewhere. And at the end of the docket, he said and what would you like, so and so, and he said have I not seen you before? He said yes, Judge, you sentenced me to a year in the county jail on Monday and the sheriff let me out by 5 on Monday since the classification system called for that. He had a lot more hardened criminals in that system and so I went back to Mexico to see my parents and came back over on Wednesday to see you because I left a paper here and I thought maybe you would like to give it to me. So that is what we run into in some classification systems.

Let me ask you, Mr. Mason, on the utilities's side, the Public Utilities Commission has reported 20 percent completion, as I noted earlier, and it estimates 100 percent by January 1999. Is that a realistic date as far as you are concerned, or would it slip until March to be more realistic?

Mr. MASON. I believe that was the part on our internal operations. I think that was on page 3.

Mr. HORN. Well, just in general, based on your feel of the situation. I noticed that the President has set for the executive branch in Washington, March 1999, because you want opportunity to test those systems in the remainder of the year. So I am just curious, are you moving perhaps toward a fixed date that would not be January but would be a little later? There always seems to be slippage in these operations.

Mr. MASON. The reports I have reviewed are all first quarter 1999 is what is being identified, leaving the time period thereafter for additional remediation, additional testing. I think that is very accurate. At that point—and a good example is one of the local phone companies I talked to is going to use the time thereafter to make sure that their out of State and their international interconnect remains intact, because at that point they want to try to start working with other companies. So a big interest I had, a big concern I had was that the people would not be sharing information. But frankly, in every plan I have run into from every utility, part of their plan is how they communicate with others. So I feel that as of first quarter, most of your formal remediation procedures will be concluded, with subsequent action thereafter being interfacing with other suppliers upstream and downstream and business partners. And then subsequently about the third quarter, the laying out not only of a draft but a fairly solid contingency plan for how to treat, whether it is outages or any incidents that might arise on 2000.

I think the important thing to note is on almost any given day of the year in Ohio, as many other States, you have some service outage, could be power, could be phone. So there is going to be something occurring on that date that we have to ensure that we do not jump and react and accuse it of being Y2K when in fact it might be something not even related to Y2K. So there is a whole variety of little features out there we have to be cognizant of.

But to answer your question, I feel that most of our remediation will be completed through those first and second quarters.

Mr. HORN. First and second quarters of the next calendar year or the fiscal year?

Mr. MASON. Of 1999, of the calendar year of 1999.

Mr. HORN. Calendar year, so that would be June essentially then, June 30, 1999.

Mr. MASON. The reports I have all show time lines to be on track for first quarter. Not that I am a pessimist, but that to me states that as you are doing additional remediation and testing that first quarter, it is possible that some things may arise that would be corrected in the second quarter. So that is the way I am looking at it. But then a contingency plan I think has to be in place by the third quarter.

Mr. HORN. So the target for doing most of the work and then testing it after that would be somewhere between March 30 and June 30, I would take it and then you are saying you are allowing half a year to see that the operational system does work.

Mr. MASON. In general terms, I believe that is accurate, Congressman.

Mr. HORN. On the—you mentioned the coordination of efforts which I think is a good thing—so these are utility companies that are in competition with each other sharing information, or how does that work?

Mr. MASON. I have asked that question. Again, when you are in government long enough—you know that there are political forces out there that are not truly R&D—but economic forces which are probably more difficult political forces. But everybody I deal with, and I do not care whether you are talking about any of the major electrical utilities or telephone, they depend on each other to provide services to their customers. Again, if on January 1, we have an unusually cold period, like we did I remember between I think it was 1983 and 1984, those companies must rely upon each other to properly serve their own customers.

So the driving force I believe in not only becoming Y2K compliant themselves, but sharing that information is the ultimate goal that they have to serve their customer on January 1 and the only way they can do that is by making sure that those people they do business with are Y2K compliant.

Mr. HORN. My colleague and I are both on a bill that the administration has suggested, what we call a Good Samaritan bill, to urge cooperation and protect people that do cooperate and do not have somebody accuse them of trying to violate the antitrust laws. So apparently you have found that you have had ready cooperation from many of those utilities who are in competition. But that has got a long way to go through the House and other people will have other ideas I am sure. We just like a simple notice to everybody that do not worry about the antitrust laws, let us get the job done on this, and if cooperation is what is needed, let us have it.

My 10 minutes are up, so I will give my colleague——

Mr. MASON. Can I make a——

Mr. HORN. Go ahead, please.

Mr. MASON. On the historic side, because my background was actually history and political science and local government, but what it reminded me of is at the beginning of World War II, the Department of Justice basically worked with Congress on the same kind of exemptions so the oil companies could work together so we could produce enough petroleum again to fight World War II. I put this in the same seriousness because the Y2K is in fact a battle that could hurt our economy if we do not address it properly.

Mr. HORN. That is a good suggestion and we will use that example now that we have got a distinguished historian that recalls it. [Laughter.]

We are yielding now to the distinguished historian of Cuyahoga County. I thought when you asked about that Election Board, if we were in Chicago, I would phrase the question a different way, like resurrection day in 1936.

Mr. KUCINICH. There are people who——

Mr. HORN. That does not happen in Cuyahoga County.

Mr. KUCINICH. Well, when you cross Y2K, it is a millennial problem and there are those who think that the millennium may bring about that Chicago would still be in business with elections. Thank you, Mr. Chairman.

Mr. HORN. Ten minutes.

Mr. KUCINICH. For Mr. Willemssen, does the GAO distribute instructional media to various departments?

Mr. WILLEMSSEN. We have put out now three pieces of guidance on year 2000. The first one that we initially put out in exposure draft form in February 1997 lays out an overall framework for assessing where any given enterprise is on addressing the year 2000 issue: awareness, assessment, renovation, validation, and implementation, lays out specific tasks within those phases that should be addressed. And so from our point of view, any large organization can pick that up and make a quick assessment on where they are at.

Mr. KUCINICH. Is this on disk?

Mr. WILLEMSSEN. We can make it available e-mail. It is available on our Web site and you can pull it down. We also have copies of that particular guide in the back of the room today, along with the other two pieces of guidance that we have put out on testing and contingency planning.

Mr. KUCINICH. Are there any disks that any of you know of that are currently available that can help someone do kind of a—for use as a utility to do a system check on compliance?

Mr. WILLEMSSEN. Oh, yes, a tremendous number of tools are out there, depending on the computing environment.

Mr. KUCINICH. Can the government—is it possible to make some of those more widely available?

Mr. WILLEMSSEN. We do have a couple of Web sites that GSA maintains that has some information on available tools. Many of these are vendor supplied tools, so they usually have a price associated with them.

Mr. KUCINICH. Has there been anything developed in-house?

Mr. WILLEMSSEN. Yes, many things developed in-house, but the one thing to keep in mind is with the uniqueness of many computing environments, they are not always transferrable to a different computing environment. So that is one thing to keep in mind in terms of its use and transferability.

Mr. KUCINICH. I just wondered if, you know, you are mailing out any computer disks with information that would enable people to plug it in.

Mr. WILLEMSSEN. We are, but I just reiterate there is a wealth of information out there, even for home PC use for upgrading BIOS and information on compliance status of operating systems and applications. The information is out there, especially on the web.

Mr. KUCINICH. I would like to get to some of the specifics of your review. Can you describe some of the problems that might be posed right now with respect to the FAA's Y2K status?

Mr. WILLEMSSEN. The unfortunate thing with FAA is they got a very, very late start on Y2K despite the best efforts of the new administrator that has been there I guess about a year, and the person in charge of the Y2K program. They have really done some yeo-

man work in getting on top of the problem, but there simply is not enough time to fully address everything that FAA must do. Y2K is not an issue where you can necessarily just throw more resources at it, especially as it pertains to testing, and hope that it will get done quicker. And with that, FAA faces some major challenges in getting everything done in time. We are on record as saying it is doubtful that they can fix all mission critical systems in time. However, one of the good things that FAA did is they prioritized within mission critical three tiers; one at the highest tier being those systems that have a safety impact, second those systems having an efficiency impact on the national airspace system; and then third, other related impacts.

At the recent hearing where I testified, I made the point that they will have to further prioritize to those safety-related systems to make sure that they are addressed first.

Mr. KUCINICH. I know the Chair is going to be holding further hearings on the FAA's readiness and there have been, as you know, conflicting reports. The one thing that we cannot get into in this whole Y2K analysis is to turn it into a public relations game where people are trying to promote an agency with public relations as opposed to honest disclosure about what the real status of readiness is. And in mission critical areas and in areas such as the FAA, the information which we get is a matter of public safety and so I appreciate your efforts in that regard, and the Chair's efforts.

I would like to also ask has the GAO analyzed the year 2000 problem and how it might affect the provision of public health and environmental services such as clean water and sewage treatment?

Mr. WILLEMSSEN. We have just recently initiated an overall review of water and wastewater systems because of growing concerns that the embedded chip issue may be much more prevalent than originally thought, so I am not in a position today to tell you what we found. I am in a position to tell you it is an area of great concern to us. I am more concerned about the water area now as much as power and telecom. And if indeed as we go again throughout the country you find that State and local organizations do not have Y2K coordinators for their water programs, I would be very concerned.

Mr. KUCINICH. Have you—you have set a task force within GAO on various areas of the economy, is that right?

Mr. WILLEMSSEN. Yes.

Mr. KUCINICH. So have you set up one dealing with water?

Mr. WILLEMSSEN. Yes, we have a number of people who are starting to look at the water issue right now. One of the things we have to keep in mind is we are going to, because we do not have as clear access to data as we do with Federal agencies, we are going to be relying on what data is already out there and looking at some of the efforts of Mr. Koskinen's conversion council to see what they are doing and then try to push them in the right direction.

Mr. KUCINICH. Thank you and thank you, Mr. Chairman. You know, again, when you start to get into some of the implications of failure, we understand the urgency of the work that is being done here. Thank you.

Mr. HORN. Well, thank you.

One of the issues that came up in our very first hearing in the spring and summer of 1996 was that the closer we got to the date of January 1, 2000, the more difficult it would be to keep and maintain personnel that you have put together to do the job. And I guess I would ask each one of you to give us some feel for the difficulty you have had in attracting programmers and have you lost many to the private sector as they have become more involved in this. And just give us a feel for the personnel and the equipment you needed or you might well have contracted it out, but give us a—let us start with Cuyahoga County, Mr. Kozlowski, and tell us what your experiences are on keeping personnel.

Mr. KOZLOWSKI. Yes, Mr. Horn, we have contracted with a third party consulting company, Keane. Staff turnover has been minimal, they reward their employees very well.

Mr. HORN. You say the contract company is King?

Mr. KOZLOWSKI. Keane, K-e-a-n-e.

Mr. HORN. K-e-a-n-e, OK.

Mr. KOZLOWSKI. Their home base is in Boston. They have a local branch here in Cleveland, OH, in Independence.

Mr. HORN. And you have found that useful.

Mr. KOZLOWSKI. Yes. And as far as our employees within Cuyahoga County who are technically oriented, to the best of my knowledge, we have no turnover. We have been able to maintain our staff. As a matter of fact, we have been undergoing some very rigorous training activities as far as getting our staff technically up to speed, as we go forward with new technology. Until recently, we have not had funding for all this training, so I think it is welcome for our staff and is helping provide some of the perks necessary to maintain staff, keeping them well groomed.

Mr. HORN. Mr. Mason, what is your experience?

Mr. MASON. I will give a slightly different answer. When I first was asked by the chairman of the Commission to head up the Commission's efforts and be the Commission's spokesperson, I decided to get outside the agency and ask people in the computer consulting business their interpretation of this. I wanted a firm picture. And frankly I turned to a brother-in-law who has a small firm, about a 15-person consulting business. He does not do this work, he says it is low tech, high meat-grinding. His point to me, to summarize, was that it does not draw the highest of the talent pool in the sense of people going out and correcting and replacing embedded chips, it is a fairly—I hate to use the term "easy task," for some of us it is still difficult loading the next version of Windows, but his basic interpretation to me was it is lower tech than a lot of the other work that they presently do, but high meat grinding. So with that being the case, I guess I do wonder if there is going to be this drawing of the talent pool because it sounds like the talent pool is wider or could be wider perhaps than we might otherwise expect.

Mr. HORN. Mr. Vidmar.

Mr. VIDMAR. Mr. Chairman, we like you have been concerned about this problem and continue to be concerned. Nonetheless, today we have found that our retention rate is very high, we have lost probably less than 10 percent as far as the State government is concerned. We still have a very healthy competition in Ohio for

contracts that we are letting and we continue to let them in increasing numbers and we have not found to this point any exorbitant cost increase. Now that is today. I will be equally concerned 3 months from now and 6 months from now because I agree that at some point this pool is likely to dry up.

Mr. HORN. Were any of the Ohio programs written in Cobol?

Mr. VIDMAR. Oh, yes.

Mr. HORN. And you still had people who knew about Cobol?

Mr. VIDMAR. And a similar language as well.

Mr. HORN. What was the other language?

Mr. VIDMAR. A similar language as well.

Mr. HORN. So you had people on the staff that knew about Cobol.

Mr. VIDMAR. I think that we had reasonably good staff in that regard and I think that we have contracted for a lot of Cobol assistance as well.

Mr. HORN. One of the problems the Federal Government had is as they progressed in new people, they really did not know Cobol and they had to bring them out of retirement and the Office of Personnel Management has waived the fact that you can keep your retirement money, you can accept the contract. It is a pretty good deal for the feds that were in retirement and never thought Cobol would be heard of again. But on the Pentagon computers, they know it is in Cobol, but they cannot find the instructions they left 10, 20 or 30 years ago, so it is a little mystery. But a lot of those people have been hired away also and there has been a loss in a number of major operations in the Federal Government, where people have told me, hey, I am losing people to private industry, to the States, the counties, the non-profits and all the rest. But you have not had that experience?

Mr. VIDMAR. No, and we have not called back retirees, that is something I have talked to a couple of people about as well. I guess you will know that the crunch begins when we press Mr. Bishop back into service. That is the point at which we will be in big trouble. [Laughter.]

Mr. HORN. Well, I think you are probably in good hands then.

Mr. Willemssen, we talked about at other hearings and here you mentioned it, the what-if scenario and what actions need to be taken to address the contingencies in either the fact that the internal systems or data, external data exchanges are not ready on time. What is your knowledge on that now nationwide?

Mr. WILLEMSSEN. Well, we continue to emphasize the fact that organizations, even if they think they are going to make it on time, that they still put in place business continuity and contingency plans, to address the unforeseen circumstances that could hit. So even the best organizations, for example the Social Security Administration, ironically is furthest ahead on putting together contingency plans, because they want to be in a position to address those unforeseen circumstances that may or may not be totally within their control. So we are again encouraging organizations to do that and do that now.

One of the issues that comes up occasionally when this issue is pressed is that organizations do not have time to do contingency plans because they want their staff to be fixing the code. One thing to keep in mind is business continuity and contingency planning ef-

forts should be led by the business side of the house, not the IT side of the house. The information technologists obviously must be intricately involved in the effort, but really the contingency planning effort has to be driven by the business side because they best know how to deliver on their mission.

Mr. HORN. How about that, Mr. Vidmar, have you had a chance to look at the possibility of contingency plans?

Mr. VIDMAR. Mr. Chairman, yes, we are currently redoubling our interest in contingency plans. With a number of agencies, we have had a similar experience, they have not included that as part of their required planning, we are insisting now upon that.

I very much liked Mr. Willemssen's comment about that being a business consideration, and that is an approach we have not taken and I appreciate that.

Mr. HORN. Mr. Mason, how about the utilities, are they thinking of some contingency plans beyond the fixing of the codes of the existing computer language?

Mr. MASON. Yes, and again when I pressed for details, there are draft plans that each of the utilities hope to refine after they recognize their internal strengths and weaknesses, but even as important is the strengths and weaknesses of the various business partners they deal with. So again, that is why, based on what I have been able to review, there should be a more final contingency planning to be prepared by the third quarter of 1999. But as indicated earlier, a lot of effort has to continue to go into remediation and testing at this point and that seems to be the primary focus of the technical people.

Mr. HORN. How about Cuyahoga County, any contingency plan?

Mr. KOZLOWSKI. Absolutely, for all the county agencies, we are working on individual project plans that include contingency, business continuity and those plans should be completed no later than first quarter next year.

Mr. HORN. Is that, for example, simply saying let us get everybody in city hall to write out the payroll checks if we have to, if the machines are not working? What kind of plans have you come up with?

Mr. KOZLOWSKI. OK, the plans may include using alternate resources, other agencies, possibly beefing up your staff as you alluded to. Human resources probably will be lean at that point because there are other agencies or other businesses who may need to draw upon the same resources like your Kelly Services or other temporary services, and that may become an issue in the year 1999 to 2000.

Mr. HORN. Moving to the comment your brother-in-law made, Mr. Mason, low tech, high meat-grinding is a good description. That led me in thinking to the community colleges, the colleges and State universities that are educating programmers, among other things, and I wonder is there any opportunity there for people on internships or whatever it is, paid or unpaid, just for the experience, where they could be used in doing some fixing on the year 2000 problem? Has anybody related to a local community college, a local State university, to see if they can get some experience and some help, because they could do a lot of that job, because it is, as

you say, low tech—or your brother-in-law said, low tech, high meat-grinding.

Mr. MASON. Mr. Chairman, I can speak on behalf of the PUCO as a business, that we do use interns on a routine basis. I cannot tell you in detail whether they were used on any of these aspects, I would have to yield to other panelists for that kind of answer.

Mr. HORN. Any thoughts at the State government, Mr. Vidmar?

Mr. VIDMAR. We are also—we use a lot of interns and are increasing our number of interns. We have not specifically, Mr. Chairman, used—applied that resource, but I think that is a very good idea. Obviously colleges and universities are not a good source of some of the Cobol programs and some of the large mainframe things we have, but they are graduating and have people in process with good local area network skills and PC kinds of applications and we will take that under advisement.

Mr. HORN. One of the things that bothers me, and we might well be acting on it before Congress recesses, is the interest of the various Silicon Valleys, be they in Ohio, California, Massachusetts, wherever they are, claiming they cannot get enough skilled programmers. These are 30 to 40 to 50 to 60,000 dollar jobs and they want to bring them in and import them from other countries, claiming we cannot educate them at home. And for the life of me, as one who has been an educator, a university president, a dean of graduate studies and research and all that, I cannot understand why the State universities of the Nation, the community colleges of the Nation, which are designed in the California sense where the movement was founded, to meet the vocational needs of the industry in the urban center. For the life of me, I just cannot understand why the community college types and the State university types, where they never have a current generation of equipment usually, they are always one or two behind just because the State budget is pretty skimpy in a lot of places, and if they sat down with their Silicon Valley, be it in Cuyahoga County—and I am sure you have got a lot of firms here—and said hey, we will trade you the learning experience that we can offer, you provide us with some of the latest equipment which would then mean you had people that really knew what they were doing as they went out on the job market. And I just wondered, is there any thinking with the educators in Ohio to meet some of the needs for skilled programmers, or are all the people in Ohio going to say well, let us import them just as we have been doing in the past. And I am saying hey, how come, these are $50,000 jobs, the kind of programmers that a lot of these people want. So can someone explain to me what is happening here? I realize we do not have any legitimate functioning educators, but we are all educators to a point.

Yes, Mr. Vidmar?

Mr. VIDMAR. Mr. Chairman, I cannot explain that, you know, except that we realize in our own experience that much of the training that we need comes post-graduate, but I am very much interested currently in what is going on in the high schools. Ohio, for instance, like many other States, is in the process of wiring all their classrooms and increasingly using student help to accomplish a number of tasks. We have recently made arrangements—the one I am certain of is with Cisco Corp. where the Cisco Corp. is creat-

ing what they call the Cisco Institute in high schools and vocational schools and graduates of those schools will receive certification on that equipment. I understand that Novell in Ohio is doing the same kind of thing.

So I see this starting even earlier than you suggested, maybe the higher education takes a lesson from some of this.

Mr. HORN. Well, you are absolutely right, it should start earlier. And the high schools, I know we are building a new technical high school in Long Beach and those schools should be doing what the community colleges did 10, 20 years ago and getting it down earlier where they get a person interested in this type of data processing and all the revolution that is going on and will continue to go on. I remember the Speaker made the comment one day that if the human resources of the Federal Government had had an increase in productivity the same as computers, we would only have three civil servants right now. [Laughter.]

I do not know if my colleague cares for the speaker's analogies, but it is an interesting one.

We no longer have huge rooms of mainframes and we have personal computers that have the capacity of what those mainframes had 30 years ago, which is why we got into this situation, when we needed to find more storage space and somebody said hey, let us put down '67, not 1967. My colleague, you have got another 10 minutes and then we will probably wind it up.

Mr. KUCINICH. Thank you, Mr. Chairman. And I again want to thank the witnesses. I think we have covered a lot of material today and I think we have been given a pretty good overview of what the capability is at the State and county levels as well as some reflection on our Federal readiness. I am looking forward to hearing from the witnesses in the next panel as well, and in the interest of that, Mr. Chairman, I would be glad to yield back so that we can get to panel No. 2.

Mr. HORN. OK. I have just got one question left, and that is—and it came up but I would like it a little more specifically answered—some of the smaller cities do not have the resources all of you have. What is the plan to help smaller cities in Ohio and how are we doing it? Are the county boards of supervisors and their State association, are they doing anything in that regard, or the mayors of smaller cities, this kind of thing? Mr. Vidmar.

Mr. VIDMAR. Mr. Chairman, there is a certain feeling of helplessness about this. Obviously in the State of Ohio, there are several thousand political subdivisions. Our average program has been directed primarily at meeting with associations. As I indicated, tomorrow we will meet again with the county auditors association and county commissioners association. Using some of the facilities we have in terms of awareness training and making our facilities available to them.

As you know, as it turns out though, each problem is kind of an individual problem and although we are going to sink or swim together, you cannot go in and do all of those. But outreach, awareness, providing assistance if it is possible for us to do is very high on our radar screen.

Mr. HORN. Any comment on the cities of Cuyahoga County? How many cities are there in the county?

Mr. KOZLOWSKI. Off the top of my head, I cannot state that number, I know there are many, many.

Mr. HORN. Several dozen?

Mr. KOZLOWSKI. Yes, at least.

Mr. HORN. In L.A. we have 88 cities searching for a city, but anyhow, I did not know if Cleveland was regarded that way either. So are we sharing in some way, and if so, what are we doing?

Mr. KOZLOWSKI. As far as I know, if we have any business exchange partners, you know, with another city or with another agency or another entity, you know, we share our information at that point. We may share that the county is 2000 compliant. Of course we need to check and make sure data files coming into the county are compliant and also going out. So in that respect we do share.

Mr. HORN. Any questions on this? You know the area better than I do.

Mr. KUCINICH. Again, I am impressed that we have witnesses here who are in a position of oversight and monitoring and I think, speaking as someone who is a Congressional Representative of this area, I feel that we are on the right track. Again, I would urge the Public Utilities Commission to consider gathering information independent of the utilities, notwithstanding that they have a proper incentive to make sure that the job is done right. Thank you.

Mr. HORN. Thank you, and I thank this panel. If Mr. Willemssen can stay, if you could stay for the second panel, I would appreciate it.

Mr. WILLEMSSEN. Sure.

Mr. HORN. And I thank you, Mr. Vidmar and your colleague and Mr. Mason and Mr. Kozlowski. That is very helpful testimony, so thank you for coming.

The next panel will come forward, and that is Mr. Gill, Mr. Harris, Mr. Blakely, Mr. Kowitz and Mr. Nicolet. Who is accompanying, is that Mr. Blakely? Why do we not just put you down and swear you in.

Mr. MEYER. John Meyer.

Mr. HORN. John White?

Mr. MEYER. John Meyer.

Mr. HORN. M——

Mr. MEYER. M-e-y-e-r.

Mr. HORN. OK. And the title is?

Mr. MEYER. I am executive vice president for Key Services.

Mr. HORN. OK, and that is a subsidiary of the Key Corp?

Mr. MEYER. Right.

Mr. HORN. Very good. Well, gentlemen, if you would all stand and raise your right hands.

[Witnesses sworn.]

Mr. HORN. All have been sworn in and affirmed the oath. And so we will start with Mr. Gill, Mr. John Gill is the senior vice president for the FirstEnergy Corp.

STATEMENTS OF JOHN GILL, SENIOR VICE PRESIDENT, FIRSTENERGY CORP.; DR. C. MARTIN HARRIS, CHIEF INFORMATION OFFICER, THE CLEVELAND CLINIC FOUNDATION; KEVIN BLAKELY, EXECUTIVE VICE PRESIDENT FOR RISK MANAGEMENT, KEY CORP., ACCOMPANIED BY JOHN MEYER, EXECUTIVE VICE PRESIDENT FOR KEY SERVICES; FRED KOWITZ, DIRECTOR, AMERITECH CORP.; AND JEFFREY NICOLET, YEAR 2000 AND CONTINGENCY PLANNING PRACTICE MANAGER, ROMAC INTERNATIONAL, CO-FOUNDER OHIO 2000

Mr. GILL. Good morning, Chairman Horn, Congressman Kucinich, thank you for the opportunity to update you on our efforts to prepare for the year 2000.

My name is John Gill, senior vice president of FirstEnergy—the holding company of Ohio Edison, Pennsylvania Power, the Illuminating Co. and Toledo Edison.

FirstEnergy's utility operating companies comprise the 12th largest investor-owned electric system in the United States and the largest in Ohio. We serve 2.2 million customers in northern and central Ohio and western Pennsylvania. The company has more than $18 billion in assets, including ownership in 18 power plants. In addition, we provide energy-related products and services to businesses nationwide through our subsidiaries.

Let me begin by assuring you that we are taking the year 2000 project very seriously. We have committed significant resources to mitigate any negative effects of the year 2000 problem for our customers, shareholders and employees.

We have always been committed to providing customers with superior service. We view the year 2000 challenge the same way we view our daily challenge.

Specifically, here is what we are doing: A team of employees is coordinating the year 2000 effort in each area of our company and reporting their progress to me monthly. I provide quarterly progress reports to the rest of the senior management team and our Board of Directors. In total, more than 200 FirstEnergy employees are involved, full or part-time, in our year 2000-readiness project. They report their results to the project's full time coordinator.

We are nearing completion of a full-scale inventory and assessment of all computer hardware, software and embedded systems to determine exactly what steps need to be taken.

As part of the process, we are identifying which systems need to be renovated and which need to be replaced.

Because of our recent merger which brought together Ohio Edison with the former Centerior Energy Corp., much of this work had been planned as part of the necessary consolidation of systems and processes. In fact, 17 new major systems are being installed as a direct result of the merger, including the accounts payable and customer accounting systems. These systems, which will be compliant, will be operational by next year.

Our year 2000 efforts are focused on four areas that are essential to our operations: First, customer services, including power generation and delivery, metering and remittance; second, the regulatory obligations ranging from environmental control systems to govern-

ment reporting; third, safety issues such as security systems and equipment and system maintenance; and fourth, shareholder services including the issuance of dividend checks and reporting of account activity.

Power generation is probably the most complicated area to assess because of the number and complexity of the systems. Completion of the assessment is projected for this fall. At our nuclear power plants, computer and other digital systems provide data acquisition and support services. Those are currently undergoing evaluation to determine their year 2000 readiness.

We have five full time employees at Perry and Davis-Besse nuclear stations dedicated to year 2000 readiness and another 32 working part-time on the project. In addition, General Electric and other vendors are assisting with the assessment of their equipment. The plant computer system at Perry was already scheduled for replacement as part of the planned refueling in April 1999. The new computer will be fully compliant.

Work to make the nuclear plants year 2000 ready is on course, and we expect to meet the Nuclear Regulatory Commission's target of July 1, 1999.

Fossil plants also pose a complex challenge. First, they generate the bulk of our power—more than 8,000 megawatts. Second, they contain many embedded chips and hardware and software systems. While we are assessing all of our fossil plants, we are looking at the largest ones first. We are currently conducting a comprehensive inventory analysis of our four plants, representing almost 6,000 megawatts of generation. During this process, we will identify all non-compliant equipment and develop a plan for remediation for each system. This will ensure that the maximum amount of generation capacity is ready as early as possible.

We have retained TAVA/R.W. Beck as consultants to help with the equipment inventory. Their data base, which includes an exhaustive list of power plant equipment and its compliance status, will help expedite the process. Equipment manufacturers such as Bailey Controls and Foxboro also are assisting with the inventory by assessing their equipment at our plants.

The Energy Management System, which runs the transmission grid and assures we have sufficient power to meet customer demand, was purchased in 1996 and is nearly year 2000 ready. The vendor, G.E. Harris, conducted extensive testing and, in March, we further tested the system by setting the equipment dates ahead. Both tests revealed no operational problems. Of the Energy Management System's support functions, we found 120,000 date-sensitive uses, with just six requiring upgrades. All of these are in the process of being changed and tested.

As always, we will be ready, with contingency plans in the event of a system failure.

The Ohio Edison-Penn Power customer remittance system, which is being upgraded as part of the Pennsylvania Customer Choice pilot program, will be compliant by early 1999. The Illuminating Co.-Toledo Edison remittance system is relatively new and needs less work to become compliant. It is nearly complete as well.

In addition to assessments, testing and remediation of internal systems, we are also contacting vendors, suppliers and inter-

connected utilities to determine whether problems exist that could impact our operations. We are developing plans to address any that we identify.

We are actively involved in the year 2000 work being done by industry groups such as the Electric Power Research Institute and the Edison Electric Institute.

We are filing monthly reports with the North American Electric Reliability Council and we recently updated our filing to the Securities and Exchange Commission.

While we have much work ahead of us, we have more behind us. The inventory and assessment phases of the project, arguably the most time-consuming, will be completed by the end of the year. We will complete contingency planning by the first quarter of 1999 and we intend to wrap up remediation and testing by the third quarter of 1999.

I am confident that FirstEnergy is on track to providing a seamless transition into the new millennium for our customers, shareholders and employees.

Thank you.

Mr. HORN. We thank you. You have stimulated our interest in a number of questions that we will save until the whole panel has had an opportunity.

Dr. Harris, we are glad to have you with us. How did a nice person like you with an M.D. become the chief information officer? Are you trying to join the enemy, or what?

[The prepared statement of Mr. Gill follows:]

Subcommittee on Government Management, Information, and Technology
Field Hearing Testimony
John Gill
September 1, 1998

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During this process, we will identify all non-compliant equipment and develop a plan for remediation for each system.

This will ensure that the maximum amount of generation capacity is ready as early as possible.

We have retained TAVA/R. W. BECK as consultants to help with the equipment inventory. Their database – which includes an exhaustive list of power plant equipment and its compliance status – will help expedite the process.

Equipment manufacturers such as Bailey Controls and Foxboro also are assisting with the inventory by assessing their equipment at the plants.

The Energy Management System, which runs the transmission grid and assures that we have sufficient power to meet customer demand, was purchased in 1996 and is nearly Year-2000 ready.

The vendor, GE Harris, conducted extensive testing and, in March, we further tested the system by setting the equipment dates ahead. Both tests revealed no operational problems.

Of the Emergency Management System's support functions, we found 120,000 date-sensitive uses, with just six requiring upgrades. All of these are in the process of being changed and tested.

As always, we will be ready with a contingency plan in the event of a system failure.

The Ohio Edison-Penn Power customer remittance system, which is being upgraded as part of the Pennsylvania Customer Choice pilot program, will be compliant by early 1999.

The Illuminating Company-Toledo Edison remittance system is relatively new and needs less work to become compliant. It is nearly complete as well.

In addition to assessments, testing and remediation of internal systems, we also are contacting vendors, suppliers and interconnnected utilities to determine whether problems exist that could impact our operations. We are developing plans to address any that we identify.

We are actively involved in Year-2000 work being done by industry groups such as the Electric Power Research Institute and the Edison Electric Institute.

We are filing monthly status reports with the North American Electric Reliability Council, and we recently updated our filing with the Securities and Exchange Commission.

While we have much work ahead of us, we have more behind us. The inventory and assessment phases of the project, arguably the most time-consuming, will be completed by the end of this year.

We will complete contingency planning by the first quarter of 1999, and we intend to wrap up remediation and testing by the third quarter of 1999.

I am confident that FirstEnergy is on track to providing a seamless transition into the new millennium for our customers, shareholders and employees.

Thank you.

Dr. HARRIS. No, I think it is all the practice of medicine. I am trained as a health services researcher interested in quality outcomes and cost and in order to do that work, you have to use large data sets and that took me further and further down the line of using technology.

Mr. HORN. Great, work within. Next you will get a law degree and then you are really working within.

Dr. HARRIS. Good morning, Chairman Horn, other members of the committee, I would like to thank you for the opportunity to speak to you this morning about year 2000 issues facing the health care industry. In particular, I will be speaking about the challenges facing the provider side of health care since I am a practicing physician and serve as the chief information officer of a large integrated delivery system here in northeast Ohio, the Cleveland Clinic Foundation.

The Cleveland Clinic Foundation is comprised of 9 acute care inpatient facilities, 12 family health centers, a home health delivery system, a large graduate medical education program and a research institute. Investigators at the Cleveland Clinic receive numerous awards from many agencies such as the National Institutes of Health and the National Cancer Institute.

As you know, industries are faced with identifying and repairing any problems with their computer software and industrial equipment which might be triggered by the transition to and beyond the year 2000. The fundamental problem is one of faulty results when a two-digit date field is used in mathematical calculations.

In health care, the year 2000 problem, if not corrected, will be evidenced in scheduling systems which reveal inaccurate appointment schedules or reservation sequences for our patients, inaccurate benefits administration for employees and failures of supply ordering, payroll processing and patient invoicing systems. Of particular concern in health care are the medical devices which practitioners use to gather data that is subsequently used to make patient treatment decisions.

During the next few minutes, I would like to present a brief summary of the activities that are currently taking place in health care institutions to address the year 2000 issue so that you have a better appreciation of the challenges that we face, but more importantly, to highlight two aspects of this national and international program which might be improved with assistance from your subcommittee.

Most year 2000 software and equipment repair plans have been divided into multiple phases which overlap with one another. The first phase of the project is the inventory and assessment phase. During this phase of the project, the scope of the year 2000 initiative is established and then is continuously updated as new information is received. As has been mentioned here several times, the inventory component of this is probably the most complex and really requires that we spend a large percentage of our efforts focused on identifying critical business processes and then establishing those computer systems and equipment which are required to support them.

The remediation phase includes the actual repair of software or equipment which are not year 2000 compliant. This phase of the

project requires extensive technical expertise and consumes the most human and financial resources. Most organizations have established teams of programmers, facilities and clinical engineer—in medicine these are the individuals who really understand medical equipment and how it works—in order to complete the tasks of this phase.

Contingency planning has been mentioned here many times and is a key component of the programs in health care. Again, this effort requires extensive human resources to define the potential failure scenarios and establish alternative means of supporting administrative or clinical processes.

Finally, and most important, is communication. The problem we are addressing here today is quite complex, but in order to be addressed appropriately, it must be communicated to every individual in the organization so that they are capable of participating in the solution. Dedicated communications specialists are required as well as information resources such as the Internet and organizational intranets.

As I stated earlier, I would like to focus my remaining remarks on two aspects of this entire process—those being the process to repair medical equipment and contingency plans for reimbursement systems which exist between providers and payers.

Despite the best efforts of provider organizations in health care to inventory and identify medical equipment which is most critical in the patient care process, it is impossible to make a final determination of compliance without well organized and definitive information from medical equipment manufacturers. At this point in time, providers must use many sources of information to establish the compliance status of a medical device.

Although some information is available directly from manufacturers and government or industry sources, it is neither complete or definitive enough to establish the final plan. A mandatory national reporting program with consistent reporting standards would greatly enhance the quality of provider equipment repair programs while minimizing risks to our patients.

I would just mention here that the FDA has established such a site, although at this point it is voluntary and as we work through our medical equipment repair and the inventory phase of that is complete at this point, we find that only 30 to 40 percent of the equipment that we are most concerned about is represented on that site.

On the reimbursement side in terms of contingency planning, the billing and collection function for services rendered in health care is one of the most complex processes in our industry. It is relatively unique compared to other industries because of the disassociation from the patient—between the patient and the responsibility for final payment. Most payments for patient services are at least partially made on behalf of the patient by a health insurance company or a third party intermediary representing the Medicare or Medicaid programs.

Most organizations have used computer software to automate the billing process as well as to comply with changing regulatory requirements. Insurance companies prefer to receive claims or bills and pay bills or remittances in electronic form. Unlike other service

providers which receive payment in check form from customers, health care organizations are extremely dependent on the integrity of this electronic relationship with numerous insurance companies, each with different computer software programs. Given the number of different computer system linkages that exist nationally between insurance companies and providers, I believe there is a very high probability of failures at this billing and reimbursement interface. Although both parties are working on this aspect of the repair, a national contingency program which establishes guaranteed reimbursement based on historical experience would provide financial stability while computer-related programs are resolved.

Now I would also mention here that there is some precedent for this in at least the Medicare program for individual institutions who have installed programs in—new computer systems in the past and have had major disasters. Medicare has provided what is known as a periodic interim payment to those institutions until their programs could be fixed. But this has been done on an individual basis. The problem here I believe is a national one.

Let me close by thanking you for the time you have given me to address this committee. I believe that through your efforts and the adoption of some of the suggestions we have heard here today, it is my hope that the health care industry will make the transition into the year 2000 with minimal interruption in patient care services.

[The prepared statement of Dr. Harris follows:]

C. Martin Harris, M.D.
Chief Information Officer
The Cleveland Clinic Foundation
September 1, 1998

Introduction: I will be speaking today about the challenges facing the provider side of healthcare since I am a practicing physician and serve as the Chief Information Officer of a large integrated delivery system here in Northeast, Ohio, The Cleveland Clinic Foundation.

The Cleveland Clinic Foundation is comprised of nine acute care inpatient facilities, twelve family health centers, a home health delivery system, a large graduate medical education program and a research institute. Investigators at The Cleveland Clinic Foundation receive numerous awards from many agencies such as the National Institutes of Health and the National Cancer Institute.

As you know, industries are faced with identifying and repairing any problems with their computer software and industrial equipment which might be triggered by the transition to and beyond the Year 2000. The fundamental problem is one of faulty results when a two-digit date field is used in mathematical calculations.

In Healthcare, the Year 2000 problem, if not corrected, will be evidenced in scheduling systems which reveal inaccurate appointment or reservation sequences, inaccurate benefits administration for employees and failures of supply ordering, payroll processing and customer/patient invoicing systems. Of particular concern in healthcare are medical devices which gather data that is subsequently used to make patient treatment decisions.

During the next five minutes, I would like to present a brief summary of the activities that are currently taking place in healthcare institutions to address the Year 2000 issue so that you have a better appreciation of the challenges that we face, but more importantly, to highlight two aspects of this national/international remediation project which might be improved with assistance from your subcommittee.

Most Year 2000 software and equipment repair plans have been divided into multiple phases which overlap with one another. The first phase of the project is the inventory/assessment phase. During this phase of the project the scope of the Year 2000 initiative is established and then continuously updated as new information is received. At least one industry study suggests that eighty percent of healthcare institutions have initiated this phase of the project. The real challenge in this component of the project is establishing the critical business processes and identifying all computer systems and equipment which are required to support them.

The remediation phase includes the actual repair of software or equipment which are not Year 2000 compliant. This phase of the project requires extensive technical expertise and consumes the most human and financial resources. Most organizations have established teams of programmers, facilities and clinical engineers, and project managers, in order to complete the tasks of this phase.

Contingency planning is required for projects that cannot be repaired before the Year 2000 or in case a completed repair is not successful. Again, this effort requires extensive human resources to define the potential failure scenarios and establish alternative means of supporting an administrative or clinical process.

Finally, but most important of all, is communication. The problem we are discussing here today is quite complex but in order to be addressed appropriately it must be communicated to every individual in the organization so that they are capable of participating in the solution. Dedicated communications specialists are required as well as information resources such as the Internet and organizational intranets.

As I stated earlier, I'd like to focus my remarks on two aspects of this entire process, those being the process to repair/replace medical equipment and the contingency plans for reimbursement systems which exist between providers and payors.

Medical Equipment Repair: Despite the best efforts of provider organizations in healthcare to inventory and identify medical equipment which is most critical in the patient care process it is impossible to make a final determination of compliance without well organized and definitive information from medical equipment manufacturers. At this point in time, providers must use many sources of information to establish the compliance status of a medical device.

Although some information is available directly from manufacturers and government or industry sources, it is neither complete or definitive enough to establish final remediation plans. A mandatory national reporting system with consistent reporting standards would greatly enhance the quality of provider equipment repair programs while minimizing risks to patients.

Reimbursement Contingency Plan: The billing and collection function for services rendered in healthcare is one of the most complex processes in the industry. It is relatively unique compared to other industries because of the disassociation between the patient and the responsible party for payment. Most payments for patient services are at least partially made on behalf of the patient by a health insurance company or a third party intermediary representing the Medicare and Medicaid programs.

Most organizations have used computer software to automate the billing process as well as to comply with changing regulatory requirements. The vast majority of insurance companies prefer to receive claims (bills) and pay bills (remittances) in electronic form. Unlike other service providers which receive payment in check form from customers, healthcare organizations are extremely dependent on the integrity of this electronic relationship with numerous insurance

companies, each with different computer software programs. Given the number of different computer system linkages that exist nationally between insurance companies and providers, I believe there is a very high probability of failures at this billing and reimbursement interface. Although both parties are working on this aspect of the repair, a national contingency program which establishes guaranteed reimbursement based on historical experience would provide financial stability while computer related problems are resolved.

Let me close by thanking you for the time you have given me to address this committee. Through your efforts and the adoption of some of the suggestions you have heard today it is my hope that the healthcare industry will make the transition into the Year 2000 with minimal interruptions in patient care services.

Mr. HORN. That is a very helpful statement, and in the latter part of it, you really are into the basic issue that is driving everybody nuts—doctors, patients, hospitals—and with other hats on, we need to work through that one also and I think we will all be calling you in the months ahead to see what your advice is, because we do recognize the excellence of the Cleveland Clinic. I drove out to that area last night to take a look at it, I had heard about it for years, and it is truly impressive, the integration of activity that you have put together there.

Our next presenter is Mr. Kevin Blakely, who is the executive vice president for risk management at the Key Corp. And he is accompanied by John Meyer, the executive vice president of Key Services. Mr. Blakely.

Mr. BLAKELY. Thank you, Mr. Chairman. Chairman Horn and Ranking Member Kucinich, I would like to thank you for the opportunity to share with you the lessons that KeyCorp has learned from the challenges posed by the year 2000. As you mentioned, I would like to introduce my partner here, John Meyer, who is executive vice president for Key Services, which is our large technology subsidiary.

KeyCorp began its preparedness efforts for the year 2000 starting as far back as 1995, and we, like many other companies, focused on fixing our internal systems. We have since learned that Y2K preparedness is much more than that. Fixing internal systems is but one leg of a multi-legged stool. It is one thing to be able to say that all of our systems are millennium ready, it is a whole different thing to be able to say that after their conversion, they still have the ability to talk to one another. This is called interface testing and we consider it a critical phase of the millennium preparedness.

Similar to how one system will be dependent on another, we found that one company will often be dependent on another to provide important information. Consequently, we have to determine that these companies upon which we are dependent, are also millennium ready and able to interface with our internal systems. Because of this external dependency, we have developed contingency plans to maintain ongoing operations in the event of a failure of a critical system or the failure of a vendor.

We have discovered that these contingency plans themselves must also be tested. One cannot assume that simply because an alternative source has been identified in a contingency plan, that they will be willing or able to provide us the support that we need. The alternate may have made a decision to focus all their resources on existing clients, leaving us out in the cold. Like interface testing, contingency testing is also critical.

Although the year 2000 is indeed a technical issue, we feel that implementation of a corporate-wide strategy to deal with its many ancillary problems is necessary in order to be ready.

My goal now is to share with you the four factors that Key believes are critical for success in our Y2K strategy. We have identified the critical success factors to be: No. 1, executive management commitment; No. 2, project management experience; No. 3, effective communications; and, No. 4, understanding external risks that are beyond our control.

We feel that these four factors are the keystone that will provide an increased opportunity for success, and I would like to spend just one moment on each of them.

Executive management commitment. In KeyCorp, every aspect of our company reports up to 1 of 11 members of our management committee. Each of these individuals has taken responsibility for their part of the company's year 2000 readiness. To get that process started, our head of technology, who is himself a member of the management committee, established a full time senior level project team to drive the day-to-day management of the year 2000 effort. John Meyer is the head of that project management team.

The management committee also designated a senior level Y2K coordinator for each of their areas of responsibility. The coordinators are responsible for implementation of all initiatives identified by the project team. This infrastructure allows the project team to rapidly carry out all critical activities that require immediate attention.

The second success factor focuses on project management expertise. Key's involvement in large scale technology projects has been anything but limited. Our merger activity in recent years as well as our conversion to a nationwide banking platform has created a well-seasoned management team proficient in the execution of complex projects. For example, in 1997, KeyCorp became the first bank to offer nationwide banking services. The operational and technological challenges presented by this effort are nothing short of extraordinary, yet they were achieved in a nearly flawless manner. The project management skills obtained through such initiatives have been invaluable in building a skill base to draw upon in meeting the year 2000 challenge.

The third success factor is effective communications. We have found that a cooperative spirit exists within the financial services industry. Many institutions, like Key itself, are willing to share issues and solutions with other companies in an effort to achieve millennium preparedness. The information we have shared with and gathered from other organizations has increased our readiness, the readiness of our partner companies and the readiness of our industry as a whole.

The last success factor is understanding external risks. Our industry has an inherent exposure to risks beyond our control. A complete understanding of these risks, as well as a means of addressing them, is critical in planning for the year 2000.

We have gathered information on the entities that, through their own potential lack of readiness, pose a risk to our institution. This assessment will allow us to develop corporate-wide contingency plans, and executive management has insisted that these contingency plans be comprehensive, realistic, achievable and date-driven.

Key's Y2K strategy has been to utilize these four critical success factors with the goal of achieving complete coverage of the corporation as it relates to all areas of risk.

In summary, the millennium bug is a problem that none of us has ever faced before. Nonetheless, the dedication of executive management, focus on risk mitigation and connection to industry knowledge bases has given us confidence that KeyCorp will con-

tinue to provide the same high quality of service that it currently provides to its shareholders, customers and business partners, well beyond the year 2000.

I will be happy to answer any questions that you should have.

[The prepared statement of Mr. Blakely follows:]

Testimony of

Kevin M. Blakely

Group Executive Vice President For Risk Management

KeyCorp

House Subcommittee on Government Management, Information and Technology

September 1, 1998 10:00 a.m.

Chairman Horn and Members of the Committee, thank you for the opportunity to share the valuable lessons Key has learned in meeting the challenges posed by the Year 2000. My name is Kevin Blakely and I am Group Executive Vice President for Risk Management at KeyCorp.

KeyCorp is one of the nation's largest financial services companies, with assets of approximately $76 billion. Through four principal lines of business—corporate capital, consumer finance, community banking and capital partners—the Cleveland-based company provides retail and wholesale banking investment, financing and money management services to individuals and companies across the U.S. Key companies have a presence in 46 states from Maine to Alaska.

Like many U.S. financial institutions, Key is currently facing the challenges posed by the Year 2000 as well as encountering complications caused by the very nature of our industry. These complications include technology dependence as well as inter-connectivity between institutions, customers, suppliers and vendors.

KeyCorp began its preparedness efforts for Y2K starting as far back as 1995. We, like many other companies, originally focused on fixing our internal systems. We have since learned that Y2K preparedness is much more than that.

Fixing internal systems is but one leg of a multi leg stool. Many of our systems transfer information to each other. In essence, they are dependent upon one another. For example, when we receive a car loan application, important underwriting information is captured in system "A". If the loan is subsequently approved, system "A" has to tell our accounting system (system "B") and the general ledger system (system "C") to record and fund the loan.

Initial efforts were focused on making all three systems, A, B, and C individually millennium compliant. We have since discovered that we must also determine that the systems can still talk to each other once the conversion is complete. This is called "interface" testing and is considered a critical component of millennium preparedness.

One company will often depend on another company to provide important information. In the previous example, KeyCorp's system "A" must receive information from an external credit bureau to properly underwrite the loan. Consequently, we have to determine that the credit bureau upon whom we are dependent is also millennium ready and able to interface with our internal systems.

We are developing contingency plans to maintain ongoing operations in the event of the failure of a critical system or vendor. In the previous example, we have identified a dependency on an external credit bureau for important information. We will form a contingency plan to assure ourselves that if the credit bureau cannot deliver the information at Y2K, we will have an alternative source available.

We have learned that the contingency plans themselves must also be tested. One cannot assume that simply because an alternative source has been identified it will be willing or able to provide us the data we need. In our example, the alternate credit bureau may have made a decision to focus all their resources on existing clients, leaving us out in the cold.

As you can see, millennium preparedness is more than just modifying your individual systems. Individual systems must continue to work with each other, be they internal, external or both. Contingency plans must also be developed in the event something goes wrong, and those contingency plans must themselves be tested.

Although the Year 2000 problem is indeed a technical issue, we feel the ramifications are so far-reaching that the implementation of a corporate wide strategy is necessary in order to be ready. As previously mentioned, significant effort has been exerted on the technical fix. As a consequence, our comfort level with the progress to date has afforded us the opportunity to place the necessary emphasis on business risk issues. With this in mind, our goal is to share with you the factors that we believe are critical for success of our Y2K strategy while demonstrating the important role they have played in our ability to meet the Y2K challenge.

KeyCorp has identified the critical success factors to be: Executive Management commitment, senior project management, effective communications, and an understanding of external risks beyond the organization's control. Apart from generous lead-time, a luxury no longer available, instituting the following practices will provide an increased opportunity for success.

Executive Management Commitment

Executive involvement in the Year 2000 initiative is critical in order to obtain accountability across the organization. Further, it will facilitate rapid issue resolution, promote corporate wide awareness and encourage dedication of resources. In KeyCorp, every aspect of the company reports up to one of eleven members of our management committee. Each of these individuals has undertaken responsibility for their business' Year 2000 readiness. In order to promote this ownership, it was essential to involve them early on to provide the greatest benefit to the project.

To get the process started, our head of technology established a full time project team to drive the day to day management of the Y2K preparedness effort. The team is comprised of technology experts, consultants and risk management people. The project team facilitates direction, cooperation and communication throughout the entire company. The early involvement of the Management Committee as well as our Board of Directors allowed the project team to obtain sponsorship and resources for initiatives that impacted the entire corporation.

The management committee also designated a senior level Y2K Coordinator in each of their areas of responsibilities. The coordinators are responsible for the implementation of all Y2K initiatives identified by the project team. This infrastructure allows the project team to rapidly carry out critical activities that require immediate attention.

Executive Management's familiarity with the project, intimate knowledge of their business and commitment of their resources established the necessary precedent to get things done. For example, KeyCorp is currently making an effort to contact many of its lending clients to determine the effect Y2K may have on them. This is important to know so that we can gauge the financial impact the millennium may present. If a manager of one of our lending units fails to fully appreciate the importance of engaging in this effort, a simple phone call from a well informed member of our management committee is usually enough to bring religion to the wayward manager.

The early establishment of regular and consistent communications with Executive Management was critical to the mobilization of the Y2K effort. This communication was established through frequent presentations and discussions on the millennium issues and risks. In depth reporting continues as we speak. These communications with Executive Management enhanced our ability to expedite effective solutions.

Senior Project Management

Key's involvement in large-scale technology projects has been anything but limited. Our merger activity in recent years as well as our conversion to a nationwide banking platform has created a well-seasoned Management team proficient in the execution of complex projects. In 1997, KeyCorp became the first bank to offer nationwide banking services. As an example, this allows clients in Seattle, WA to deposit and withdraw from their accounts in Portland, ME. The operational and technological challenges presented by this effort were extraordinary. Yet, they were achieved in a nearly flawless manner. The project management skills sharpened through such initiatives have been invaluable in building a skill base throughout the corporation's staff to draw upon in meeting the Year 2000 challenge. The opportunity to manage business technology projects involving hundreds of systems, multiple business units and numerous operational functions, all under a common project management structure, have served as a practice field for the challenge facing us today.

The appointment of a full-time senior level project management team promotes the use of best practices and eliminates delays in the decision making process. We believe this is crucial to accelerating the completion of critical, time sensitive initiatives. Previous large-scale technology projects prepared Key for the type of hands on, interactive management style required of this effort.

Effective Communications

The Year 2000 will potentially impact every member of our corporation. Based on the level of media attention focused on the issue it is essential that employees have access to accurate information on the details of the problem and what their institution is doing about it. Employees in their communication, both professionally and personally, are viewed as a grass roots campaign focused on communicating the readiness of the institution to the public. Key began communicating directly with its employees in early 1996. These communications, through an internal web site, newsletters, management memos, and e-mail were critical in creating support for the initiative.

Communication with external parties including but not limited to: customers, financial counterparties, suppliers, and technology vendors is essential for building confidence not only in our institution but in the industry as a whole. Due to the inter-dependency within in the industry it is critical that all parties involved in the relationship have an understanding of each other's readiness. This understanding will allow each party to plan accordingly and minimize the threat and impact of any potential failures.

Maintaining direct contact with regulatory bodies ensures their understanding of the industry's readiness and can provide our organization with valuable information. At Key we have found that sharing information with the regulators throughout the process provides us with valuable insight into potential pitfalls. Their knowledge of other institutions can be a means of confirming and/or potentially improving our own approach prior to rollout.

The industry's success in meeting the Year 2000 challenge will not be measured by the readiness of stand-alone institutions. Due to the inter-connectivity of the industry it is critical that institutions share knowledge with one another. The Year 2000 will not provide a particular institution with competitive advantage if their partner institutions are unable to provide needed services. Understanding this early on, Key has made significant contributions to the network of institutions sharing their Year 2000 experiences. We have found a cooperative spirit exists within the financial services industry. Many institutions, like Key itself, are willing to share issues and solutions with other companies in an effort to achieve millennium preparedness. The information we have shared with and gathered from the organizations such as the Bank Administration Institute, the Bankers Roundtable, and various banking companies has increased our readiness, the readiness of our partner companies, and the readiness of the industry as a whole.

Understanding External Risks Beyond the Organization's Control

The financial services industry has an inherent exposure to external risks beyond our control. Our reliance on third parties is a component of the way we do business. A complete understanding of these risks, as well as means of addressing them, is essential in planning for the Year 2000. As previously noted, communication is a critical step in this process.

Our project team created a communications network that required each of KeyCorp's lines of business to assess their vulnerability to external parties. For example, one line of business noted a dependency on an external vendor whose millennium readiness is highly suspect. Relaying this information back through the communications network enabled our own technology unit to mobilize resources needed to fix the problem independent of the vendor.

As this example shows, once this communication channel was established, it was utilized to gather information on the entities that, through their potential lack of readiness, pose a risk to our institution. This information, once analyzed, is being used to aggregate the overall risk faced by our company. This assessment will allow us to utilize a triage approach in developing corporate wide contingency plans.

Key's risk management and contingency planning objective has been to utilize all of these critical success factors with a goal of achieving complete coverage of the corporation as it relates to all areas of risk. Executive Management has insisted that contingency planning must be comprehensive, realistic, achievable, and date driven.

In Conclusion

The millennium bug is a problem none of us has ever faced before. We have no precedent upon which we can rely for knowledge and guidance. Nonetheless, the dedication of Executive Management, focus on risk mitigation and connection to industry knowledge bases has given us confidence that KeyCorp will continue providing the high quality services expected by our shareholders, customers and business partners beyond the Year 2000.

Mr. HORN. Well, thank you very much. We have got two more witnesses and we will get to those questions.

Mr. Kowitz, as I note here, you are director of the Ameritech Corp. Is that a member of the Board of Directors?

Mr. KOWITZ. Corporate director, it is a position on the corporate staff.

Mr. HORN. I see. In other words, you are director really of the CEO's corporate staff?

Mr. KOWITZ. I am the director of the Y2K project, corporate director of the Y2K project.

Mr. HORN. Very good. Please proceed.

Mr. KOWITZ. Mr. Chairman, I filed my testimony and I would like to provide a summary of that testimony.

My name is Fred Kowitz and I am the corporate director for Ameritech's year 2000 initiative.

At Ameritech, we have devoted considerable effort on keeping interested parties, including the Federal Government, advised of our progress. Over the past several months, we have met with government representatives from the Federal Communications Commission, the Federal Reserve, both in Washington and Chicago. Also the GSA and GAO and we have participated in 13 regionally sponsored seminars by the Office of Thrift Supervision, the FDIC and the Federal Reserve to assist smaller financial institutions on the year 2000 issue.

Because we share your concern for raising awareness, we have also provided information on our progress to each of the Public Service Commissions in our region, addressed the questions and concerns of the largest 250 customers as well as several thousand smaller customers. And we have proactively contacted 1,500 of our financial institution customers and developed a quarterly summary to serve as a vehicle to help us communicate our progress and opened a Web site on year 2000 information.

On a personal note, I have also spoken with our village council and worked with them to create a plan for our own village in Illinois.

Given that level of activity, we are not sure that we can add significantly to the information that we have provided, but we are pleased to have this opportunity to testify before this committee and we would like to commend the committee on their efforts to assist government at all levels to meet the year 2000 challenge.

In my opinion, the largest challenge that businesses face as they seek to address the year 2000 issues has to do with positioning the project within their company. I believe that in order to assure the success of the year 2000 project, you need four key elements: strong executive support; sufficient funding; access to strong project management skills; and, commitment to year 2000 goals.

In order to acquire those elements, senior management of the business must be educated about the seriousness of the year 2000 issue. Once they understand the scope of the problem and the potential impact to the business of not addressing or resolving the problem, they are quite willing to lend their support to the project. Senior management support becomes easier to acquire, other tools that one needs to develop a successful year 2000 program, includ-

ing funding, access to internal and external specialized resources and the ability to draw upon the most talented employees.

At Ameritech, we have those elements in place and that is why you will hear throughout the testimony that we are confident that we will be able to meet our stated objective of making year 2000 transparent for our customers.

As mentioned, executive support and funding are elements critical to the success of the year 2000 project. At Ameritech, I report directly to an executive vice president who in turn reports directly to the chairman. I update my boss on a regular basis, advise Ameritech's management committee of our progress on a monthly basis and meet with our Board of Directors every 6 months. We consistently receive strong support from our executive team and have access to the funds required to complete the project.

As I just stated, Ameritech's goal is to make the year 2000 event transparent to our customers. We have been working since 1996 to ensure that our products and services avoid material problems associated with the year 2000. It has long been our stated goal to have our mission critical systems, those network and supporting systems that are essential to the ability to provide business, government and residential customers with local switched and data telecommunications services year 2000 ready by January 1, 1999, leaving us an entire year to complete our deployment of these systems, to remediate our non mission critical systems, to perform any additional testing that may be required and to complete the development of a comprehensive business continuity and contingency plan.

Our current evaluation is that we will come close, but not quite achieve, this ambitious goal. Indeed, the overwhelming majority of our mission critical systems will be both certified as year 2000 ready and deployed back into production by January 1, 1999. However, based on current information, it appears we will not have the necessary year 2000 upgrades for several of our mission critical systems in time to perform fully our certification process and complete deployment of those systems by January 1, 1999. We are continuing to work this issue with our vendors. In any event, we do not view this modest deployment delay as having a significant impact on actual readiness of Ameritech for the century date change.

Let me now share with you some detail about Ameritech's year 2000 initiative.

Since 1996, Ameritech has been pursuing one of the most aggressive undertakings ever to assure a smooth transition to the 21st century for both Ameritech and its customers. We have established a corporate-wide initiative to address and resolve year 2000 issues and more than 300 professionals from 31 different disciplines are working on a team that is headed by myself and involves every business unit in the corporation.

From Ameritech's standpoint, the initiative includes: Reviewing more than 2,500 products and services for year 2000; assessing approximately 27 million lines of computer code; upgrading 1,400 host and remote switches; analyzing and preparing tens of thousands of desktop and office components such as telephones, computers, and faxes; and, preparing access systems, heating and cooling plants, alarms and elevators in over 12,000 locations.

Ameritech's information services organization has completed its inventory and assessment phase and its centrally coordinated remediation phase is currently in progress. Ameritech has hired Bellcore, an ITAA certified year 2000 company, to manage its remediation process. The process is proceeding in five distinct steps: We extract the application; we convert the application; we test the final product; we certify it; and, reinsert the application into production.

As of the end of the second quarter of 1998, Ameritech's IS organization has reported the following progress: Over 80 percent of the Ameritech-owned code has been remediated; and, over half of the affected applications have been certified and deployed.

Ameritech has completed its inventory and assessment of its network facilities that carry telecommunications, data, wireless and video traffic and is implementing the deployment phase of its plan. Because Ameritech purchases all of its network components from suppliers, those suppliers are conducting remediation and testing phases to correct any potential year 2000 defects in the network components Ameritech uses.

In addition, Ameritech will conduct independent verification as required on network component upgrades that it receives from suppliers. Testing will be conducted in Ameritech's service integration laboratory in Hoffman Estates, which routinely tests software and hardware network component upgrades to ensure that they meet Ameritech's high standards for reliability and technical excellence.

Selected year 2000 upgrades will undergo rigorous testing in a controlled environment that replicates the current Ameritech network; complete with switches, data links and other equipment.

During the second quarter, Ameritech formalized its membership in the Telco Year 2000 Forum, a nationwide group of major telecommunications companies.

In June 1998, the forum announced that it has contracted with Bellcore, a leading supplier of telecommunications software, consulting and testing, to coordinate and supervise year 2000 network interoperability testing of components in the Nation's telecommunications infrastructure.

This testing will begin or began in July 1998 and is being supervised by Bellcore and will help detect year 2000 issues within the public telecommunications network. The Forum's testing effort covers a broad cross-section of services, from voice to high speed data circuits to complex 911 emergency services.

Ameritech is also participating in the Network Testing Committee sponsored by the Alliance for Telecommunications Industry Solutions which is planning additional national and possibly international interoperability testing of the telecommunications network.

The year 2000 project at Ameritech has constituted a major learning experience for us. We have learned that you must start this project early; ensure that you have strong executive support; ensure that you have the funding available and develop a comprehensive internal and external communications plan.

The year 2000 issue represents a significant challenge to Ameritech's business and residential customers as well as to the government. As has been noted, it is a worldwide concern which

has been declared by many industry experts as the largest single project that many companies will have to face.

Resolving the year 2000 issue requires strong project management within a company, timely and informative communication between companies and their customers and cooperation within the industry and across industry boundaries. At Ameritech, we are confident that we are addressing these challenges.

Thank you for the opportunity to share these thoughts with you today.

Mr. HORN. Well, we thank you, that is a very thorough statement.

Mr. Nicolet, I read with interest your statement, you have given us some interesting testimony we have not had before. So why do you not explain your consultantship role in all this that gives you a lot of that bread.

[The prepared statement of Mr. Kowitz follows:]

Opening Statement

Chairman Horn and members of the Subcommittee, I would like to submit the following written testimony on Ameritech's purpose and activities to address Year 2000 issues within our company.

We have devoted considerable effort on keeping interested parties, including the Federal Government, advised of our progress. Over the past several months, we have met with representatives from the Federal Communications Commission, the Federal Reserve (both in Washington and Chicago), the GSA, GAO and we participated in 13 seminars sponsored by the Office of Thrift Supervision, the FDIC and the Federal Reserve to assist smaller financial institutions address the Year 2000.

We have also provided information on our progress to each Public Service Commission in our region, addressed the questions and concerns of our largest 250 customers as well as several thousand smaller customers, contacted 1,500 of our financial institution customers, developed a quarterly program summary to serve as a vehicle to help us communicate our progress and opened an internet web site to make our Year 2000 information easily accessible to our customers.

Given that level of activity, we are not sure that we can add significantly to the information that we have provided to other agencies of the government and that we continue to make available to our customers and the general public. Nevertheless, we are pleased to have the opportunity to testify before this committee and we would like to commend the committee on its efforts to assist government at all levels to meet the Year 2000 challenge.

Challenges of the Year 2000 Issue

In my opinion, the largest challenge that businesses face as they seek to address the Year 2000 issue has to do with "positioning" the project within their company. I believe that in order to assure the success of a Year 2000 project you need 4 key elements:

- strong executive support
- sufficient funding
- access to strong project management skills
- commitment to Year 2000 goals

In order to acquire those elements, senior management of the business must be educated about the seriousness of the Year 2000 issue. Once they understand the scope of the problem and the potential impact to the business of not addressing and resolving the

problem, they are quite willing to lend their support to the project. With senior management support, it becomes somewhat easier to acquire the other tools that one needs to develop a successful Year 2000 program including funding, access to internal and external specialized resources and the ability to draw upon the most talented employees.

At Ameritech, we have all of those elements in place and that is why, as you will hear throughout my testimony, we are confident that we will be able to meet our stated objective of making the "Year 2000 transparent to our customers."

Executive Support and Funding

As mentioned, executive support and funding are elements critical to the success of a Year 2000 project.

At Ameritech, I report directly to an executive vice president who in turn reports directly to the Chairman. I update my boss on a regular basis, advise Ameritech's management committee of our progress on a monthly basis and meet with our Board of Directors every six months. We consistently receive strong support from our executive team and have access to funds required to complete the project.

Ameritech's Year 2000 Initiative

As I just stated, Ameritech's goal is to make the Year 2000 event "transparent" to our customers. We've been working since 1996 to ensure that our products and services avoid material problems associated with the Year 2000.

It has long been our stated goal to have our mission-critical systems (those network and supporting systems that are essential to our ability to provide our business, government and residential customers with local switched and data telecommunications services) Year 2000 ready by January 1, 1999, leaving us an entire year to complete our deployment of these systems, remediate our remaining non mission-critical systems, to perform any additional testing that may be required and to complete the development of comprehensive business continuity and contingency plans.

Our current evaluation is that we will come close, though not quite achieve, this ambitious goal. Indeed, the overwhelming majority of our mission-critical systems will be both certified as Year 2000 ready and deployed back into production by January 1, 1999. However, based upon our current information, it appears that we will not have the necessary Year 2000 upgrades for several of our mission-critical systems in time to

perform fully our own certification process and complete deployment of those systems by January 1, 1999. We are continuing to work this issue with our vendors In any event, we do not view this modest deployment delay as having a significant impact on the actual readiness of Ameritech for the century date change.

Let me now share some detail about Ameritech's Year 2000 Initiative.

Since 1996, Ameritech has been pursuing one of our most aggressive undertakings ever to assure a smooth transition to the twenty-first century for both Ameritech and its customers. We have established a corporate-wide initiative to address and resolve Year 2000 issues and more than 300 professionals from 31 different disciplines are working on a team that is headed by myself and involves every business unit in the corporation.

From Ameritech's standpoint, the initiative includes:

- Reviewing more than 2,500 products and services for Year 2000 issues;
- Assessing approximately 27 million lines of computer code;
- Upgrading 1,400 host and remote switches that handle telephone calls;
- Analyzing and preparing tens of thousands of desktop and office components such as telephones, computers and fax machines;
- Preparing access systems, heating and cooling plants, alarms and elevators in 12,000 buildings and equipment vaults.

Ameritech's Definition of "Year 2000 Ready"

Ameritech regards systems as "Year 2000 Ready" if they will operate without any substantial decrease in performance as a result of processing date data into the next century.

In determining readiness, we utilize different standards depending upon the type of system involved. For example, our information services organization uses language adapted from the standard recommended by the US General Services Administration and our network organization follows the standards as described in Bellcore document *GR-2945-CORE*.

Ameritech Year 2000 Initiative Program Phases

Ameritech's business units, as well as the separate disciplines that fall under the corporate umbrella, are implementing comprehensive Year 2000 plans focusing on their customers and functional areas. Each of these plans include the following phases: inventory, assessment, remediation, testing (if required), deployment and monitoring.

Information Services (IS) Readiness Plan

Ameritech's corporate information services (IS) organization has completed its inventory and assessment phases and its centrally coordinated remediation phase is currently in progress. Ameritech has hired Bellcore (an ITAA certified Year 2000 company) to manage its remediation process. The process is proceeding in five distinct steps:
1) extract the application to be converted and establish baseline tests;
2) convert the application;
3) test the final product;
4) certify the application;
5) reinsert the application into production.

The two principal methodologies being employed in Ameritech's conversion process are the 40/60 Fixed Window solution and the Four-Digit Year Format as described in ISO Standard 8601.

As of the end of the second quarter of 1998, Ameritech's IS organization has reported the following progress on their Year 2000 plan:

- over 80% of Ameritech-owned code has been remediated
- over one-half of the affected applications have been certified and deployed

Network Readiness Plan[1]

Ameritech has completed its inventory and assessment of its network facilities that carry telecommunications, data, wireless and video traffic and is implementing the deployment phase of its plan. Because Ameritech purchases all of its network components from suppliers, those suppliers are conducting the remediation and testing phases to correct any potential Year 2000 defects in the network components Ameritech uses.

In addition, Ameritech will conduct independent verification testing, as required, on network component upgrades that it receives from suppliers. Testing will be conducted in Ameritech's service integration laboratory in Hoffman Estates, Ill., which routinely tests software and hardware network component upgrades to ensure that they meet Ameritech's high standards for reliability and technical excellence.

[1] Ameritech's network plan includes our local exchange and internal office networks, our cellular network managed by Ameritech Cellular Services, our advanced data services managed by Ameritech Advanced Data Services, our video network managed by Ameritech New Media, Inc. and our long distance network managed by Ameritech Communications, Inc.

Selected Year 2000 upgrades will undergo rigorous testing in a controlled environment that replicates the current Ameritech network: complete with switches, data links and other equipment. The laboratory is equipped to simulate peak traffic loads and analyze actual network performance in a trial run of such events as the turn of the century and leap year dates.

At the end of the second quarter of 1998, Ameritech has tested and completed the deployment of Year 2000 upgrades in over 50% of those network switches requiring an upgrade.

Supplier Readiness Plan

With the exception of some internal information services applications, Ameritech does not directly manufacture any of the various hardware and software components that comprise our telecommunications network infrastructure. To assure Year 2000 readiness for those components, we are entirely dependent upon our suppliers to provide us with the necessary upgrades in a timely manner.

We have a strong supplier compliance program in place and are confident that we will be successful in acquiring Year 2000 ready components from our suppliers in a cost-effective and timely fashion.

Impact on Customers

Ameritech products and services that we expect to be ready well in advance of the century date change include residence and business telephone lines, PBX trunks, Centrex and ISDN lines, switched and dedicated data services, cellular and paging services and Ameritech's cable television service.

We are also working with our suppliers to determine the Year 2000 status of customer premise equipment (CPE), such as telephones and PBXs, in order that this information may be provided to our customers. This is typically equipment owned by our customers and for which they are responsible. It is important that our customers work with the equipment manufacturer and take efforts to assure the readiness of their own telecommunications applications and equipment.

Business Contingency and Continuity Planning

Because customers rely on Ameritech's network, rigorous contingency planning has been part of our standard operation for many years. Emergency plans are updated and tested

frequently in disaster exercises with other telecommunications carriers, major suppliers and customers, and government agencies. We are working to leverage this historical experience to develop business contingency and continuity plans oriented towards Year 2000 challenges.

Mid-Year Progress

As the following chart illustrates, Ameritech has completed the inventory phase of its plan for the five major areas deemed as mission-critical. In addition, the assessment phase has been completed for three of the five areas with full completion in all six areas expected during the third quarter of 1998.

It should be noted, however, that the program phases (e.g, Inventory, Assessment, Remediation, etc.) are not conducted in a serial fashion but, in fact, are taking place in parallel. That is, once we have inventoried and assessed an item, remediation, testing and deployment can occur for that item even though other items in the same area may still be in an earlier phase of the program.

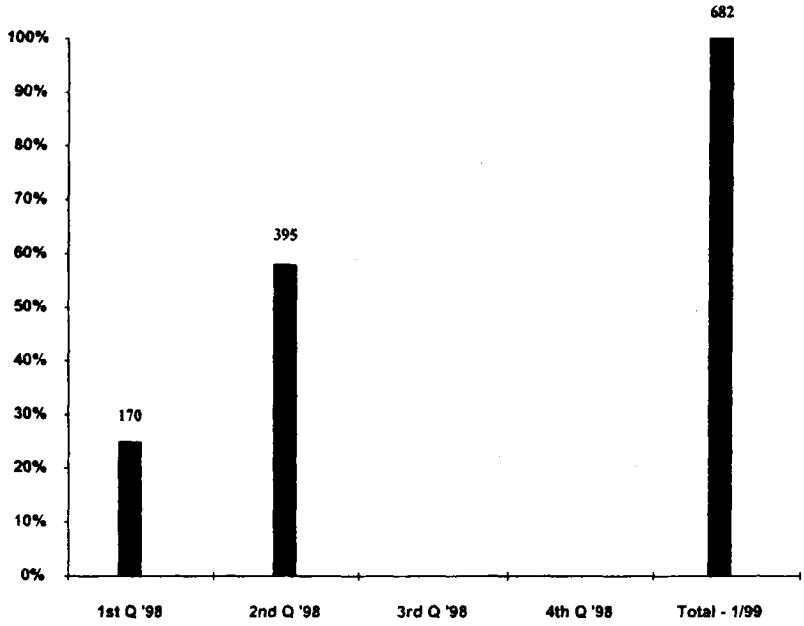
Figure 1: Mid-Year Scorecard

	Inventory	Assessment	Remediation/Deployment Mission-Critical	Testing
Networks			In progress through 1/99	Industry Testing In progress through 1/99
Information Services			In progress through 1/99	Flowthrough Testing In progress through 3Q99
Facilities		In Progress	In progress through 1/99	In progress through 1Q99
Desktop PC & Internal Voice Communications			In progress through 1/99 In progress through 1/99	In progress through 2Q99 In progress through 2Q99
Product Management		In progress through 2Q98	Network products through 1/99	Network products in progress through 2Q99

Remediation, deployment and additional testing (if appropriate) is well underway in our information services and network areas. As mentioned previously, over 80% of the Ameritech-owned code has been remediated and over 50% of the information services applications were certified and deployed by the end of the 2nd quarter of 1998.

In the landline telecommunications area, over one-half of Ameritech's network switching systems (a.k.a. "central offices") have been upgraded to Year 2000 ready status. Testing, remediation and deployment of other network elements is underway and the expectation is that we will substantially meet our target date for complete network Year 2000 readiness by January 1, 1999, leaving the remainder of 1999 for additional testing, further certification and deployment of Year 2000 ready systems, continued remediation of non-critical systems and continuity and contingency planning.

Figure 2: Year 2000 Ready Network Switches



Year 2000 Telco Forum Interoperability Testing[2]

During the second quarter, Ameritech formalized its membership in the Telco Year 2000 Forum, a nationwide group of major telecommunications companies.

In June, 1998, the Forum announced that it has contracted with Bellcore, a leading supplier of telecommunications software, consulting and testing, to coordinate and supervise Year 2000 network interoperability testing of components in the nation's telecommunications infrastructure.

[2] For additional information on the Telco Year 2000 Forum's activities see "Statement of William O. White, Member Telco Year 2000 Forum, Testimony Before the Subcommittee on Oversight of the House Committee on Ways and Means Hearing on the Year 2000 Problem and Telecommunications Systems, June 16, 1998"

The testing which will began in July, 1998, is being supervised by Bellcore and will help detect Year 2000 issues within the public telecommunications network. The Forum's testing effort covers a broad cross-section of services, from voice to high-speed data circuits, to complex 9-1-1 emergency services.

In order to accomplish this testing without jeopardizing the integrity of their in-service networks, the Forum has linked together several of the member companies' network testing laboratories including Ameritech's. Ameritech's test laboratory is located at its facilities in Hoffman Estates and provides a controlled environment that replicates the current Ameritech network: complete with switches, data links and other equipment.

The laboratory is equipped to simulate peak traffic loads and analyze actual network performance in a trial run of such events as the turn of the century and leap year dates. The laboratory is generally used to conduct thorough testing of new network-based products before they are deployed in Ameritech's service area and to conduct ongoing reliability testing of existing network services. Over the past six months, the laboratory has also been extensively involved in rigorously testing the Year 2000 upgrades required to make Ameritech's network Year 2000 ready.

Ameritech is also participating in the Network Testing Committee ("NTC") sponsored by the Alliance for Telecommunications Industry Solutions ("ATIS") which is planning additional national and possibly international interoperability testing of the telecommunications network.

Lessons Learned

The Year 2000 project at Ameritech has constituted a major learning experience for us. Lessons that we have learned include:

- start your Year 2000 project early
- ensure that you have strong executive support
- ensure that you have funding available
- develop a comprehensive internal and external communications plan

Conclusion

The Year 2000 issue represents a significant challenge to Ameritech's business and residential customers, as well as to the government. As has been noted, it is a worldwide concern, which has been declared by many industry experts as the largest single project that many companies will have to face.

Resolving the Year 2000 issue requires strong project management within a company, timely and informative communication between companies and their customers and cooperation within industry and across industry boundaries. At Ameritech, we are confident that we are addressing those challenges.

Thank you for the opportunity to share these thoughts with you today.

Mr. NICOLET. Basically I began consulting in June 1997 and have been out there working with a lot of other companies to audit their methodologies, their best practices, trying to ensure that they have all the bases covered, that their project plans are reasonable in scope. And the opportunity has provided quite an insight in a lot of different industries to notice what is common among them, as well as what is different.

Mr. Chairman, Congressman Kucinich, I appreciate the opportunity to appear before you to discuss the year 2000 problem, its effect on Ohio-based businesses and government services, and our efforts to address the challenges before us. My name is Jeff Nicolet and I am a year 2000 contingency planning practice manager with Source Consulting, a business of Romac International, Inc. I am also co-founder and leader of Ohio 2000, a special interest group on century date change issues, established in 1996.

Please note that the testimony I give today represents my personal views and do not necessarily reflect the views of Romac International, its subsidiaries or employees, nor the views of my fellow members of Ohio 2000.

Mr. HORN. So noted. [Laughter.]

Mr. NICOLET. I speak to you today not as an individual representing a single business, utility or government service, but as a business professional with views and insights into many different organizations across several different industries. My clients and personal contacts include representatives from the legal, financial, insurance, health care, transportation, manufacturing communities. Additionally, our Ohio 2000 membership includes an even wider diversity of businesses and organizations throughout the State. Hopefully, this cross-industry assessment will provide you with a slightly different and possibly unique perspective.

I would first like to address the multiple problems common to all industries and services. Even at this late date, we are still waging the war on awareness and problem understanding. With media sound bites and published commentary largely focused on hype versus apocalypse, a clear and reasoned message outlining the potential problems, actual findings, effective solution strategies and status of repair is not getting through.

Turning awareness into focused, productive action is also a challenge. Some organizations act like the proverbial deer caught in the headlights of an oncoming truck. They do not seem to realize that even the smallest steps in the right direction could literally save their business. They continue to under staff, under fund and under prioritize the year 2000 project, and unless the organization has the resources to hire experience and knowledge or already has advanced best practices disciplines and talent in house, they end up treating year 2000 like any other information systems project and adjusting their strategy with many false starts, missed opportunities and missed exposures.

A potential remedy to both of these issues is a focused awareness campaign, support and participation in grassroots special interest groups like Ohio 2000, and a common checklist of categories and process methodology pooled from our Nation's talented minds and personal experience.

While the Internet has provided a wealth of information on addressing year 2000, not all businesses have access or experience to find it. An alternative method of communication must be provided.

Next, larger organizations typically are further along in the year 2000 maturity curve, but because of their larger size, they have more inventory to examine and remediate. As a result, large businesses face the same risk of running out of time as the smaller company starting later.

Because of this increasing demand for resources there has been an explosion of consulting firms, remediation firms and Y2K software vendors. This has inevitably brought out the con games, rip-offs and shams. A single reference point similar to the Better Business Bureau could help weed out some of the less reputable organizations, but again, awareness and education, particularly aimed at the small to medium size businesses and local governments is vital.

Now let me address a few select industries.

It is my impression that the Federal regulated financial institutions are, in general, farthest along in their efforts. While some have yet to complete their remediation testing, they appear to have reasoned plans and the resources to complete the tasks. Some medium to small financial institutions may not have the resources to address year 2000 problems with the speed or priority necessary. As a consequence, in 1999, I expect to see additional mergers, acquisitions or cooperative partnership. It is extremely important that these situations be handled carefully, demonstrating full Federal support in order to maintain public confidence—no mistakes, no surprises. A single run on any given bank will very likely spread across this country like wildfire. Clearly, the most dangerous times for financial institutions are not following New Years Day 2000, but are the remaining days of this century.

The health care industry is truly a mixed bag and appears to be at great risk. Generally, health care appears to have begun later than other industries. Many hospitals, home health care, senior care centers, et cetera, are operating on fairly limiting budget constraints and while some larger institutions may have progressed well in their information systems, they would most likely have the greater exposure in the quantity and types of non-compliant medical devices. Failures in any facet of the health care services could have serious, even deadly, results. Strengthening the FDA's position statements on year 2000 and providing a more complete data base of medical devices and findings could play a vital role in saving lives.

Manufacturing, shipping and transportation industries are reasonably advanced in repairing their information systems, with larger firms again outpacing the small to medium sized businesses. Locally, some of the larger companies are also reporting progress on the embedded systems and process controllers but because of their size, they have more to address.

Three years ago, vendors and suppliers would respond to compliance inquiries, once they understood the issue and had a possible resolution or timeframe. Now, many vendors, suppliers, customers, et cetera are either refusing to respond or respond with sufficiently vague generalities on the advice of their legal counsel. They fear possible litigation from releasing information that is misinterpreted

or that later is discovered to be inaccurate. It is uncertain if this proposed Good Samaritan bill or similar legislation will improve the situation but without truthful exchange of information, it will be impossible for any business or government service to move forward with confidence.

Large county and city governments and services appear to be taking positive steps, while many smaller jurisdictions are still in the awareness phase. In general, however, all government organizations are hampered by their funding and direction for allocation of resources, competitive bid and procurement procedures that take time and even their allowable pay scales. We need to get better information into smaller local government offices and school districts and connect them with Y2K experts willing to volunteer their time to help ensure a focused and efficient strategy. Beyond that, some serious funding considerations will be needed in 1999.

Public and private utilities typically state that they are working on their systems and expect to be fully operational, but cannot guarantee uninterrupted service due to someone else. Not very comforting for Ohioans in the middle of winter. Without power, natural gas, water, sewage and telecommunications, everything these businesses and government agencies are doing is wasted. Without some shred of evidence, some tangible hope that progress is being made, I too would take my wife Faith and my daughter Jamie, to join the survivalists. Relying on the existing structure of multiple regulatory agencies with various levels of jurisdiction and authority, along with a handful of industry professional organizations is not sufficient. The U.S. Government must protect its people and its most basic infrastructure by ensuring proper and adequate progress is being made in the public and private utilities. We demand to know what risks we face.

In conclusion, these hearings are vitally important. I thank you for pursuing this topic and seeking out information from all sectors of the Nation. While history may not long remember what we have said here in these remaining days, present and future generations will live with the results of our actions. May God protect us all.

Thank you.

[The prepared statement of Mr. Nicolet follows:]

Prepared Testimony of

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Source Consulting, A Business of Romac International
Co-founder of OHIO 2000, A Year 2000 User Group

before the

Subcommittee on Government Management, Information, and Technology

Committee on Government Reform and Oversight

United States House of Representatives

September 1, 1998

Field Hearing: "Oversight of the Year 2000 Problem: Lessons to Be Learned from State and Local Enterprises"

Mr. Chairman, distinguished Members of the Subcommittee:

I appreciate the opportunity to appear before you to discuss the Year 2000 problem, its effect on Ohio based businesses and government services, and our efforts to address the challenges before us. My name is Jeff Nicolet and I am a Year 2000 and Contingency Planning Practice Manager with Romac International Inc. D/B/A Source Services ("Source Consulting"). I am also co-founder and leader of OHIO 2000, a special interest group on century date change issues since 1996. Please note that the testimony I give today represents my personal views and do not necessarily reflect the views of Romac International, its subsidiaries, or employees, or the views of fellow members in OHIO 2000.

I speak to you today, not as an individual representing a single business, utility, or government service; or even a single industry. I speak to you today as a business professional with views and insights into many different organizations across several different industries. Yes, I am a consultant. My clients and personal contacts include representatives from the legal, financial, insurance, health care, transportation, and manufacturing communities. Additionally, our OHIO 2000 membership includes a even wider diversity of businesses and organizations, across the state. Hopefully this cross-industry assessment will provide you with a slightly different and possibly unique perspective.

Across The Board

Before I comment on specific industries, I would like to mention multiple problems common to all industries and services. First, even at this late date we are still waging the war on awareness and problem understanding. With media sound bites and published commentary largely focused on "hype" versus "apocalypse", a clear and reasoned message outlining the potential problems, actual findings, effective solution strategies, and status of repair *is not getting through.*

Turning awareness into focused, productive action is also a challenge. Some organizations act like the proverbial "deer caught in the headlights" of an oncoming truck. They don't seem to realize that even the smallest steps in the right direction could literally save their business. They continue to under staff, under fund, and under prioritize the Year 2000 project. And unless the organization has the resources to hire experience and knowledge, or already have advanced best practices disciplines and talent in-house, they end up treating Year 2000 like any other information systems project and adjusting their strategy with many false starts, missed opportunities, and missed exposures.

A potential remedy to both of these issues is a focused awareness campaign, support and participation in "grassroots" special interest groups like OHIO 2000, and a common checklist of categories and process methodology pooled from all of our nation's talented minds and personal experience.

Next, larger organizations typically are further along in the Year 2000 maturity curve, but because of their larger size, they have more inventory to examine and remediate. As a result, large businesses face the same risk of running out of time as the smaller companies starting later. This is creating a real crunch and escalating competition for available resources. Not only in personnel, but also in replacement equipment, components, and software. Organizations that are unwilling or *unable* to compete may find their project plans in ruin.

Because of this increasing demand for resources there has been an explosion of consulting firms, remediation firms, and Y2K remediation software vendors. This has inevitably brought out the "con games", rip-offs, and shams. A single reference point similar to the Better Business Bureau could help weed out some of the less reputable organizations, but again, awareness and education is key.

PCs and distributed systems have propagated themselves throughout our business systems. For many organizations big and small, it may be viewed as a hardware problem and are not addressing the larger software issue. The greater cost and effort is typically in understanding how differing products interact, installing the software on thousands of machines, upgrading, converting or recreating the data, and in training the users and support personnel. Additionally, many vendors of software products were late in recognizing or responding to the problem, and as a result are late in providing proven compliant products and update options.

Finally, every organization is connected and dependent on an infrastructure comprised of utilities, business partners, customers, suppliers, government services, and their surrounding environment which includes facilities, medical care, emergency services, law enforcement, grocery stores, etc. etc. It is increasingly apparent that even with all of our planning and remediation efforts, we will all be forced to step into the next century with our fingers crossed, hoping that "the other guy" did his job as well.

Now, to the industries.

Financial

It is my impression that the Federally regulated financial institutions are, in general, farthest along in their efforts. While some have yet to complete their remediation testing, they appear to have well formulated plans and the resources to complete the tasks. Some medium to small financial institutions may not have the resources to address Year 2000 problems with the speed and or priority necessary. As a consequence, in 1999 I expect to see additional mergers, acquisitions, or "cooperative partnerships". It is *extremely important* that these situations be handled carefully, demonstrating full Federal support, in order to maintain public confidence. No mistakes, no surprises. A single "run" on any given bank will very likely spread across this country like wildfire. Clearly the most dangerous times for financial institutions are not in the year 2000, but are the remaining days of this century.

Manufacturing

In manufacturing, it appears larger firms are more advanced with their information systems than their small to medium size counterparts. Locally, some of the larger companies are also reporting progress on embedded systems in process controllers, but because of their size they have more to address. Organizations that play a role in the auto industry have all participated in the AIAG surveys. While it's not the same as being Federally regulated like the financial institutions, it did seem to spur the process along.

Shipping & Transportation

Locally, businesses in the Shipping and Transportation industry are reasonably advanced in repairing their information systems, with larger firms again outpacing the small to medium size businesses. They also have some embedded systems issues that remain to be addressed. However, setting aside their internal readiness, as an industry they are exposed to the continuing laws of supply and demand (are their Customers still in business), as well as the transportation infrastructure (roads, railways, airways, and access to fuel).

Health Care

The health care industry is truly a mixed bag, and appears to be at great risk. Generally, health care appears to have begun later than other industries. Many hospitals, home health care, senior care centers, etc. are operating on fairly limiting budget constraints. And while some larger institutions may have progressed well in their information systems, they would most likely have the greater exposure in the quantity and types of non-compliant medical devices. Failures in any facet of health care services could have serious, even deadly results. Strengthening the FDA's position statements on Year 2000 and providing a database of medical devices and findings could play a vital role in saving lives.

Legal Counsel

Two, three years ago, vendors and suppliers would respond to compliance inquires, once they understood the issue and had a possible resolution or time frame. Now, many vendors, suppliers, customers, etc. are either refusing to respond, or respond with sufficiently vague generalities, on the advice of their legal counsel. They fear the possible litigation from releasing information that is misinterpreted or that later is discovered to be inaccurate. It is uncertain if the proposed "safe harbor" bill or similar legislation will improve the situation, but without truthful exchange of information it will be impossible for *any* business or government service to move forward with confidence. As for the legal firms themselves, a large portion of their information systems depend on industry-specific third-party software, and on the operational status of the courts and other government services.

Government Services

Large county and city governments and services appear to be taking positive steps, while many smaller jurisdictions are still in the awareness phase. In general however, all government organizations are hampered by their funding and direction for allocation of resources, competitive bid and procurement procedures that take time, and even their allowable pay scales. We need to get better information into smaller local government offices and school districts, and connect them with Y2K experts willing to volunteer their time to help ensure a focused and efficient strategy. Beyond that, some serious funding considerations will be needed in 1999.

Public & Private Utilities

Public and private utilities typically state that "they are working on their systems and expect to be fully operational, but cannot guarantee uninterrupted service due to someone else". Not very comforting for Ohioans in the middle of winter. Locally, their participation in OHIO 2000 will usually focus on the information systems, and seldom address the service components such as the power grid. Without power, water, sewage, and telecommunications, everything these businesses and government agencies are doing is wasted. Without some shred of evidence, some tangible hope that progress is being made, I too would take my wife Faith and daughter Jamie to join the survivalists. Relying on the existing structure of multiple regulatory agencies with various jurisdictions and a handful of industry professional organizations is not sufficient. The United States government must protect its people and its most basic infrastructure by ensuring proper and adequate progress is being made in the public and private utilities. We demand to know what risks we face.

In Conclusion

These hearings are vitally important. I thank you for pursuing this topic and seeking out information from all sectors of the nation. While history may not long remember what we have said here in these remaining days, present and future generations will live with the results of our actions. Thank you.

Witness Biography

In 1979 Jeff Nicolet began his information systems career with Ernst & Young in various capacities including EDP audit support, development of software for the Health Care industry, Information Technology (IT) research & development, and definition of project methodologies. At Rockwell International he helped refine best practices methodologies and Standards related to IT interaction and support of industrial process controllers. At American Greetings Corporation he spent eight years in contingency planning / disaster recovery and special projects for best practices deployment. This background in developing project controls and procedures which encompass every aspect of business and IT interaction, made him uniquely suited to get involved in another "disaster" related project, the Year 2000. He joined the American Greetings Year 2000 project team and was responsible for helping define a strategic methodology for certification / conversion of legacy systems.

Mr. Nicolet has earned three certifications (CDP, CSP, CBCP) and has published several articles on subjects related to Contingency Planning and the Year 2000. His involvement in user group associations lead him to become President of the *Contingency Planners of Ohio* for 4 years, serve two years on the Business & Industry Committee for the *International Association of Emergency Managers* (formerly the *National Coordinating Council for Emergency Management*), and to become one of the principal founders and leader of *OHIO 2000*, a state special interest group for century date change issues.

Mr. Nicolet is currently a Practice Manager with Romac International, specializing in Year 2000 and Contingency Planning project methodologies, process documentation, and project quality control reviews. He is a graduate of Kent State University.

Mr. HORN. I might add, compared to that last phrase, Bismarck used to say that God protects fools, drunkards and the United States. [Laughter.]

I am now delighted to yield 10 minutes to my colleague from Ohio.

Mr. KUCINICH. Thank you, Mr. Chairman.

I note in the last testimony and also in the testimony of Dr. Harris some symmetry on the issue of being able to get information, and with respect to the section on legal counsel, is it Mr. Nicolet——

Mr. NICOLET. Nicolet [pronouncing].

Mr. KUCINICH [continuing]. Nicolet's testimony, he said "Now many vendors, suppliers, customers, et cetera are either refusing to respond or respond with sufficiently vague generalities on advice from counsel," and in his section on medical equipment repair, Dr. Harris cites that "Despite the best efforts of provider organizations in health care to inventory and identify medical equipment which is most critical in the patient care process, it is impossible to make a final determination of compliance without well-organized and definitive information from medical equipment manufacturers."

So, a question to Dr. Harris, have you done a review at the clinic about the life support equipment which you have which has embedded chips, the monitors, cardiac and others, the anesthesiology machines, surgical lasers and others that are used that are computer guided, with respect to this problem, shall we say?

Dr. HARRIS. The answer is yes, it is really what has generated my statement. We chose at the clinic to inventory and physically touch every piece of medical equipment that we have in our facilities. I can tell you that turns out to be about 58,000 items which group into about 6,000 different categories. And by way of gathering the information we need to make the final determination now—and we are committed to either repairing or replacing that equipment in order to make it function properly in the year 2000—we have been using information sources. The first was the FDA repository of information. But as I have said in my testimony, the information is relatively vague at this point and we need to make a replacement or repair decision now.

Mr. KUCINICH. OK, now Doctor, medical equipment manufacturers, I imagine the Cleveland Clinic would probably be one of the largest consumers of medical equipment, in the world, for that matter in terms of the size of the physical plant the Cleveland Clinic has, number of beds, number of doctors, range of services—we are very proud of that in the Cleveland area. What pressure does the clinic exert on the medical equipment industry?

Dr. HARRIS. In two ways. We are a member of a larger purchasing consortium that is known as Premier in health care. When you combine the clinic with all of those other institutions, now you really have a significant percentage of any medical equipment vendor's production. Through that group, we have been consistently demanding this consistency in information. It is beginning to come. My statement really focuses on the timing, that to effectively complete our replacement program, we would like to begin in January of next year.

Mr. KUCINICH. Would Cleveland Clinic—what is your position if you are not able to get adequate feedback from a manufacturer of medical equipment, would you then not use that equipment after the year 2000?

Dr. HARRIS. And that is part of the contingency programs that we are looking at. Now as was mentioned here earlier, our hope is that we know what to do about 90 percent of it. It then allows you to carry out an alternative program. If 90 percent of it is unknown, then building a contingency program would be very difficult.

Mr. KUCINICH. Thank you, Doctor.

Also, I found your other statement about given the number of different computer linkages that exist nationally between insurance companies and providers, there is a high probability of failures at the billing and reimbursement interface. I am sure there are going to be doctors across the country that are going to be very interested in that and the industry and the financial implications for this. It is a very strong statement, Mr. Chairman, and I appreciate the Doctor's insight on that because it is something certainly this committee is going to have to take into account. I think, Mr. Chairman, the insurance companies would be one industry that would be important to delve into further.

Mr. HORN. Well, I agree with the gentleman, and having listened to 30 doctors on the subject on Friday evening, I am concerned when people without a medical degree are making insurance company judgments and they are not—they not only do not have a medical degree, they do not have any knowledge of the specialty that they are authorizing or not authorizing for an operation. I think we have got a major problem there and when we get back to town, we ought to think about how we get at it.

Mr. KUCINICH. The implications for the stability of the health care industry are very strong here, because if you are not turning the revenue around, getting reimbursed, being able to pay your bills, I mean we understand what the implications are there.

I would like to go to Mr. Blakely of KeyCorp.

Have there ever been any considerations to impose on those who are borrowing money from the bank for their business' Y2K compliance criteria before—and responsibilities prior, making it contingent on loans?

Mr. BLAKELY. That is a very good question, Congressman. One of the things that we are doing is making an effort to contact the vast majority of our credit clientele and basically have an interview with them to determine how far along they are in their own millennium preparedness, whether or not they are going to run into any kind of difficulties and whether or not there is any way that we can help any of them out.

Mr. KUCINICH. So would you then—would non-compliance have a bearing on the credit worthiness of an applicant or of someone who is seeking to refinance?

Mr. BLAKELY. Yes, it is possible that if someone is exhibiting significant problems with their millennium preparedness, that it could enter into our consideration as to whether or not we would advance credit. I can also say too that in many of our loan documents, we have language that asks our credit customers to represent and

warrant to us that they are taking the actions and steps necessary to be millennium ready when the year 2000 comes.

Mr. KUCINICH. You know, I think that the banking industry can certainly do a lot to make sure that Y2K compliance is brought about simply because of the exigencies of the business. If people are not able to keep their business operating, they cannot repay the loans that you have given them and if you do not get the loans on time, that affects your portfolio.

Mr. BLAKELY. That is correct, sir, and that is one of the reasons why we wanted to contact so many of our clients, not just to make sure that we are protected, but also to make sure that they are focusing on the issues that they need to.

Mr. KUCINICH. I am impressed by your commitment to contingency planning and particularly your testing of the contingency plans. That is something everyone ought to look at.

Have you discovered any unexpected problems with contingency plans?

Mr. BLAKELY. We are still in the testing phase. That will be going on for the next several quarters. So far, we have not come up with any significant surprises, although on a number of instances, it has caused us to take a step back and wonder whether or not we should reconsider the original contingency plan that we had developed.

Mr. KUCINICH. I am going to jump real quick to Mr. Gill. I have had a chance to meet with many senior executives of FirstEnergy in my congressional offices and I know that they are doing everything they can to build a strong energy company. One of the things that I am interested in, there have been some widespread layoffs in the industry recently and some in FirstEnergy. Could you indicate, for this committee, the implications that those layoffs could have on the readiness of FirstEnergy to be able to meet Y2K and to provide for the safety of the public?

Mr. GILL. Yes. Congressman, an earlier question on one of the other panels dealt with building people or finding people who had Cobol experience, and in a positive vein, we are considering a program now to mitigate some of the people who may have been laid off or would be laid off in the future, to train those people. They have knowledge and experience in particular systems; for example, customer information system. They may not be trained in Cobol, but they understand how the system operates, so that in lieu of laying off some people from some of the telephone centers, we could contract, or are looking at the possibility of contracting with some of the community colleges and the universities in our territory, to train those people in Cobol and then use those people to maintain the customer information systems as they go forward.

On a larger scale, the people that have been laid off as a result of the merger should have no appreciable effect on the safety or reliability of the electric system.

Mr. KUCINICH. I would just have a quick followup question and then I will respect the Chair's time here. And that is that has the Nuclear Regulatory Commission been particularly vigilant in this issue in the interactions they have had with FirstEnergy?

Mr. GILL. The Nuclear Regulatory Commission has required a number of reports to be filed, I think the last one was filed in mid-

August. They require additional reports to be filled out and filed with them through the first part of next year. In addition to that, the North American Reliability Group has reports and a part of their report is also a report on nuclear preparedness. And we participate as well in an organization, Nuclear Energy Institute, a voluntary organization that we supply reports to on a monthly basis and those reports are exchanged within the operators of nuclear stations.

Mr. KUCINICH. Thank you, Mr. Gill. I would like in the next round to come back to that, but I——

Mr. HORN. No, go ahead, finish it out, if you would like.

Mr. KUCINICH. OK, thank you.

Well, you know, your company of course, as we all know, operates nuclear power plants and reports indicate that lawyers for nuclear power plants are recommending that nuclear power plants shut down before December 31, power down, power off and then restart slowly. Will FirstEnergy follow that particular operational approach and could you answer?

Mr. GILL. That decision—I am not aware that that recommendation has been made, but that decision at this point has not been made. If we determine that that is a prudent course of action, we certainly would participate in that. I would say that in a survey—that both nuclear power plants participated, both Davis-Besse and the Perry Plant, in a survey and a test of some of the systems, they found no year 2000 problem that would stop the safe shutdown of either of those plants.

Mr. KUCINICH. I think that is a very important point to make, because that is actually, Mr. Chairman, in all of the hearings that we have about Y2K, there are probably very few areas that spark greater public concern than the safety of nuclear reactors because it can affect millions of people. So you are now testifying that the ability to shut any plant down is not going to be affected by—adversely by any Y2K compliant issues. And would you further say then that you have already covered those issues with respect to the interface between the shutdown in the computer systems that would be needed in order to do that, you have already addressed those issues and are confident that the public safety would be protected?

Mr. GILL. I am confident that our nuclear operations and the shutdown, the safe shutdown of the plants would not be affected. That will continue to be tested right up until December 31.

Mr. KUCINICH. I understand that and I can appreciate the interest of FirstEnergy in doing that. Are you familiar with the recent Merrill Lynch report on the utility industry?

Mr. GILL. Not in detail.

Mr. KUCINICH. Because I think it is interesting how the financial industries and those who are—have the market oversight I guess you could say of the industry, they really have something to do I think with driving some solutions because they have expressed industry-wide some concerns, Merrill Lynch did, about the state of readiness, Y2K compliance, in the utility industry.

So again, I think it goes back to the financial industry in which I think you are going to have a lot to do with driving compliance and of course our utility industries we can understand are self-ini-

tiated for compliance because if you do not supply the service it undermines your customer base.

Mr. GILL. Very true.

Mr. KUCINICH. And of course, that is what you want to do in order to protect your own status in the economy. But I would urge you to look at that Merrill Lynch report and see if there is anything that—any concerns that were expressed that might somehow reflect on FirstEnergy's status.

Thank you, Mr. Chairman, for the additional time, I appreciate it.

Mr. HORN. Thank you for the questioning.

Dr. Harris, you mentioned the 58,000 items in 6,000 categories. Were those mostly items with embedded chips?

Dr. HARRIS. Almost 100 percent, yes.

Mr. HORN. Has there been any attempt or need to call the original manufacturer as to what can be done about the embedded chip that is in there and would they be 2000 compliant, or would they not? Has anybody had any experience with that?

Dr. HARRIS. It is growing experience right now. I will say we are using another firm that is really a company of 300 clinical engineers who maintain equipment for a large number of health care organizations. They have built a private data base of this information and it is much more efficient for us to work that arm of it. What I can say is looking at their data base, there is a growing percentage of information available about whether chips need to be replaced or not. But again, it is only the 2,000 or 3,000 critical pieces of equipment that we are most concerned about. Most of our medical equipment does not have a problem. It is somewhere in the range of 10 to 20 percent, has been the best industry guesses that we have seen.

Mr. HORN. How about MRI equipment, CAT scan equipment?

Dr. HARRIS. Depending on the manufacturer and the year, it does definitely have a problem.

Mr. HORN. And that is simply because it goes across on a date field or what?

Dr. HARRIS. And uses dates to calculate, especially—I will give you an example, for radiation equipment—it uses the date to determine the age of the fossil source and then to determine the duration of exposure. So if it is not year 2000 compliant, we have an issue.

Mr. HORN. I have heard of cases where the manufacturer has been called, this is not necessarily in medical equipment but in other embedded chip situations, and the manufacturer frankly now is either out of business or does not recall what they did there, it is a 30-year old traffic light or whatever, and that, I think how we are going to deal with that—you say this private data base, at least say they do have a chip and it will not affect us or will it also say they have designed a new chip that could be substituted, and if so, how do you do that? Do they know it, or what type of skills do you need to find that embedded chip and replace it?

Dr. HARRIS. We have converted our evaluation categories into three: It is compliant and we have documentation from the manufacturer as well as their test plan that has been supplied. The second is that it is not compliant but the manufacturer produces an-

other device that is compliant, and again they can give us the test plan for that. The category that we are most concerned about is the third, which is the unknown or the unclear. And that is where the challenge is for us at this point. I think as an industry, the concern is that rather than having one well-coordinated effort to test the unknown, we are going to have 6,000 individual institutions coming up with their own test. And I think from a patient perspective, that might not produce the most optimum outcome.

Mr. HORN. So are hospitals as a national association trying to work together on this then?

Dr. HARRIS. Working on it, but we have a long way to go.

Mr. HORN. Yeah, and that would include clinics, medical schools—how far down does it go, even nursing homes to some machinery, or what?

Dr. HARRIS. I could not speak to that, but definitely all of the major academic centers in the country and then the large health care delivery organizations participate in numerous groups that are focused on this issue.

Mr. HORN. Mr. Blakely, every day I have been asked for months from constituents, from people around the country, should I go to the bank and withdraw my money before January 1, 2000; should I keep a duplicate set of hard paper records as to what I have in or out? Same story goes with the stock market.

Mr. BLAKELY. I would suggest that if you wanted to withdraw your money prior to January 1 that you bring it over to KeyCorp. [Laughter.]

We will do everything we can to make sure that it is available to you.

Actually the question that you ask is one that is on our minds quite a bit. It is one that we worry about, because if each individual takes it upon themselves to go and withdraw their money, and you multiply that times millions of customers, it can actually cause some problems for the financial industry.

We believe that we are making all the progress necessary in order to provide the cash to the people when it is supposed to be there. As far as the stock market is concerned, I cannot really provide you any advice there. I am sure that the SEC is taking a close look at all the companies and the exchanges to make sure that they are millennium prepared.

But in all accounts, I would suggest that it is not a bad idea to maintain written records to prove what you have. I would strongly encourage that.

Mr. HORN. In your testimony, Mr. Blakely, you discussed the processes of the KeyCorp where employees are educated on the Y2K progress at that company, which is commendable. Now are there similar initiatives that are undertaken at FirstEnergy, the Cleveland Clinic, Ameritech, is this—to educate those front line employees? I think it is essential when people come in and ask just the kind of questions I have been asked—are you using those resources so they can explain to really the whole group of employees? Is there a communication/education program in educating your work force? Because if you are talking about banks or nuclear energy, they are going to go to their neighbor and say gee, what do you know about this? And if the neighbor is not informed and it

is an employee, then management has really failed to use that resource. What is your experience on that and in the other areas, and to what degree are we educating the employees involved as to the status of these things? Mr. Gill.

Mr. GILL. I could give an answer for FirstEnergy. Our communications department provides an employee update on a periodic basis. It is generally several times a month, and over the past several months and through the next 3 months, they will be taking a specific issue in the year 2000 program and writing articles and communicating to the employees of FirstEnergy with respect to the positions that the company is taking and the efforts that are going forth.

We get an awful lot of questions into our telephone services from customers who ask some of those same questions, and we try to answer those questions and concerns as honestly and forthrightly as we can.

Mr. HORN. Any other reaction there? Mr. Kowitz.

Mr. KOWITZ. For Ameritech, we have a similar process. We have internal communications plans within each one of our business units. In addition we have communication plans that we use for all of our customer and major customer sets. We also have a corporate program that then uses the internal corporate communication vehicles to not only address the individual parts of the project that are ongoing, but also alert senior level people throughout the company on our progress.

Mr. HORN. Any other comments on that question?

[No response.]

Mr. HORN. If not, let us talk about the degree to which Canada, if any, helps provide power for the midwest portion of the national grid, and how does that work. What is the situation we now have with Canada in terms of their cooperation and working on compliance with the year 2000? Do we have a feel for that one way or the other? Do not all jump at once. I take it we do not have a feel for that, or is Canada involved?

Mr. GILL. I am not aware at this time that Canada will have an effect on FirstEnergy being able to provide power to its customers.

Mr. HORN. Are they part of the grid? Is there any discussion between—as I recall, power does move across that foreign boundary.

Mr. KUCINICH. Would the gentleman yield?

Mr. HORN. Yes.

Mr. KUCINICH. Yes, certainly there are various utilities who do purchase power from Hydro Quebec, you know, but what place they play in the grid as a source of power for any particular system in this area might be really a matter of contract more than anything. But it is certainly an issue that is worth looking at because it is a source of power for, I would think, various utilities in the northeast as well as some in the midwest.

Mr. HORN. Well, along that line, it obviously gets to the matter of interchangeability, whether it is a power generating unit in another State or whatever it is, the question is will compatibility exist between what you are all doing now very effectively, and we know that some other countries on that recent survey are doing rather well. We also know a lot of advanced countries—and I cited one example the other day without naming it, but I just talked to the

Ambassador to the United States of a rather advanced European country and they were not taking this seriously at all. Now if we have interchangeability going on in data moving back and forth between that nation and our Nation, that is a problem that might affect us.

The other thing, which is a little different than what we are talking about is the European Parliament in January approved a privacy document that takes effect this October. And some of us think that privacy document might have some real concerns for American computers and that would include the American computers of European subsidiaries in the United States and of American subsidiaries in Europe. Because it gets down to not so much the year 2000, but the degree to which permission is given by the individual if anything is about an individual under that privacy doctrine. We have made a number of suggestions to two presidents in Europe and their prime ministers and at this point, we are just—our government is trying to negotiate that situation. So interchangeability, how do you feel and where do you think the lags are that perhaps have not come out today in any way? Anybody have a thought on that?

Mr. KOWITZ. We have an aggressive program in our company to look at all of the external interfaces that we have with trading partners, be they suppliers or customers, and where we have some very large customers, we have actually sat down with them to look at their list of interfaces and our list of interfaces to ensure that we have captured them both in our inventories and assessments and we know the remediation steps that we are taking, how we will interexchange data. And we have other processes then for our smaller trading partners that will communicate with them directly in terms of how we are—how that interface will operate, and in the most cases, in the vast majority of cases, there is no change to the interface at all. And so we are confident that we have got a program there to ensure our trading partner interfaces will remain up.

To your earlier comment about foreign countries, I know I have just visited with one of our affiliates in Europe and the Ambassador there in Belgium had requested that company to come and present their year 2000 program to him. So there is an interest and there is that directive out there that I think John Koskinen has placed with them and they seem to be taking it, at least in Belgium, very seriously and we communicated our plans there in Belgium.

Mr. HORN. Well, you have got a very knowledgeable Ambassador in Belgium that is deeply involved in American financial aspects.

Mr. Blakely, when you discussed the cooperative experience and spirit within the financial services industry, that made sense to me because I think there has been a lot of that cooperation. What have your companies learned from other similar organizations and what has been done to help others once they have learned from say experiences you have shared with them or whatever? Do you find that going throughout America or is it a regional thing or a State of Ohio situation, or what?

Mr. BLAKELY. Actually it is a little bit of everything. I would say that if you have a competitor right down the street, you typically do not talk to your competitor right down the street, but it is not

unusual at all to receive calls both from regional banking companies as well as nationwide banking companies. We receive many calls, we place many calls. We have open and frank discussions about the types of problems that we run into, the ways that we are trying to approach it and we solicit information on how other banks have tried to approach it.

Within the last week, I have received four phone calls from other major regional banking companies who are more than willing to share what is going on in their company and they are also soliciting feedback from us. And in so doing, we have learned to take our sights a little bit higher than we had been before because the collective wisdom of the entire industry helps all of us reach a higher level.

Sometimes we will be having difficulty, let us say, with an outside vendor. We may have certain problems with that vendor and in discussing with other financial institutions who are also dependent on that vendor, have discovered how they are trying to work around the difficulties that we have all encountered. In so doing, we all come away a little bit smarter. I cannot understate the spirit of cooperation within the industry, it has really been quite remarkable.

Mr. HORN. What are the Federal regulatory entities that you have to worry about and have control over you in some things?

Mr. BLAKELY. That could take all afternoon to respond, sir. But our primary regulator is the Office of the Comptroller of the Currency, who regulates the national banking company subsidiaries that we have. We also deal, to a lesser extent, with the FDIC and also the Federal Reserve. The regulators, particularly the OCC, have been pretty good partners in helping us here. They are willing to share what they have seen in other companies. They will not disclose to us specific companies, but they are willing to say that in this type of a circumstance, we have seen this approach taken or we have seen that approach taken. They may tell us, "You are a little bit ahead in your remediation efforts here." Or, "you are a little bit behind over here, so you might want to focus on that a little bit more." We found that the regulators have been quite helpful in that regard.

Mr. HORN. Good. Mr. Willemssen, do you have any suggestions here? GAO, General Accounting Office, part of the legislative branch, focuses on best practices and their adoption, and so I would welcome your thoughts.

Mr. WILLEMSSEN. Yes, a couple of things I thought I would mention in the biomedical area that Dr. Harris brought up earlier. We will be issuing a report this month on biomedical devices and their Y2K status and our recommendations will, I believe, touch on many of the areas that Dr. Harris brought up.

I also wanted to mention, and Doctor, you may be aware of this, maybe not, but the best data base that I have seen on biomedical devices and their compliance status is maintained by the Department of Veterans Affairs. Currently that data base is not publicly available. I hope that that will be changing very shortly and will be publicly available. The Department got quite a high response rate compared to, for example, the Food and Drug Administration, their response rate not being so good. Why is that? Because VA is

a major customer and has some leverage with those device manufacturers. So I just thought it important to mention that and hopefully that kind of information will be available soon so that we do not have situations of everyone having to do it on their own. We do have readily available data that folks can use and then assess where their individual devices are at.

I will also mention—the Medicare area was brought up—we will be issuing a report very shortly on that. The report will be going to the Administrator of HCFA for comment within the next few days and we will provide an updated status on where we stand on that major benefits area that was raised earlier.

Mr. HORN. Now is this on—in the case of Medicare, is this on who makes these decisions within the various either intermediaries between hospitals, doctors and Medicare?

Mr. WILLEMSSEN. This will focus predominantly on where we stand as a Nation on making sure that our Medicare payment system is going to be Y2K compliant, a system that involves a great many players and is very complex and will be a huge challenge to address.

Mr. HORN. OK, so this is not really the role of the people that are giving specialty clearance or non-clearance in——

Mr. WILLEMSSEN. No, sir, Mr. Chairman, it will not address that particular area.

Mr. HORN. Is GAO looking at that issue at all?

Mr. WILLEMSSEN. I would have to defer to the record on that particular question. With that being a programmatic issue, we may indeed be looking at that.

Mr. HORN. We will work with you on making sure that is a programmatic issue, because as I look at it, under State law—and correct me, Dr. Harris, you are the M.D.—State law decides who practices medicine in the State of Ohio, just as they do in the State of California. You can have an M.D., but you have to pass certain tests, tc hold certain positions, you have to be accredited by a board that looks at your record and your experience and sometimes there are written, sometimes there are oral examinations and so forth. And I guess, I am wondering why we have people in insurance companies in the intermediaries that are chosen under Medicare, which is primarily hospital generated, I believe, as to who the intermediary is, and why are we having these people practice medicine without a license?

Mr. WILLEMSSEN. I will followup for you, Mr. Chairman.

Mr. HORN. That is my question and I would like GAO to start doing that on a random sample. That is to me one of the hot questions.

Mr. WILLEMSSEN. OK.

Mr. HORN. Now I have stretched this out a little too long and I guess there is a term we have on the floor when we are floor managing, I will yield to myself such time as I will consume. Well, I am going to yield to the ranking member such time as he might wish to consume. So we might leave here at what, 5 today at least, or what? It is all yours.

Mr. KUCINICH. Actually, Mr. Chairman, the major questions that I wanted to ask I have covered, and I want to repeat again that the financial institutions have a real opportunity here to help en-

force compliance. The telecommunications as well as the energy industries have much to lose if they do not step up to their responsibility. The mergers that are occurring in industries right now are likely to be affected by the inability of industries to be able to demonstrate the ability to be Y2K compliant, since industries are so heavily reliant on computer technologies. And again to Dr. Harris, it is comforting to know that Cleveland Clinic will enforce compliance in the medical equipment industry by just not using the equipment. You know, there are legal issues that certainly follow, but the overall interest is in protecting the health of the people who have confidence in Cleveland Clinic and its abilities.

So I think, Mr. Chairman, this hearing today has been very important because we have major corporate citizens who represent areas of the economy which touch not only on this city and this State but which affect States across this country. That is certainly true of Key Bank, it is true of the interactions with Cleveland Clinic and the larger health community. We know it is true of the work of both Ameritech and of FirstEnergy. And it is useful to have testimony from a consultant because you are out there, you have a pretty good sweep of understanding of what can happen, but I am hopeful that we do not have to, as we approach that millennium, get into a position where we want to even in a humorous way, suggest that people ought to run for the hills because we have created this technologically dependent society and that same knowledge of creativity which brought that society together is there to help us weather the inevitable glitches that come up in operating this type of culture.

So I thank all of the witnesses for their testimony, and again, I want to pay tribute to our chairman because, you know, there are so many things that people have to work on in Washington, there are so many different issues that flow through the air every day. Any one of us might have to address one or two dozen matters in any given day. Chairman Horn has been relentless in keeping the country focused on this and for that reason, I am absolutely thrilled and proud to be a member of his committee, let alone to be the ranking member. So thank you, Mr. Chairman.

Mr. HORN. Well, we thank you and appreciate all you have done in Washington as well as here. And I thank this panel in particular. I think of all the testimony we have elicited since April 1996, I think your documents and presentations have been very thorough and they have given us a broader perspective across your industry rather than simply your own particular firm, and we are immensely grateful for that bit of input because we will be issuing reports based on the record and they will be designed to help other States or entities that are going through some of this.

Let me thank the staff that has worked on this hearing for both the majority and the minority: J. Russell George, the staff director and chief counsel, will be with us at the Indianapolis and Chicago portions of this hearing, he is in Washington today. Counsel for the majority is on my left, Randy Kaplan; and Matthew Ebert, the staff administrator; Megen Davis is a General Accounting Office detailee, had a lot to do with the preparation for this particular hearing; Mason Alinger, staff assistant had a lot to do with this and both he and Matthew have been putting it together, but we

could not have done it without the help of the city of Lakewood. We are grateful to the mayor and the staff for getting such a nice facility as this to hold the hearing in.

We thank also Faith Weiss, the counsel for the minority; Jennifer Lawless, the district aide to Representative Kucinich; Bill Warren, our court reporter. And we thank Ed Derma, the sound technician for the city of Lakewood.

And with that, a quorum having been established, the hearing is recessed to Indianapolis and to Chicago and the time is 1:05 p.m.

[Whereupon, at 1:05 p.m., the hearing was recessed, to reconvene on Wednesday, September 2, 1998, in Indianapolis, IN.]

OVERSIGHT OF THE YEAR 2000 PROBLEM: LESSONS TO BE LEARNED FROM STATE AND LOCAL EXPERIENCES

WEDNESDAY, SEPTEMBER 2, 1998

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON GOVERNMENT MANAGEMENT,
INFORMATION, AND TECHNOLOGY,
COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT,
Indianapolis, IN.

The subcommittee met, pursuant to notice, at 9:04 a.m., in the Holiday Inn Select Airport Ballroom, Indianapolis, IN, Hon. Stephen Horn (chairman of the subcommittee) presiding.

Present: Representatives Horn and Souder.

Staff present: J. Russell George, staff director and chief counsel; John Hynes, professional staff member; Matthew Ebert, clerk; and Bill O'Neill, full committee professional staff member.

Mr. HORN. A quorum being present, the Subcommittee on Government Management, Information, and Technology will come to order. It is in recess since our hearing yesterday and will be in recess after this hearing until the hearing in Chicago tomorrow.

We are here today to discuss the year 2000 computer problem. As just about everyone knows by now, many computers and microchips must be reorganized and fixed in order to recognize the date change after December 31, 1999. This is a race against time: we are facing a deadline that cannot be moved. The checkered flag has been waved and we are on the last lap. We must work together, we must share information, we must mobilize our resources and cross the finish line in time.

We know that the year 2000 computing problem affects just about every aspect of Federal, State, and local government operations. It also affects private sector organizations and could affect the lives of most individuals.

Over 2 years ago, this subcommittee held its first congressional hearing on the year 2000 problem, and since that time, we have held numerous hearings across the status of the Federal Government as we look at the Y2K fixes the various bureaus, administrations, cabinet departments and independent agencies are making. Today's hearing marks the fifth in a series of field hearings which began in Dallas, went on in New Orleans and was in New York and also in Cleveland yesterday.

The chief objective of this task force is to inspire action. No single organization, city, State or even country can solve the year 2000 problem alone. Data exchanges and interdependencies exist at

all levels of government and throughout the private sector. A single failure in the chain of information could have severe repercussions. That is why we are looking at the energy grid in each city where we have been.

For example, State disability determination systems provide data on whether an individual qualifies for disability benefits, how long he or she should receive them, and how much the beneficiary should receive. The Social Security Administration uses those data to approve the disbursement of disability payments, but somebody else gets into it, the Department of the Treasury. They cut the check, they send it to the local bank. The local bank deposits the check into the individual's account. The bottom line is, if any one of these entities along the line fails, from the State office to the local bank, back to the national agency, a deserving individual will not receive the payment. Now multiply that situation by millions of people that receive benefits and you can appreciate the magnitude of just one example and one aspect of Y2K's issue.

Accordingly, the testimony we receive today will help our understanding of the full extent of the problem. Witnesses will address the State and local levels in Indiana, as well as the Federal and private sector aspects of the year 2000 problem.

I would now like to yield to one of your excellent representatives from Indiana, Mark Souder, who is a member of the full Committee on Government Reform and Oversight. He has done a terrific job on anything he touches there in terms of asking questions that go right to the gut of the issue. We are delighted to have Mark with us.

The chairman unfortunately could not be here. Chairman Burton is in Washington right now with a special meeting with the Attorney General and a number of other individuals in Washington.

So, Mark, would you like to make an opening statement?

Mr. SOUDER. I will make a few brief comments. I want to thank Chairman Horn for bringing the subcommittee here. Chairman Burton was committed to bringing this committee to Indiana to focus on some of the original solutions from here, to hear some of the national perspectives brought to Indiana and to hear from our State organizations. He just learned in the last 48 hours about this emergency meeting in Washington. As my chairman and as my friend, I was happy to clear my schedule to come down.

It is also a great honor to be here with Chairman Horn. He is one of the most systematic, well-read students and scholars of government. He has been—at times when not very many people were paying attention, dogged in pursuit of trying to make this administration come to grips with this problem. The series of hearings he is conducting again, his regular report cards on the administration hopefully have been, and will be, a key and instrumental part of making sure that America is prepared for the year 2000.

It is a great honor to be here today to hear from the distinguished Mr. Forbes as well as our other panelists.

I yield back.

Mr. HORN. Well thank you, Mark. I appreciate your coming here.

Let me just say what the ground rules are in any of these hearings. We have two panels today. You are looking at the first panel, that is Mr. Forbes. There are a few more allies around on the sec-

ond panel that will give us a diversity of views on various problems. We swear all witnesses—this is an investigating committee—that they will tell the truth, the whole truth and nothing but the truth. After we introduce them, if they have a written statement, that is automatically put in the hearing record. Then we would prefer that they summarize that written statement rather than read it, so we will have more time for a dialog and questions.

We are delighted to have Mr. Forbes here. He was an early Paul Revere, if you will, on this issue, and he is absolutely correct, because he watches American industry. He knows the tremendous impact that not fixing this problem will have on American industry and our global position as a major economy in this world. So, Mr. Forbes, if you will stand and raise your right hand, I will give you the oath.

[Witness sworn.]

Mr. HORN. The clerk will note that Mr. Forbes has affirmed the oath. Please proceed in any way that you would like.

STATEMENT OF STEVE FORBES, CHAIRMAN AND CHIEF EXECUTIVE OFFICER, FORBES MAGAZINE

Mr. FORBES. Thank you very much, Mr. Chairman. I would like to also thank Chairman Burton, for his invitation. As you know, he could not be here today, but he, too, has been very, very good on this subject, and he should be congratulated and applauded for his efforts in this area.

I would also like to thank Congressman Souder for suddenly making changes in his plans, especially in the summertime, to be here today.

What I would like to do is summarize my testimony and then we will submit the formal written testimony.

As you well know, and as I think the American public is beginning to recognize, the Y2K problem is a genuine crisis, but it is not merely a technology problem. It may cost a lot, but there are solutions to deal with the problem. The real problem to date has been a management and leadership problem on the part of this administration. And so, Congressman Horn, Congressman Souder and other colleagues such as Congressman Cox and Congressman Dreier, and Senator Bennett deserve a great deal of credit for making real efforts to get the administration to focus its attention on this problem.

The Y2K issue has been acknowledged for several years. This is not something that suddenly happened. Forbes Magazine has been writing about it, as has our technology magazine, Forbes ASAP. So this is not something new, it has been out there. Meanwhile at our issues advocacy organization, Americans for Hope, Growth and Opportunity, we recognized that with this administration you really have to put their collective feet to the fire to get their attention to do something. Unfortunately this administration has the habit of thinking that when a problem arises a few well-chosen words will solve it. But as some wag inside the administration—whose name I will not reveal for obvious reasons—said, "It may take a woman 9 months to bring a baby to birth but nine women cannot do it in 1 month." This is a problem that needs to be dealt with in a timely manner.

We at Americans for Hope, Growth and Opportunity, of which I am honorary chairman, last July began making a concerted effort to bring this to the public's attention, just as Congressman Horn has been doing for several years, and as have other groups. The title of my testimony today is not about the general problem—which I think, is well known—but about a particular aspect of the problem and that is the new Y2K threat, predatory trial lawyers. In a moment, I will explain why. This problem, if left untended or not attended to properly, combined with the other crises in the world, could have a damaging impact on the economy.

We see the economic problems in Asia, Russia, Latin America. But it's not only there. Our own economy is beginning to feel the affect in slower economic growth, slower job creation and financial turbulence in the markets. These things tie together. So if combined with those current problems, we do have a genuine Y2K problem in the year 2000, real fundamental damage will be done to the economy.

Unfortunately, as I said, this administration has not been giving this the top-priority attention that it should. And so, we get to the problem of what to do. You have been giving grades each quarter, Mr. Chairman, on their progress or lack of progress, and that has begun to get attention, at least on the agency level. Thanks to the efforts of people like you, the President last summer finally made a speech on the subject. He gave the speech to a group that guaranteed it would not be on page 1 for very long. But at least he acknowledged the problem, which was remarkable because, theoretically, it won't be upon us for another 17 months. That is real foresight for them. But at least, we got a speech. At least, we got a speech out of it. And so when you look at the problem, you almost want to say to this administration that it is the global economy, stupid. It all ties together. The Y2K problem does not just affect the American private sector or the American government, it also affects foreign companies and foreign governments, and there has not been the sense of urgency that we need.

Now let us get down to a more specific problem and that is a peculiarity of the American legal system. I am afraid to this disturbing equation, financial turmoil around the world, terrorist turmoil around the world and an administration that has not taken real foresight here, we must add a new threat and that is a trial lawyer feeding frenzy. Let me explain. Unfortunately it has become clear that with the problems coming with Y2K, lawyers are now readying massive lawsuits to win damages as these problems come to the fore. These trial lawyers unfortunately—you have seen them at work in other areas such as tobacco, and that will seem like penny ante poker by the time they get through with this if remedial legislation is not enacted. They are behaving like trial lawyer sharks smelling blood in the water. They are about to launch extensive lawsuits in this area. What is the potential liability? Published reports have given numbers as high as $1 trillion. That is $15,000 to $20,000 for each and every American family. That may be an estimate, but as a businessman, I can tell you the problem is real. And it will be compounded if there are fears that anything you do internally or externally to fix this problem can be used against you as the police, in effect, read you your warning. That is not the way

to solve the problem; therefore, it is absolutely essential that remedial legislation be passed along the lines proposed by your colleagues Congressman Dreier and Congressman Cox, and others, be passed, providing safe harbors so that this problem can be dealt with.

Essentially what their bill would do would be to allow companies and individuals who act in good faith not to be subject to frivolous and damaging lawsuits. It would allow people to do trial runs, to get those results into a Federal agency and out to others so that it is on public record that they made a good faith effort. So that internally there can be a free exchange of information, and that externally there can be the same with their suppliers and their customers. At the same time, it should be made explicit, and not just with grunts and shrugs from the Justice Department, that the antitrust laws will not be held against companies that work together to exchange information to get industry-wide solutions. So this legislation as proposed by these Congressmen may need improvement. I will leave the technicalities to others, but the thrust of it is absolutely on target and absolutely essential.

Let me conclude by emphasizing my belief that, as you well know, time is running perilously short and remedial measures must be taken. Now, as I said earlier, the only way, alas, that this administration responds is when the pressure is on it and one way to apply pressure is to pass legislation—especially with this administration's ties to the trial bar. Pass legislation that will stop the trial lawyer vultures from preying on small businesses that do not have the resources to fight them effectively and that are trying to do the right thing. These small businesses should have the full protection of the law. As this is a White House that, as we know, lives by the polls and focus groups, we must arouse public attention, then it will respond. This should not be a partisan issue. After all, if the bridge to the 21st century is not going to be ready by the time we get there, don't the American people have the right to know why it was not ready? Of course they do.

Mr. Chairman, Congressman Souder and your colleagues, many thanks again for all of your efforts to put this issue on the front burner and to get real action on the Federal level to make it possible for the private sector to do all it needs to do to make this a problem not of great magnitude but of something in the normal course of business. You are certainly doing the Lord's work here. Thank you very much.

Mr. HORN. We thank you for those very useful comments. I wonder if you—as a chief executive yourself of a large enterprise, what would you suggest to the chief executive of the United States and the various heads of cabinet departments in terms of specifics as to how they ought to go about addressing this problem?

Mr. FORBES Well first of all, the chief executive of the Nation should make it clear to the Nation—not just to the government, but to the Nation, that this is a very serious problem but that it is one with solutions. There are ways to deal with it. What may happen is that as we approach the year 2000—after all, next year many companies begin fiscal years, so the 00 is going to come up in 1999. Most State governments begin their fiscal year July 1. The Federal Government begins its fiscal year October 1. So this is going to

start to crop up, and the tendency will be for people to say, my God, maybe they do not have it fixed. Should I fly an airplane, should I go to my ATM and get out as much as I can each day and horde it under a mattress? That's great for mattress sales but not great for the rest of the economy. We need to lay out the fact that the problem is real and why. Then we need not only to propose what the government is going to do and when—with yardsticks by which to mark progress—but also give to information to the private sector—especially small businesses, not hard to do these days—about the experiences of others and what they have been able to do in terms of trial runs, in terms of working with each other. This is something you do not have a blueprint for right now; it evolves as you learn more about the problems. It could be you do not have the software there. We at Forbes have subscriptions. So maybe the software is not there for 2003, but there is a way of backing it up because there has been a trial run, and yes, you can work with it. There are ways to cope with it. But that information is developed, shared and then expanded. So if the President were to say here is the problem, here is what we are doing, here is what can be done and we are not going to have plane crashes on January 1st. We are making progress here, we are making progress there, but, there is more to be done. He can convey a sense of measured urgency. When people become familiar with the problem, they will not fear the problems. The fear of the unknown can turn something that is real but manageable into something that causes panic, and that is when the bad stuff really happens.

Mr. HORN. I am curious, with your own experience in Forbes Magazine, what kind of problems arose when you dealt with this situation yourself?

Mr. FORBES. Well, the problem was getting beyond the reassurances, yes, we are on top of it and saying OK, what does that mean. What specifically are our vulnerabilities? I mentioned subscriptions. There are obviously administrative ones, financial ones. So it is just systematically going down a checklist saying what can be the problem? Who in the chain can create a problem, even if we think we have solved our problem? It is nitty-gritty, unglamorous, non-pictorial stuff. Maybe that is why the White House has not picked up on it, because it does not have the easy, obvious drama. It is simply what we call scud work, line by line, and if you have a problem, what do you do about it? If you think you have solved it, have you solved it in a way that is not going to create a problem for somebody else? It is just step by step. And the key for top management—again, you cannot leave it just to technologists because they may think they have a brilliant solution which may gum up the rest of the works, so to speak. So it is just day-by-day application, and even then, you are going to get surprises, but at least, you know you are on top of the thing.

Mr. HORN. You mentioned the total worldwide cost in your testimony, and we all agree, the Gartner Group, a fairly respected computer consultant firm, started out saying that it would be a $600 billion problem and $300 billion would be assigned to the United States because we have half the world's computers. Now they have said it is up to about $1 trillion, which would be a $500 billion problem for us. Now even if we do all of these things that you and

I and anybody with common sense would want to do, what do we do about the other half of the world, the middle of Africa, the middle of developing countries in south Asia when some of our computers are going to be interacting with their computers and vice versa? Do you have any thoughts on that?

Mr. FORBES. Well there again, if the United States has taken an obvious public lead that this is a real problem, that this does have global ramifications, other nations will take note. We are, after all, the only superpower left in the world, and like it or not, if we do not take the lead on something it is not going to get done. So if we are seen openly at the highest level of our government; i.e., the President acknowledges the problem, saying here is what we are doing, that goes a long way toward getting the attention of other countries and shaking them out of their complacency. Then, you can do as you have suggested, and have CEOs—urge them to come together with their subsidiaries overseas and vice versa, we are an interdependent world—express a greater sense of urgency, even if some of their governments do not. We could also have our diplomats make queries of other governments. If you have a government owned airline, what is that government doing about this situation? Ask the private sector the same thing. Once in this world, it doesn't take long to get a message out there that we think there's a problem. Reassure us that there is not a problem. If Telebras in Brazil does not think they are going to have a problem with their telecommunications system, as a few months ago some of their people tried to say, OK, here are the problems we think we have, why do you not think you have them and explain them to us. That gets people's attention.

Mr. HORN. Besides the antitrust laws you mentioned of Mr. Dreier in particular, what other factors would you suggest that we ought to have to motivate chief executives in the private sector, the non-profit sector, the governmental sector, anything else that you would like to put a stress on?

Mr. FORBES. Well, I think that what you want to do is make sure that not only is there an antitrust exemption, but that you encourage an open exchange of information. And that it would not be used against you in terms of a lawsuit, stripping away any excuse that a company might have of saying well we wanted to do it but the lawyers prevented us from doing it. So that is why those kind of immunities—if you do certain things by a certain date, it will not be held against you—are essential to give companies a sense of urgency and take it out of the hands of both the legal counselors and the narrow technologists. Bring it out into the open, no excuse. We have given you the safe harbor, now it is up to you to take your ship into the safe harbor. And encouraging test runs. It is one thing to think you have got it, but it is quite another—it is like doing exercises and practices for a sporting game and it is quite another thing when you get out on the field and see how it works in the real world.

Mr. HORN. Mr. Souder, the gentleman from Indiana, please proceed on questioning.

Mr. SOUDER. My oldest son just started his freshman year in college, and we were talking the other night about what he should do for a career and where he should focus. Maybe there will be this

promise of all these things for lawyers to do, though we have tried to preserve our good family name, maybe it is time to surrender.

One of our problems that we have had in Congress is every time we try to do anything regarding trial lawyers, we get stopped by this administration. Realizing that the President and the White House are somewhat preoccupied right now, have you heard a peep out of them regarding what seems to be an imminently logical position that there ought to be able to be antitrust exemptions and so on because we kind of get exhausted in Congress. Have you heard anything out of the administration? Have they ever made a statement?

Mr. FORBES. No. As you well know, when the President made that speech—I think it was at the Academy of Sciences—the provision they came up with was so narrow, it was next to useless in terms of opening up information and making sure that it would not be fodder for the trial lawyers—for the sharks. And so, no. You remember—you were there as part of the class of 1994—the experience in 1995 when some good legislation was passed in terms of securities, even when Democrats were for it, even when I think the President assured or gave body language signals to Senator Dodd that he was going to sign the thing, but then in the middle of the night, the President got a call from somebody and decided to veto it. The veto was overridden. There was also good product liability bill that was stopped in its tracks in 1995 because of opposition from the White House.

And so again, I think we have to take heart from how we manage in another area, that of fundamental welfare reform. It was pushing it on the agenda, getting the public's attention. The President vetoed it once; Congress passed it again. He vetoed it again. Congress passed it a third time, and lo and behold there was such momentum Mr. Clinton had to sign it—felt he had to sign it. He has been working hard to subvert it since but he had to sign the thing. And so here, with what you are doing around the country, if you can pass this kind of legislation, then that puts it on his desk. He knows a problem is coming up. Does he veto it and therefore make himself culpable for what happens afterwards? So instead of saying just yes, they are blocking us, they are not being very cooperative, OK, we are going to take matters into our own hands and shame them by giving them public bills that he has to make a decision on. I think you are going to find, especially now, he is going to have a lot more give in terms of willingness to compromise sensibly than you might have had a few weeks ago.

Mr. SOUDER. I want to commend you for bringing this more to the public attention because we need to do that in Congress too. This is not a matter of just doing lawyer jokes and picking on attorneys. This is not a matter of individual rights. Quite frankly, the good faith part is important because this might be a negative stimulus to get businesses to exercise the responsibility they need to to protect their customers and those who could be inadvertently harmed. But it just seems so imminently reasonable it does not even seem like there should be a debate on something like this. Then you can see how things like health insurance costs have gone up because of this type of issue and then a whole category of medical malpractice insurance develops. We have not seen the develop-

ment of the risk insurance on year 2000 yet, have we? I mean, that would be the next round, worried about attorney fees and the next thing you know, you have some kind of insurance.

Mr. FORBES. This is where remedial legislation is needed, to have this kind of brain power, this kind of energy, these kind of resources devoted just to defensiveness, figuring out how do you price an insurance policy instead of fixing the problem. It really does get to that old saying that an ounce of prevention is worth many pounds of cure. If you allow—especially small businesses. We have already seen in Silicon Valley, and elsewhere in high technology, where there are startups, you do get volatile stock prices. You have predatory trial lawyers going after these companies and suing them. Many feel that it is similar to days of old with gangsters, when you had to pay them off just so you could get about doing business because you could not afford to get bogged down in that kind of thing. To have this happen here would be a catastrophe. Small businesses could not afford the premiums on something that is so unknown. If you put a price on it, you know it would be right through the roof. It's not right.

Mr. SOUDER. I must say I am not completely shocked that the administration is slow, although I thought that the Vice President was Mr. Technowhiz and that he would be on top of this and clearly they are not.

Mr. FORBES. Unfortunately he is sweating on other things. [Laughter.]

Mr. SOUDER. And also preoccupied. You are possibly the foremost advocate in America of dynamic capitalism and I strongly am supportive of that, too. Why do you think even in the private sector there was such a slowness to recognize this problem and the development of it?

Mr. FORBES. That is a good question. I think that among certain companies, especially the banks who realized that with credit cards you have expiration dates and if you have a problem on 00, that is going to be very, very costly. They had an incentive to get their act together. Remember, it was only just a few years ago that we began to hear of things like the web and the net. The idea that because of decisions made 40 years ago, when memory was relatively expensive, and that you could make real savings by having two digits instead of four, would have such huge repercussions as this software gets encrusted, encrusted, encrusted, that it would have a massive problem. It just takes a while for people to say by golly, that is a problem. It should not be in this high tech age. We do things instantly, we get instant solutions. Why can we not get a quick fix here? You know, for $89.95 there should be some software out there to deal with the thing. You know, it is much more complicated than that; you have to go through line by line in many cases. Again, it is do-able. It just takes time to do it. It takes a long time to sink in. But part of it, too, I think in terms of public discussion, given the potential liability if something goes wrong—and computers always have problems—software often has glitches—I think many CEOs were inhibited by their counselors saying they'd better be careful what they said. That they'd better be careful how much they got out in front on this issue. Do it internally, but if you are too much out in front, you might be opening yourself up for

trouble. By golly, they see what happens when their stock price changes, and they see what happens if somebody misuses a product. They say uh-oh, I guess we better do something but not let too many people know we are doing it. So I think there was that inhibition as well.

Mr. SOUDER. On the positive side, what—if our companies move faster in America and our markets adjust and our financial institutions adjust, what advantage does that give us worldwide as far as capital moving to this country and our exports and other things like that?

Mr. FORBES. It is impossible to quantify, but what this era underscores is something that has always been true, but something that we tended to overlook in the past. The true source of capital, the true source of wealth in a society is not physical things. In times past, we thought it was land, armies, piles of jewels, gold and the like. The real source of wealth is the human mind, human ingenuity, innovation, imagination, information. Take something we call a natural resource, like oil. What is oil in and of itself? It is simply glop, sticky stuff. You cannot eat it, you cannot drink it, you cannot feed it to camels. Amazingly, 140 years ago in places like Pennsylvania when this goo would emerge at the surface, it was seen as a depressor of property values. Why? Because it was hard to grow crops with this glop around. It made the animals sick. It was human ingenuity and imagination that turned this sticky stuff into what the Arabs now call black gold.

So in terms of impact, if we are ahead of the information curve, this will become our "natural resource." And just as we lead the world in software, just as we lead the world in terms of high technology in a number of areas, so too, if we are first on this, other countries are going to come to us and ask us what to do about it, and we will have that know how.

Mr. SOUDER. Thank you.

Mr. HORN. Thank you.

A number of people have predicted a global recession if this problem is not solved. Do you share that view?

Mr. FORBES. I do not share the prediction. I am delighted that some people, including Ed Yardeni who was very optimistic at a time 10 years ago when others were very pessimistic about the future and therefore got credibility on looking at fundamentals, are raising the alarm because unfortunately, especially given the laggardness of the Clinton/Gore administration, you need people to say if nothing is done, here is what is going to happen. Well a lot is being done. I do not mind that kind of—saying what could happen because that will get people to say all right, what do we do to prevent it from happening? The danger is, especially on the governmental level, if you do not do it with a sense of urgency there will end up being panic. So I think the kind of prediction of what can happen if we do not approach this with measured urgency, with all deliberate speed is very useful.

Mr. HORN. I think one of the things that people do not really think about when we discuss this subject is the so-called embedded chip that is in machinery all around our house, in our offices, in the streets, in the traffic lights and all the rest. Did you have much of a problem of that type within your particular firm?

Mr. FORBES. Yes. Not so much a problem, just a sense of awe. You know, when you think of great changes in our lives, we always think of photographs, before and after, rural America versus industrial America in the late 19th century, huge changes, growth of big cities and the like. The amazing thing about this new era is, if you take pictures before and after, it pretty much looks the same. As you say, it is embedded. We did an article in our technology magazine, Forbes ASAP, about a town called Enid, OK. The writer came from there—he's a high technologist—and he went back to the town—a lot of ups and downs, especially the oil boom—and found there literally tens of billions of bits of information embedded in an area that if you look at pictures it looks like it has always been what it has been. There have been normal kinds of changes but you do not see them. Simple things, like your toaster, your car, turning on your air conditioner, all have chips that we do not see; therefore, we do not realize how much the chip has become a part of our lives. You are absolutely right. That is why there is not the proverbial silver bullet. It is why you sometimes have to go under the hood, so to speak, and go wire by wire, line by line to see how much has been embedded, especially in recent years. It has been phenomenal.

Mr. HORN. One of my last questions is, what message would you like to send to the American people about the potential threat of the Y2K situation to their lives and what actions and fears should they take, or should they have any?

Mr. FORBES. Well instilling fear in advance can be a wonderful motivator to getting the problem solved. As we know, human nature being what it is, a deadline concentrates minds wonderfully. The only way in my business, the publishing business, that you ever get an article handed in is with a deadline. You get it done or else. It gets done usually.

Mr. HORN. Like term papers. [Laughter.]

Mr. FORBES. We have all been through it. And so having that deadline, I think that by doing what you are doing and what efforts of others are doing, I think we can—especially if the President and Vice President would come and take a genuine lead—say that there is a serious problem, and if nothing is done, very damaging things will happen. You will not get your water, you will not get your electricity, you will not get your ATM. Life as you know it, especially in the winter when bad weather is around, could be a catastrophe. That is the worst scenario. Emphasize that a lot has been done, that if we do this with a sense of urgency, step by step, we can solve most of the problems so that, at the most, it is a nuisance not a catastrophe. And if the President would just take the lead, I think it would be very reassuring. You will be able to get on an airplane. We are not going to be suddenly disarmed come January 1st because the Pentagon has not done what it should do. We can deal with these things. As you and others have pointed out—and I have tried to emphasize today—when the problem is out in the open and information is shared, you come up with some very innovative, imaginative ways of doing something you did not think could be done before. Human innovation is stimulated by a deadline, by fear, not by panic, but by a measured "By golly, we have got to deal with this thing." We can; we have done so before.

Mr. HORN. We certainly did it in the Second World War when you and I were little kids. It is rather interesting this time. I wonder if we could ever win the Second World War if we had to do it over with all the regulations and everything else that block action. I think you have given us a good example of the American spirit today that we are used to solving problems. That is what has made this country and let us get on with it. And so we thank you very much for coming.

Mr. FORBES. Thank you.

Mr. HORN. Mr. Souder.

Mr. SOUDER. One additional question. I am sorry I do not know the answer to this but I assume it would just be in the early stages at this point anyway. Have you at Forbes, or any other financial publications for that matter, thought about taking the lead and possibly doing like Congressman Horn's grading system by company if they would give you financial information? Because clearly your magazine is a source of—to many people as to where they put their money and ultimately their stock and their investments may be endangered by those decisions. I am just curious about whether you have thought about this because you yourself have one of the biggest levers.

Mr. FORBES. Well obviously we will continue to write about it, but I do not want to reveal any trade secrets or things we might do in terms of features in the future. But right now it would be very difficult—to answer your question seriously—to do a grading system because we do not have the information. I think a lot of companies really are not yet equipped to give enough information. But I think as the year 1999 comes into being, we will have the kind of questions you asked and I think it is going to provide a lot of fodder for our editors. I do not want to go into too much detail because we have competition.

Mr. SOUDER. And it would show the importance of the legislation you talked about because without that protection they are unlikely to share that information with Forbes and other institutions that could make it available to investors. But if we could protect them, then they might respond to your inquiries and that would be an additional motive for those companies.

I yield back.

Mr. HORN. Well, I must say to the gentleman, who is a lawyer, I have never seen a lawyer ask a question where they did not know the answer—[laughter]—or they did not ask the question. But anyhow, it is great to have you here, Mark.

Mr. FORBES. That is what happens when you have an honest lawyer. [Laughter.]

Mr. HORN. He gets right in the middle of it.

Anyhow, we thank you again for coming and wish you well.

Mr. FORBES. Thank you, Mr. Chairman, and congratulations again to the singular work that you and a handful of colleagues have done to bring this about. Your grading system, I think, has given a sense of urgency to these agencies, even if it has not permeated to the White House. It has made progress where there would not have been progress before. So congratulations and keep it up.

Mr. HORN. Thanks very much.

Mr. FORBES. Thank you.

Mr. HORN. Our next surprise guest is the distinguished mayor of Indianapolis, Steve Goldsmith, one of the most innovative mayors in America. He is going to make a welcoming statement and a few thoughts. I just saw him in Long Beach, CA where the leadership has almost become just like Indianapolis.

Mr. GOLDSMITH. The scenery in your home district, Mr. Chairman, is somewhat different than the scenery——

Mr. HORN. If you are going to get into substance, I might as well swear you in.

Mr. GOLDSMITH. Oh. [Laughter.]

If I promise not to, do I have to swear——

Mr. HORN. You have to tell the truth about Indianapolis now. [Laughter.]

[Witness sworn.]

Mr. HORN. The clerk will note the mayor has affirmed the oath.

STATEMENT OF STEVE GOLDSMITH, MAYOR, CITY OF INDIANAPOLIS, IN

Mr. GOLDSMITH. Now that I am under oath, I would like to say that this is the greatest city in the United States. [Laughter.]

You have provoked me.

Mr. HORN. Usually people say gee, it is a pleasure to be here and I say, look, you just took the oath. How can you make that statement? [Laughter.]

Mr. GOLDSMITH. Well, Congressmen, I am just here basically to welcome you. I was honored to have the opportunity to be in your district and appreciate so much what you and this committee have done. Congressman Souder and I have been long-time associates as well. So welcome to all three of you to Indianapolis.

You have a panel of experts so I am basically just going to introduce ours with a comment or two. Let me say that the various interests of this subcommittee, I think, are appropriately coordinated because the goal, I think, is not to solve the Y2K problem by rebuilding incompetent government technology which has no relationship to management. I mean the goal is to prepare us for the 21st century and by being prepared for the 21st century we want to have management systems that work and the efforts of Congress to force performance in government agencies is not unrelated to this issue of solving the Y2K problem. The fact of the matter is, it is difficult enough to figure out what an executive branch agency measures as performance, whether it is the city level, State level or certainly at the national level. Some of the initiatives from you personally in that regard are important. So as we think about building management systems, it would be helpful to know what is a standard of performance, how we measure and track those standards of performance and how we report them both to the managers who are responsible and to the legislative oversight issues.

So the Y2K problem which brings you to Indianapolis is significant. One of the things we like to examine when we talk about management in Indianapolis is how we are doing more with less money. Competing out public services, watching the cost of public

services and measuring the performance of the private and the public sectors as well.

And so as we begin our process, you will hear from Carlton Curry, the city councilman who is the chair and the conscience of this effort. We created a separate group, enterprise-wide group, and have begun to address those. My goal is to end up on January 1, after the bewitching hour, with not just corrected antique systems but systems that will actually help us manage in a better and more prudent way.

Now I heard the exchange between you and Steve Forbes and our problems are not defense of the free world. They are whether people who are arrested actually stay in jail or whether the jail doors open and whether the traffic light was green or red or whether the sewer pump works or does not work. It is kind of basic stuff, but the life of a lot of people who are in this room today is dependant on our ability to resolve the Y2K problem. This will be a $15 to $20 million effort just inside city government itself to make sure that our basic services perform well. It is also one that we hope will take us up a level in terms of performance and accountability.

I think that the legislative body—as the Indianapolis City Council—serves to monitor and stimulate our progress, but I do not think any organization, whether it is the city of Indianapolis or the State of Indiana or certainly the Federal Government can solve these problems without an enterprise-wide approach driven by a person with talent. Our team is here today after the committee hearing if anybody wishes to address questions to them.

So thanks for pointing attention to this issue and we think we will be in reasonably good shape and resolve our problems by the appropriate time.

Mr. HORN. Great. We really appreciate you taking the time to come over here. I do not know if the citizens of Indianapolis know this, but your mayor is probably the most progressive mayor in America and if we had more of them our cities would not be the mess that they are in. I have been to a few in the last few months and it just makes you ill when you see how really bad off a number of our major old-world cities are in shape. So what is happening in Indianapolis hopefully will be happening around the country thanks to the mayor. So thank you for coming.

Mr. SOUDER. I would like to ask a brief question, Mayor. I want to echo—I would probably use a different word than progressive, but progressive in the good sense. I certainly agree that he has been one of the most innovative mayors in the Nation, if not the most innovative.

Have you talked to other mayors around Indiana and do you get the sense that even the small and mid-size towns are starting to become aware, and is there anything you can do, since you have clearly been the leader in a lot of these types of services, to help make other mayors aware of that?

Mr. GOLDSMITH. I think that we have a ways to go in that regard. It is somewhat difficult for—especially a smaller community mayor to know whether in fact his or her community is prepared. In our current situation—for example, in Indianapolis, we received reassurances from a lot of technical people for a long period of time that there was nothing to be concerned about and under the scru-

tiny of the city/county council we started asking more hard-edged questions and the answer was no, I am not quite comfortable things are where they need to be.

I think probably what we could do now that you asked the question is, we have had actually several thousand mayors and city councils visit Indianapolis on other subjects obviously, but through associations of mayors and exchanges, I think we could probably raise the level of interest considerably by demonstrating the scope of the level here. I think that might alert people that they are not really ramped up the right way.

Mr. SOUDER. In Indiana we always have the—most cities and towns are, as you are well aware having campaigns Statewide, kind of sensitive to Indianapolis thinking they are the only city in Indiana, at the same time knowing Indianapolis is ahead and on the cutting edge of a lot of the technological changes.

Did you receive any help directly from the Governor's office? Have they been outreach to the cities?

Mr. GOLDSMITH. No. There is—I think both leadership from Washington and the State governments would help some of the programs. I mean obviously many cities face the same set of issues. Now they may have different software for handling those problems, but there has not been any sustained effort at the State or Federal level to—and it would be very helpful because these issues—I am certainly not equipped to deal with—I am personally not equipped to deal with these issues. We may have the resources to be able to purchase assistance. But it would be I think quite appropriate, whether it be by the State or Federal Government, for a little more intensity in alerting people about the scope of the problem and the ways to receive resources.

Mr. SOUDER. I want to commend you on your efforts in Indianapolis because when the Republican National Convention comes here in the year 2000, we want it right.

Mr. GOLDSMITH. That's right. Our computers will be ready, Mr. Horn, when we greet the California delegation. [Laughter.]

Mr. HORN. Will we get seats in front of the bus and not in the end of the bus?

Mr. GOLDSMITH. Yes, sir.

Mr. HORN. OK, good. [Laughter.]

Mr. GOLDSMITH. Thank you very much for your courtesy.

Mr. HORN. Thank you. Thank you for coming.

OK, panel two. Mr. Joel Willemssen, the General Accounting Office; Mr. Carlton Curry, chairman of the City-County Council Y2K Subcommittee in Indianapolis and Marion County; Laura Larimer, director of information technology, State of Indiana; Jerry Smith, president of Sion Group and J. Gregory Garrison, attorney and host of the Greg Garrison Show, WIBC Radio.

You know the routine ladies and gentlemen. Raise your right hands.

[Witnesses sworn.]

Mr. HORN. The clerk will note that all five witnesses have affirmed.

We are delighted to start with our friend Joel Willemssen. He is Director of the Accounting Information Management Division, U.S. General Accounting Office. Now the U.S. General Accounting Office

is part of the legislative branch and Mr. Willemssen and his staff have been deeply involved in not only giving an overview at all of our field hearings but going out into the agencies to find out what they are doing and are they with their self-reporting really telling Congress and the President the truth about the status of where they are on this project. One of the things the General Accounting Office does at every new Congress, regardless of who is in charge of that Congress, is give them background on what we call the best practices of American government, American industry and we are trying to apply those to the Federal Government. So we thank you for following us around or preceding us as the case may be.

Mr. Willemssen.

STATEMENTS OF JOEL WILLEMSSEN, DIRECTOR, ACCOUNTING AND INFORMATION MANAGEMENT DIVISION, U.S. GENERAL ACCOUNTING OFFICE; CARLTON CURRY, CHAIRMAN, CITY-COUNTY COUNCIL Y2K SUBCOMMITTEE, CITY OF INDIANAPOLIS, MARION COUNTY, IN; LAURA LARIMER, DIRECTOR OF INFORMATION TECHNOLOGY, STATE OF INDIANA; JERRY SMITH, PRESIDENT, SION GROUP; AND J. GREGORY GARRISON, ATTORNEY AND HOST OF THE GREG GARRISON SHOW, WIBC RADIO

Mr. WILLEMSSEN. Thank you, Mr. Chairman and Congressman. Thank you for inviting GAO to testify today on the Y2K issue.

As requested, I am going to briefly summarize our statement covering the overall progress that the Federal Government is making, issues facing State and local governments and then touch on the critical data exchange issue that affects many of our organizations, both public and private.

Regarding the Federal Government, overall the 24 major Federal agencies continue to make slow progress. As we testified before you in June, Federal agencies would need to dramatically increase their pace in order to make it in time. As you know, we are currently looking at the most recent set of agency quarterly reports to see if that pace is quickening. However, with the daunting testing challenge largely ahead, it is very doubtful that all agencies can make it in time with all of their mission-critical systems.

One example is FAA. Since testifying before you in February, FAA has made some great progress in getting on top of its systems, assessing them and understanding what needs to be done to fix them. However, with relatively little time left, FAA still must correct, test and implement many of its mission-critical systems. With the complexity of the task at hand and the amount of time left, it is doubtful that they can finish all of that in time; therefore, it is imperative that FAA devote sufficient attention to putting together business continuity and contingency plans in the likely event that systems fail.

State and local governments also face major year 2000 risks to services such as benefit payments, transportation and public safety. To effectively manage those risks and manage their year 2000 projects, State and local governments must perform some of the same types of activities as Federal agencies. These activities would include items such as priority setting, progress reporting and contingency planning.

In addition to your hearings across the country getting the word out and making sure people understand the urgency of this problem, your hearings have also identified what we feel are some best practices that can be shared across the country. For example, when we were in New York, we heard about that State identifying a top 40 priority list of systems, those systems that they were going to fix regardless of what hurdles they ran into and recognition that with the limited amount of time left not everything can be fixed.

When we were in Dallas, we heard about the city of Lubbock this month planning a Y2K alert day where they were going to run some failure scenarios of what could happen when we go to January 1, 2000. So I think those are representative of some of the best practices that are out there that can be used by others.

Finally the other critical issue that I want to touch on is the data exchange or interface issue that confronts all organizations. No matter how well a given organization fixes its own systems, if it has not dealt with data exchanges, that is data coming in from other sources or going to other sources, all their best efforts may be for naught. There are thousands of data exchanges, hundreds of thousands in the Federal Government, State governments, local governments and with the private sector. Each of those exchanges should be inventoried and assessed. Agreements need to be reached with partners and then those agreements need to be tested. That is a very time-consuming, resource-intensive effort and there is no way that all of those exchanges can be done. Unfortunately too much relative effort to date has been put in just to inventory and assess data exchanges the relatively simple phases of that exercise. What is more difficult is reaching agreement with your outside partners on how data is going to be exchanged and then testing those exchanges. So there really needs to be a great deal of attention focused on this particular issue. We have made several recommendations to the administration which they have agreed to implement. So we are hopeful more attention will be placed on this data exchange issue but there is a long way to go.

That concludes the summary of my overall statement. After the panel is done, I will be pleased to address any questions that you may have. Thank you.

[The prepared statement of Mr. Willemssen follows:]

United States General Accounting Office

GAO

Testimony

Before the Subcommittee on Government Management, Information and Technology, Committee on Government Reform and Oversight, House of Representatives

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YEAR 2000 COMPUTING CRISIS

Strong Leadership and Effective Partnerships Needed to Reduce Likelihood of Adverse Impact

Statement of Joel C. Willemssen
Director, Civil Agencies Information Systems
Accounting and Information Management Division

GAO/T-AIMD-98-277

Mr. Chairman and Members of the Subcommittee:

Thank you for inviting us to participate in today's hearing on the Year 2000 problem. According to the report of the President's Commission on Critical Infrastructure Protection, the United States--with close to half of all computer capacity and 60 percent of Internet assets--is the world's most advanced and most dependent user of information technology.[1] Should these systems--which perform functions and services critical to our nation--suffer disruption, it could create a widespread crisis. Accordingly, the upcoming change of century is a sweeping and urgent challenge for public- and private-sector organizations alike.

Because of its urgent nature and the potentially devastating impact it could have on critical government operations, in February 1997 we designated the Year 2000 problem as a high-risk area for the federal government.[2] Since that time, we have issued over 50 reports and testimony statements detailing specific findings and recommendations related to the Year 2000 readiness of a wide range of federal agencies.[3] We have also

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[1]Critical Foundations: Protecting America's Infrastructures (President's Commission on Critical Infrastructure Protection, October 1997).

[2]High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997).

[3]A list of these publications is included as an attachment to this statement.

issued guidance to help organizations successfully address the issue.[4]

Today I will briefly discuss the Year 2000 risks facing the nation; highlight our major concerns with the federal government's progress in correcting its systems; identify state and local government Year 2000 issues; and discuss critical Year 2000 data exchange issues.

RISK OF YEAR 2000 DISRUPTION TO THE PUBLIC IS HIGH

The public faces a high risk that critical services provided by the government and the private sector could be severely disrupted by the Year 2000 computing crisis. Financial transactions could be delayed, flights grounded, power lost, and national defense affected. Moreover, America's infrastructures are a complex array of public and private enterprises with many interdependencies at all levels. These many interdependencies among governments and within key economic sectors could cause a single failure to have adverse repercussions. Key economic sectors that could be seriously affected if their systems are not Year 2000 compliant include information and telecommunications;

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[4]Year 2000 Computing Crisis: An Assessment Guide (GAO/AIMD-10.1.14, September 1997), which addresses the key tasks needed to complete each phase of a Year 2000 program (awareness, assessment, renovation, validation, and implementation); Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, August 1998), which describes the tasks needed to ensure the continuity of agency operations; and Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, Exposure Draft, June 1998), which discusses the need to plan and conduct Year 2000 tests in a structured and disciplined fashion.

banking and finance; health, safety, and emergency services; transportation; power and water; and manufacturing and small business.

The information and telecommunications sector is especially important. In testimony in June, we reported that the Year 2000 readiness of the telecommunications sector is one of the most crucial concerns to our nation because telecommunications are critical to the operations of nearly every public- and private-sector organization.[5] For example, the information and telecommunications sector (1) enables the electronic transfer of funds, the distribution of electrical power, and the control of gas and oil pipeline systems; (2) is essential to the service economy, manufacturing, and efficient delivery of raw materials and finished goods; and (3) is basic to responsive emergency services. Reliable telecommunications services are made possible by a complex web of highly interconnected networks supported by national and local carriers and service providers, equipment manufacturers and suppliers, and customers.

In addition to the risks associated with the nation's key economic sectors, one of the largest, and largely unknown, risks relates to the global nature of the problem. With the advent of electronic communication and international commerce, the United States and the rest of the world have become critically dependent on computers. However, there are indications of Year 2000 readiness problems in the international arena. For example,

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[5]Year 2000 Computing Crisis: Telecommunications Readiness Critical, Yet Overall Status Largely Unknown (GAO/T-AIMD-98-212, June 16, 1998).

a June 1998 informal World Bank survey of foreign readiness found that only 18 of 127 countries (14 percent) had a national Year 2000 program; 28 countries (22 percent) reported working on the problem; and 16 countries (13 percent) reported only awareness of the problem. No conclusive data were received from the remaining 65 countries surveyed (51 percent). In addition, a survey of 15,000 companies in 87 countries by the Gartner Group found that the United States, Canada, the Netherlands, Belgium, Australia, and Sweden were the Year 2000 leaders, while nations including Germany, India, Japan, and Russia were 12 months or more behind the United States.[6]

The Gartner Group's survey also found that 23 percent of all companies (80 percent of which were small companies) had not started a Year 2000 effort. Moreover, according to the Gartner Group, the "insurance, investment services and banking are industries furthest ahead. Healthcare, education, semiconductor, chemical processing, agriculture, food processing, medical and law practices, construction and government agencies are furthest behind. Telecom[munications], power, gas and water, software, shipbuilding and transportation are laggards barely ahead of furthest-behind efforts."

The following are examples of some of the major disruptions the public and private sectors could experience if the Year 2000 problem is not corrected.

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[6]Year 2000 World Status 2Q98 Update - A Summary Report (Gartner Group, Report #M-04-6957, July 21, 1998).

- Unless the Federal Aviation Administration (FAA) takes much more decisive action, there could be grounded or delayed flights, degraded safety, customer inconvenience, and increased airline costs.[7]

- Aircraft and other military equipment could be grounded because the computer systems used to schedule maintenance and track supplies may not work. Further, the Department of Defense could incur shortages of vital items needed to sustain military operations and readiness.[8]

- Medical devices and scientific laboratory equipment may experience problems beginning January 1, 2000, if the computer systems, software applications, or embedded chips used in these devices contain two-digit fields for year representation.

- According to the Basle Committee on Banking Supervision--an international committee of banking supervisory authorities--failure to address the Year 2000 issue would cause banking institutions to experience operational problems or even bankruptcy.

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[7]FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998).

[8]Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998).

Recognizing the seriousness of the Year 2000 problem, on February 4, 1998 the President signed an executive order that established the President's Council on Year 2000 Conversion led by an Assistant to the President and comprised of one representative from each of the executive departments and from other federal agencies as may be determined by the Chair. The Chair of the Council was tasked with the following Year 2000 roles: (1) overseeing the activities of agencies; (2) acting as chief spokesperson in national and international forums; (3) providing policy coordination of executive branch activities with state, local, and tribal governments; and (4) promoting appropriate federal roles with respect to private-sector activities.

MUCH WORK REMAINS TO CORRECT THE FEDERAL GOVERNMENT'S YEAR 2000 PROBLEM

Addressing the Year 2000 problem in time will be a tremendous challenge for the federal government. Many of the federal government's computer systems were originally designed and developed 20 to 25 years ago, are poorly documented, and use a wide variety of computer languages, many of which are obsolete. Some applications include thousands, tens of thousands, or even millions of lines of code, each of which must be examined for date-format problems.

The federal government also depends on the telecommunications infrastructure to deliver a wide range of services. For example, the route of an electronic Medicare payment may traverse several networks--those operated by the Department of Health

and Human Services, the Department of the Treasury's computer systems and networks, and the Federal Reserve's Fedwire electronic funds transfer system. In addition, the year 2000 could cause problems for the many facilities used by the federal government that were built or renovated within the last 20 years and contain embedded computer systems to control, monitor, or assist in operations. For example, building security systems, elevators, and air conditioning and heating equipment could malfunction or cease to operate.

Agencies cannot afford to neglect any of these issues. If they do, the impact of Year 2000 failures could be widespread, costly, and potentially disruptive to vital government operations worldwide. Nevertheless, overall, the government's 24 major departments and agencies are making slow progress in fixing their systems. In May 1997, the Office of Management and Budget (OMB) reported that about 21 percent of the mission-critical systems (1,598 of 7,649) for these departments and agencies were Year 2000 compliant.[9] A year later, in May 1998, these departments and agencies reported that 2,914 of the 7,336 mission-critical systems in their current inventories, or about 40 percent, were

[9]The Social Security Administration's (SSA) mission-critical systems were not included in these totals because SSA did not report in May 1997 on a system basis. Rather, SSA reported at that time, and again in August 1997, on portions of systems that were compliant. For example, SSA reported on the status of 20,000-plus modules rather than 200-plus systems.

compliant.[10] However, unless agency progress improves dramatically, a substantial number of mission-critical systems will not be compliant in time.

In addition to slow governmentwide progress in fixing systems, our reviews of federal agency Year 2000 programs have found uneven progress. Some agencies are significantly behind schedule and are at high risk that they will not fix their systems in time. Other agencies have made progress, although risks continue and a great deal of work remains. The following are examples of the results of some of our recent reviews.

- Last month, we testified[11] about the Federal Aviation Administration's (FAA) progress in implementing a series of recommendations we had made earlier this year to assist FAA in completing overdue awareness and assessment activities.[12] These recommendations included assessing how the major FAA components and the aviation industry would be affected if Year 2000 problems were not corrected in time and completing inventories of all information systems, including data interfaces. Officials at both FAA and the Department of Transportation agreed with these recommendations, and the agency has made progress in implementing them. In our

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[10]The agencies latest quarterly reports were due in mid-August. We are in the process of obtaining and analyzing these reports.

[11]GAO/T-AIMD-98-251, August 6, 1998.

[12]Year 2000 Computing Crisis: FAA Must Act Quickly to Prevent Systems Failures (GAO/T-AIMD-98-63, February 4, 1998) and FAA Computer Systems: Limited Progress on Year 2000 Issue Increases Risk Dramatically (GAO/AIMD-98-45, January 30, 1998).

August testimony, we reported[13] that FAA had made progress in managing its Year 2000 problem and had completed critical steps in defining which systems needed to be corrected and how to accomplish this. However, with less than 17 months to go, FAA must still correct, test, and implement many of its mission-critical systems. It is doubtful that FAA can adequately do all of this in the time remaining. Accordingly, FAA must determine how to ensure continuity of critical operations in the likely event of some systems' failures.

- In October 1997, we reported that while SSA had made significant progress in assessing and renovating mission-critical mainframe software, certain areas of risk in its Year 2000 program remained.[14] Accordingly, we made several recommendations to address these risk areas, which included the Year 2000 compliance of the systems used by the 54 state Disability Determination Services[15] that help administer the disability programs. SSA agreed with these recommendations and, in July 1998, we reported that actions to implement these recommendations had either been taken or were underway.[16] Further, we found that SSA has maintained its place as a federal leader in addressing Year 2000 issues and has made significant progress in achieving

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[13]GAO/T-AIMD-98-251, August 6, 1998.

[14]Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997).

[15]These include the systems in all 50 states, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

[16]Social Security Administration: Subcommittee Questions Concerning Information Technology Challenges Facing the Commissioner (GAO/AIMD-98-235R, July 10, 1998).

systems compliance. However, essential tasks remain. For example, many of the states' Disability Determination Service systems still had to be renovated, tested, and deemed Year 2000 compliant.

- Our work has shown that much likewise remains to be done in the Department of Defense and the military services.[17] For example, our recent report on the Navy found that while positive actions have been taken, remediation progress had been slow and the Navy was behind schedule in completing the early phases of its Year 2000 program.[18] Further, the Navy had not been effectively overseeing and managing its Year 2000 efforts and lacked complete and reliable information on its systems and on the status and cost of its remediation activities. We have recommended improvements to the Department of Defense and the military services' Year 2000 programs with which they have concurred.

In addition to these examples, our reviews have shown that many agencies had not adequately acted to establish priorities, solidify data exchange agreements, or develop contingency plans. Likewise, more attention needs to be devoted to (1) ensuring that the government has a complete and accurate picture of Year 2000 progress, (2) setting

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[17]Defense Computers: Year 2000 Computer Problems Put Navy Operations At Risk (GAO/AIMD-98-150, June 30, 1998), Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program (GAO/AIMD-98-53, May 29, 1998), GAO/AIMD-98-72, April 30, 1998, and Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998).

[18]GAO/AIMD-98-150, June 30, 1998.

governmentwide priorities, (3) ensuring that the government's critical core business processes are adequately tested, (4) recruiting and retaining information technology personnel with the appropriate skills for Year 2000-related work, and (5) assessing the nation's Year 2000 risks, including those posed by key economic sectors. I would like to highlight some of these vulnerabilities, and our recommendations made in April 1998 for addressing them.[19]

- First, governmentwide priorities in fixing systems have not yet been established. These governmentwide priorities need to be based on such criteria as the potential for adverse health and safety effects, adverse financial effects on American citizens, detrimental effects on national security, and adverse economic consequences. Further, while individual agencies have been identifying mission-critical systems, this has not always been done on the basis of a determination of the agency's most critical operations. If priorities are not clearly set, the government may well end up wasting limited time and resources in fixing systems that have little bearing on the most vital government operations. Other entities have recognized the need to set priorities. For example, Canada has established 48 national priorities covering areas such as national defense, food production, safety, and income security.

[19] Year 2000 Computing Crisis: Potential for Widespread Disruption Calls for Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998).

- Second, business continuity and contingency planning across the government has been inadequate. In their May 1998 quarterly reports to OMB, only four agencies reported that they had drafted contingency plans for their core business processes. Without such plans, when unpredicted failures occur, agencies will not have well-defined responses and may not have enough time to develop and test alternatives. Federal agencies depend on data provided by their business partners as well as services provided by the public infrastructure (e.g., power, water, transportation, and voice and data telecommunications). One weak link anywhere in the chain of critical dependencies can cause major disruptions to business operations. Given these interdependencies, it is imperative that contingency plans be developed for all critical core business processes and supporting systems, regardless of whether these systems are owned by the agency. Our recently issued guidance aims to help agencies ensure such continuity of operations through contingency planning.[20]

- Third, OMB's assessment of the current status of federal Year 2000 progress is predominantly based on agency reports that have not been consistently reviewed or verified. Without independent reviews, OMB and the President's Council on Year 2000 Conversion have little assurance that they are receiving accurate information. In fact, we have found cases in which agencies' systems compliance status as reported to OMB has been inaccurate. For example, the DOD Inspector General estimated that almost three quarters of DOD's mission-critical systems reported as compliant in

[20]GAO/AIMD-10.1.19, August 1998.

November 1997 had not been certified as compliant by DOD components.[21] In May 1998, the Department of Agriculture reported 15 systems as compliant, even though these were replacement systems that were still under development or were planned for development.[22] (The department removed these systems from compliant status in its August 1998 quarterly report.)

- Fourth, end-to-end testing responsibilities have not yet been defined. To ensure that their mission-critical systems can reliably exchange data with other systems and that they are protected from errors that can be introduced by external systems, agencies must perform end-to-end testing for their critical core business processes. The purpose of end-to-end testing is to verify that a defined set of interrelated systems, which collectively support an organizational core business area or function, will work as intended in an operational environment. In the case of the year 2000, many systems in the end-to-end chain will have been modified or replaced. As a result, the scope and complexity of testing--and its importance--is dramatically increased, as is the difficulty of isolating, identifying, and correcting problems. Consequently, agencies must work early and continually with their data exchange partners to plan and execute effective end-to-end tests. So far, lead agencies have not been designated to take responsibility for ensuring that end-to-end testing of processes and supporting

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[21]Year 2000 Certification of Mission-Critical DOD Information Technology Systems (DOD Office of the Inspector General, Report No. 98-147, June 5, 1998).

[22]Year 2000 Computing Crisis: USDA Faces Tremendous Challenges in Ensuring That Vital Public Services Are Not Disrupted (GAO/T-AIMD-98-167, May 14, 1998).

systems is performed across boundaries, and that independent verification and validation of such testing is ensured. We have set forth a structured approach to testing in our recently released exposure draft.[23]

In our April 1998 report on governmentwide Year 2000 progress, we made a number of recommendations to the Chair of the President's Council on Year 2000 Conversion aimed at addressing these problems. These included

- establishing governmentwide priorities and ensuring that agencies set agencywide priorities,
- developing a comprehensive picture of the nation's Year 2000 readiness,
- requiring agencies to develop contingency plans for all critical core business processes,
- requiring agencies to develop an independent verification strategy to involve inspectors general or other independent organizations in reviewing Year 2000 progress, and

[23]GAO/AIMD-10.1.21, Exposure Draft, June 1998.

- designating lead agencies responsible for ensuring that end-to-end operational testing of processes and supporting systems is performed.

We are encouraged by actions the Council is taking in response to some of our recommendations. For example, OMB and the Chief Information Officers Council adopted our guide providing information on business continuity and contingency planning issues common to most large enterprises as a model for federal agencies.[24] However, as we recently testified before this Subcommittee, some actions have not been fully addressed--principally with respect to setting national priorities and end-to-end testing.[25]

STATE AND LOCAL GOVERNMENTS FACE SIGNIFICANT YEAR 2000 RISKS

State and local governments also face a major risk of Year 2000-induced failures to the many vital services--such as benefits payments, transportation, and public safety--that they provide. For example,

- food stamps and other types of payments may not be made or could be made for an incorrect amount,

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[24]GAO/AIMD-10.1.19, August 1998.

[25]Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO/T-AIMD-98-205, June 10, 1998).

- date-dependent signal timing patterns could be incorrectly implemented at highway intersections, and safety severely compromised, if traffic signal systems run by state and local governments do not process four-digit years correctly, and

- criminal records (i.e., prisoner release or parole eligibility determinations) may be adversely affected by the Year 2000 problem.

Recent surveys of state Year 2000 efforts have indicated that much remains to be completed. For example, a July 1998 survey of state Year 2000 readiness conducted by the National Association of State Information Resource Executives, Inc., found that only about one third of the states reported that 50 percent or more of their critical systems[26] had been completely assessed, remediated, and tested.

In a June 1998 survey conducted by the Department of Agriculture's Food and Nutrition Service, only 3 and 14 states,[27] respectively, reported that the software, hardware, and telecommunications that support the Food Stamp Program, and the Women, Infants, and Children program, were Year 2000 compliant. Although all but one of the states reported that they would be Year 2000 compliant by January 1, 2000, many of the states

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[26]Critical systems were defined as "systems that effect public safety, public health, and financial and personnel aspects of government services."

[27]The Food and Nutrition Service included the District of Columbia, Guam, Puerto Rico, and the Virgin Islands in its survey. The Food and Nutrition Service did not verify the information provided by the states.

reported that their systems are not due to be compliant until after March 1999 (the federal government's Year 2000 implementation goal). Indeed, 4 and 5 states, respectively, reported that the software, hardware, and telecommunications supporting the Food Stamp Program, and the Women, Infants, and Children program would not be Year 2000 compliant until the last quarter of calendar year 1999, which puts them at high risk of failure due to the need for extensive testing.

State audit organizations have identified other significant Year 2000 concerns. For example, (1) Illinois' Office of the Auditor General reported that significant future efforts were needed to ensure that the year 2000 would not adversely affect state government operations,[28] (2) Vermont's Office of Auditor of Accounts reported that the state faces the risk that critical portions of its Year 2000 compliance efforts could fail,[29] (3) Texas' Office of the State Auditor reported[30] that many state entities had not finished their embedded systems[31] inventories and, therefore, it is not likely that they will complete their embedded systems repairs before the Year 2000, and (4) Florida's Auditor General has issued several reports detailing the need for additional Year 2000 planning at various

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[28]Bureau of Communications and Computer Services Third Party Review (July 1, 1998).

[29]State Auditor's Report On Vermont's Year 2000 Preparedness For The Period Ending April 1, 1998 (May 5, 1998).

[30]A Review of Oversight for the State's Embedded Systems Year 2000 Repair Efforts (SAO Report No. 98-056, August 10, 1998).

[31]Embedded systems are special-purpose computers built into other devices. They are used in, for example, security systems, prison control units, and certain medical equipment.

district school boards and community colleges.[32] State audit offices have also made recommendations, including the need for increased oversight, Year 2000 project plans, contingency plans, and personnel recruitment and retention strategies.

In the course of these field hearings, states and municipalities have testified about Year 2000 practices that could be adopted by others. For example:

- New York established a "top 40" list of priority systems having a direct impact on public health, safety, and welfare, such as systems that support child welfare, state aid to schools, criminal history, inmate population management, and tax processing. According to New York, "the Top 40 systems must be compliant, no matter what."

- The city of Lubbock, Texas is planning a Year 2000 "drill" this month. To prepare for the drill, Lubbock is developing scenarios of possible Year 2000-induced failures, as well as more normal problems (such as inclement weather) that could occur at the change of century.

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[32]Examples of these reports include, Report on Audit of the Alachua County District School Board For The Fiscal Year Ended June 30, 1997 (Report No. 13219, April 21, 1998) and Operational Audit of the District Board of Trustees Broward Community College For The Period July 1, 1996 through June 30, 1997 (Report No. 13222, April 30, 1998). The Year 2000 work for these reports was performed in early 1998.

- Louisiana established a $5 million Year 2000 funding pool to assist agencies experiencing emergency circumstances in mission-critical applications and which are unable to correct the problems with existing resources.

FEDERAL/STATE DATA EXCHANGES CRITICAL TO DELIVERY OF SERVICES

To fully address the Year 2000 risks that states and the federal government face, data exchanges must also be confronted--a monumental issue. As computers play an ever-increasing role in our society, exchanging data electronically has become a common method of transferring information among federal, state, and local governments. For example, the Social Security Administration exchanges data files with the states to determine the eligibility of disabled persons for disability benefits. In another example, the National Highway Traffic Safety Administration provides states with information needed for driver registrations. As computer systems are converted to process Year 2000 dates, the associated data exchanges must also be made Year 2000 compliant. If the data exchanges are not Year 2000 compliant, data will not be exchanged or invalid data could cause the receiving computer systems to malfunction or produce inaccurate computations.

Our recent report[33] on actions that have been taken to address Year 2000 issues for electronic data exchanges[34] revealed that federal agencies and the states use thousands of such exchanges to communicate with each other and other entities. For example, federal agencies reported that their mission-critical systems have almost 500,000 data exchanges with other federal agencies, states, local governments, and the private sector.

To successfully remediate their data exchanges, federal agencies and the states must (1) assess information systems to identify data exchanges that are not Year 2000 compliant; (2) contact exchange partners and reach agreement on the date format to be used in the exchange; (3) determine if data bridges and filters are needed and, if so, reach agreement on their development; (4) develop and test such bridges and filters,[35] (5) test and implement new exchange formats; and (6) develop contingency plans and procedures for data exchanges.

At the time of our review, much work remained to ensure that federal and state data exchanges will be Year 2000 compliant. About half of the federal agencies reported during the first quarter of 1998 that they had not yet finished assessing their data

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[33]Year 2000 Computing Crisis: Actions Needed on Electronic Data Exchanges (GAO/AIMD-98-124, July 1, 1998).

[34]To perform this review, we developed and sent a data collection instrument to survey 42 federal departments, all states, the District of Columbia, and Puerto Rico.

[35]A bridge is used to convert incoming 2-digit years to 4-digit years or to convert outgoing 4-digit years to 2-digit years. A filter is used to screen and identify incoming noncompliant data to prevent it from corrupting data in the receiving system.

exchanges. Moreover, almost half of the federal agencies reported that they had reached agreements on 10 percent or fewer of their exchanges,[36] few federal agencies reported having installed bridges or filters, and only 38 percent of the agencies reported that they had developed contingency plans for data exchanges.

Further, the status of the data exchange efforts of 15 of the 39 state-level organizations that responded to our survey was not discernable because they were not able to provide us with information on their total number of exchanges and the number assessed. Of the 24 state-level organizations that provided actual or estimated data, they reported, on average, that 47 percent of the exchanges had not been assessed. In addition, similar to the federal agencies, state-level organizations reported having made limited progress in reaching agreements with exchange partners, installing bridges and filters, and developing contingency plans. However, we could draw only limited conclusions on the status of the states' actions because data were provided on only a small portion of states' data exchanges.

To strengthen efforts to address data exchanges, we made several recommendations to OMB. In response, OMB agreed that it needed to increase its efforts in this area. For example, OMB noted that federal agencies had provided the General Services Administration with a list of their data exchanges with the states. In addition, as a result

[36]This does not include the status of agreements reported by the Federal Reserve. The Federal Reserve controls the data exchange software used by its partners and does not need to reach agreement with exchange partners on formats.

of an agreement reached at an April 1998 federal/state data exchange meeting,[37] the states were supposed to verify the accuracy of these initial lists by June 1, 1998.[38] OMB also noted that the General Services Administration is planning to collect and post information on its Internet World Wide Web site on the progress of federal agencies and states in implementing Year 2000 compliant data exchanges.

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In summary, federal, state, and local efforts must increase substantially to ensure that major service disruptions do not occur. Greater leadership and partnerships are essential if government programs are to meet the needs of the public at the turn of the century.

Mr. Chairman, this concludes my statement. I would be happy to respond to any questions that you or other members of the Subcommittee may have at this time.

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[37]Initial agreements between the federal government and the states on steps to address Year 2000 data exchange issues were reached at an October 1997 state/federal summit, sponsored by the federal Chief Information Officer Council and National Association of State Information Resource Executives, Inc., and hosted by the Commonwealth of Pennsylvania.

[38]According to the National Association of State Information Resource Executives, Inc., as of early August 1998, 16 states had completed the verification of their federal/state data exchanges and an additional 9 states had completed 80 percent of the verification.

GAO REPORTS AND TESTIMONY ADDRESSING THE YEAR 2000 CRISIS

FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998)

Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, August 1998)

Internal Revenue Service: Impact of the IRS Restructuring and Reform Act on Year 2000 Efforts (GAO/GGD-98-158R, August 4, 1998)

Social Security Administration: Subcommittee Questions Concerning Information Technology Challenges Facing the Commissioner (GAO/AIMD-98-235R, July 10, 1998)

Year 2000 Computing Crisis: Actions Needed on Electronic Data Exchanges (GAO/AIMD-98-124, July 1, 1998)

Defense Computers: Year 2000 Computer Problems Put Navy Operations At Risk (GAO/AIMD-98-150, June 30, 1998)

Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, Exposure Draft, June 1998)

Year 2000 Computing Crisis: Testing and Other Challenges Confronting Federal Agencies (GAO/T-AIMD-98-218, June 22, 1998)

Year 2000 Computing Crisis: Telecommunications Readiness Critical, Yet Overall Status Largely Unknown (GAO/T-AIMD-98-212, June 16, 1998)

GAO Views on Year 2000 Testing Metrics (GAO/AIMD-98-217R, June 16, 1998)

IRS' Year 2000 Efforts: Business Continuity Planning Needed for Potential Year 2000 System Failures (GAO/GGD-98-138, June 15, 1998)

Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO/T-AIMD-98-205, June 10, 1998)

Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program (GAO/AIMD-98-53, May 29, 1998)

Year 2000 Computing Crisis: USDA Faces Tremendous Challenges in Ensuring That Vital Public Services Are Not Disrupted (GAO/T-AIMD-98-167, May 14, 1998)

Securities Pricing: Actions Needed for Conversion to Decimals (GAO/T-GGD-98-121, May 8, 1998)

Year 2000 Computing Crisis: Continuing Risks of Disruption to Social Security, Medicare, and Treasury Programs (GAO/T-AIMD-98-161, May 7, 1998)

IRS' Year 2000 Efforts: Status and Risks (GAO/T-GGD-98-123, May 7, 1998)

Air Traffic Control: FAA Plans to Replace Its Host Computer System Because Future Availability Cannot Be Assured (GAO/AIMD-98-138R, May 1, 1998)

Year 2000 Computing Crisis: Potential For Widespread Disruption Calls For Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998)

Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998)

Department of the Interior: Year 2000 Computing Crisis Presents Risk of Disruption to Key Operations (GAO/T-AIMD-98-149, April 22, 1998)

Tax Administration: IRS' Fiscal Year 1999 Budget Request and Fiscal Year 1998 Filing Season (GAO/T-GGD/AIMD-98-114, March 31, 1998)

Year 2000 Computing Crisis: Strong Leadership Needed to Avoid Disruption of Essential Services (GAO/T-AIMD-98-117, March 24, 1998)

Year 2000 Computing Crisis: Federal Regulatory Efforts to Ensure Financial Institution Systems Are Year 2000 Compliant (GAO/T-AIMD-98-116, March 24, 1998)

Year 2000 Computing Crisis: Office of Thrift Supervision's Efforts to Ensure Thrift Systems Are Year 2000 Compliant (GAO/T-AIMD-98-102, March 18, 1998)

Year 2000 Computing Crisis: Strong Leadership and Effective Public/Private Cooperation Needed to Avoid Major Disruptions (GAO/T-AIMD-98-101, March 18, 1998)

Post-Hearing Questions on the Federal Deposit Insurance Corporation's Year 2000 (Y2K) Preparedness (AIMD-98-108R, March 18, 1998)

SEC Year 2000 Report: Future Reports Could Provide More Detailed Information (GAO/GGD/AIMD-98-51, March 6, 1998)

Year 2000 Readiness: NRC's Proposed Approach Regarding Nuclear Powerplants (GAO/AIMD-98-90R, March 6, 1998)

Year 2000 Computing Crisis: Federal Deposit Insurance Corporation's Efforts to Ensure Bank Systems Are Year 2000 Compliant (GAO/T-AIMD-98-73, February 10, 1998)

Year 2000 Computing Crisis: FAA Must Act Quickly to Prevent Systems Failures (GAO/T-AIMD-98-63, February 4, 1998)

FAA Computer Systems: Limited Progress on Year 2000 Issue Increases Risk Dramatically (GAO/AIMD-98-45, January 30, 1998)

Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998)

Year 2000 Computing Crisis: Actions Needed to Address Credit Union Systems' Year 2000 Problem (GAO/AIMD-98-48, January 7, 1998)

Veterans Health Administration Facility Systems: Some Progress Made In Ensuring Year 2000 Compliance, But Challenges Remain (GAO/AIMD-98-31R, November 7, 1997)

Year 2000 Computing Crisis: National Credit Union Administration's Efforts to Ensure Credit Union Systems Are Year 2000 Compliant (GAO/T-AIMD-98-20, October 22, 1997)

Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997)

Defense Computers: Technical Support Is Key to Naval Supply Year 2000 Success (GAO/AIMD-98-7R, October 21, 1997)

Defense Computers: LSSC Needs to Confront Significant Year 2000 Issues (GAO/AIMD-97-149, September 26, 1997)

Veterans Affairs Computer Systems: Action Underway Yet Much Work Remains To Resolve Year 2000 Crisis (GAO/T-AIMD-97-174, September 25, 1997)

Year 2000 Computing Crisis: Success Depends Upon Strong Management and Structured Approach (GAO/T-AIMD-97-173, September 25, 1997)

Year 2000 Computing Crisis: An Assessment Guide (GAO/AIMD-10.1.14, September 1997)

Defense Computers: SSG Needs to Sustain Year 2000 Progress (GAO/AIMD-97-120R, August 19, 1997)

Defense Computers: Improvements to DOD Systems Inventory Needed for Year 2000 Effort (GAO/AIMD-97-112, August 13, 1997)

Defense Computers: Issues Confronting DLA in Addressing Year 2000 Problems (GAO/AIMD-97-106, August 12, 1997)

Defense Computers: DFAS Faces Challenges in Solving the Year 2000 Problem (GAO/AIMD-97-117, August 11, 1997)

Year 2000 Computing Crisis: Time is Running Out for Federal Agencies to Prepare for the New Millennium (GAO/T-AIMD-97-129, July 10, 1997)

Veterans Benefits Computer Systems: Uninterrupted Delivery of Benefits Depends on Timely Correction of Year-2000 Problems (GAO/T-AIMD-97-114, June 26, 1997)

Veterans Benefits Computer Systems: Risks of VBA's Year-2000 Efforts (GAO/AIMD-97-79, May 30, 1997)

Medicare Transaction System: Success Depends Upon Correcting Critical Managerial and Technical Weaknesses (GAO/AIMD-97-78, May 16, 1997)

Medicare Transaction System: Serious Managerial and Technical Weaknesses Threaten Modernization (GAO/T-AIMD-97-91, May 16, 1997)

Year 2000 Computing Crisis: Risk of Serious Disruption to Essential Government Functions Calls for Agency Action Now (GAO/T-AIMD-97-52, February 27, 1997)

Year 2000 Computing Crisis: Strong Leadership Today Needed To Prevent Future Disruption of Government Services (GAO/T-AIMD-97-51, February 24, 1997)

High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997)

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Mr. HORN. Thank you very much.

Our next presenter is Carlton Curry who I noted is chairman of the City/County Council Y2K Subcommittee, city of Indianapolis and Marion County. The mayor certainly praised your work and understanding of both city and county. So we look forward to hearing from you.

Mr. CURRY. Thank you, Mr. Chairman, Congressman Souder and ladies and gentlemen.

We really appreciate the opportunity to offer some testimony today about Indianapolis and Marion County and what is being done with respect to not only chip-embedded technology but also the hardware and software challenges that face us all. So in less than 5 minutes I am going to try to do four points. I will give you an idea of our scope for the year 2000, the notion of the resources that we have placed in place and some concerns about liability which Mr. Forbes also raised, a suggested bit of language perhaps, and then a brief summary of risk management as to how we are working.

Marion County encompasses 402 square miles, 800,000 people, over 100 different agencies, so we are sort of a microcosm, I think, of the challenges that you all face at the Federal level, although where we have hundreds, I suspect you have tens of thousands. But nevertheless, as we looked at this program, we determined that progress was not moving as rapidly as it should to prepare us because the due date is coming at us at the rate of 24 hours a day and there's only 486 days left. That is if you ignore the Julian calendar date which says that April 9, 1999, being the 99th day, is four nines in a row and some programmers use three 9s as a signoff. So, you know, there's another little option that comes earlier in the year.

So what we did was establish a four-phase process that said we would inventory all of our assets, we would do an assessment and planning stage, a renovation stage and a test and certification stage. And in the course of doing that, we found that we had—well for Marion County, 2,600 PCs and 45 servers and things, a lot of equipment that is both embedded and as hardware and software that has to be done. And once we found out what assets we had, we then set together in doing an assessment and planning on how to remediate or replace or risk management. I will hit risk management last.

We have also recognized that our problems are not just within our own house. We have many, many vendors and we have supplied services to others. So we are trying to identify the interfaces where data flows from one entity to another. And in the course of applying our resources, there are again four phases. We can upgrade, we can replace, we can maintain, certify, and if you want to throw in a fifth phase, we can retire. Actually some of the systems we looked at, we have asked the question what would happen if this system was not there tomorrow and if someone said well, nothing, why spend any money on that? Let us kill it now and move on.

So as we applied our resources the initial new money estimate—and I stress new money estimate—was $19 million for Marion County, because many of our agencies in the 1998–1999 budgets al-

ready had moneys allowed for various elements of a Y2K program, but we did not have all elements covered. And so, we have recently passed through the city-county council a reduced value of $12.9 million, $12.6 of new money, which I hope that we will be able to live within. And as we have done that, we are applying that toward our programs for the remediation and then the test and certification of our systems.

We have discovered in our risk management aspect that sometimes the testing and the verification costs two to three times as much as remediation. So again, we have ranked all of our programs as to how critical are they so that we can smooth out our expenditure curve, the number of programmers we have to bring in. I have read there is a shortage of programmers in the Nation, around 435,000. Maybe that is right, maybe it is not. I know that we have had some difficulty getting programmers, but we have now done contracts with people with whom we have some confidence. And so, we are using that to load level our effort on a priority basis.

Then finally before we get to the conclusion, in the testimony there is some language that I asked our local counsel to develop for us that would assist in protecting municipal entities such as ours from tort liability. May I say that I apologize for one spelling error. Unfortunately the word came out as a legitimate word but there has been a pen and ink correction when I read it last night, and so you have that.

So in conclusion then, I would like to say that while we feel very, very confident that our programs are coming along and doing well, we would like to look to the Congress as a partner. For example, as the mayor mentioned and is included in our testimony here, in some cases, if we would re-time the application of an asset—and I used in the testimony the example of the automatic fingerprint identification system and our records management system. If we would re-time an asset to obtain certain law enforcement grants earlier that could be applied to that, we could make our fingerprint system Y2K compliant, which it is not now, and we could bring our records management system, which we were going to update in the year 2001, if we brought that forward, we would not only be Y2K compliant earlier, we would have a far more efficient front end that would feed a new integrated law enforcement system that would make our police officers far more effective and certainly more safe as they are out doing the job of protecting you and I. So, you folks in the Congress, if there is some way that we could continue that partnership and look at the timing of some dollars and things, I think that other communities like ours could benefit from that.

I really appreciate the time to offer this testimony and again, will be pleased to do this, although I do have to say I have to leave at 11 because I have an airplane to catch, like Mr. Forbes. Thank you very much.

Mr. HORN. You will make it.

Mr. CURRY. Thank you, Mr. Chairman.

Mr. HORN. Ms. Larimer is director of information technology for the State of Indiana. Welcome.

[The prepared statement of Mr. Curry follows:]

CITY OF INDIANAPOLIS & MARION COUNTY YEAR 2000 PROJECT MANAGEMENT

September 1, 1998

Subcommittee on Government Management, Information, and Technology
Congress of the United States
House of Representatives
2157 Rayburn House Office Building
Washington, DC 20515-6143

Efforts State and Local Governments Are Taking To Address the Year 2000 Computer Problem

Good Morning and thank you for this opportunity to testify concerning the approach the City of Indianapolis and Marion County is making to address the impact of the Year 2000 on chip-embedded technology, hardware and software. The problem is widespread because most computer systems store the year in date fields as a two position field. The century date itself is often not used or stored. As dates are entered into these systems for post-year 2000 periods, the year is stored as "00" which may result in calculations problems, sequencing errors, date-driven command failures within systems or between systems communicating with each other. In these situations, systems may either store bad data or fail altogether. Today I will share with you an overview of: the scope of the City and County's Year 2000 effort, the approach adopted to discover and address Year 2000 problems, a notion of the resources put into place to undertake this project and a concern about potential liability the Congress may wish to address.

SCOPE

The City and County formally established the Year 2000 initiative as a high-priority enterprise-wide project in the fourth quarter of 1997 to address the significant risks that the City County would face with respect to the Year 2000. Some local agencies began much earlier to address the issue. Due to the unchangeable deadline and the threat of multiple, simultaneous failures, it was imperative that the City and County approach any remediation effort in a concerted manner. That is, to determine whether the enterprise's Information technology assets and other non-IT assets would function correctly prior to, on, and after January 1, 2000 with respect to date-based calculations and date usage. This Year 2000 project encompasses over 100 County Agencies and City Departments. The primary objective is to identify and certify mission-critical systems and chip-embedded technology that may be date sensitive, and therefore be affected by the century date change. There are a number of municipal corporations, township organizations and non-profit organizations affiliated with the City/County that are outside of the direct scope of this Year 2000 project. However these agencies are actively under review by the City/County Year 2000 Council Committee regarding the progress of their remediation efforts since various systems under different control may communicate with each other in a mission critical fashion.

APPROACH

The general strategy employed by the Y2K project management team mirrors the approach utilized by many public and private organizations across multiple industries. A four phase process has been developed including: (1) Inventory, (2) Assessment & Planning, (3) Renovation, (4) Testing & Certification.

In the *inventory* phase, 48 enterprise applications were identified as mission-critical with nearly 7 million lines of code needing renovation. In addition, over 2600 PCs including 45 servers were audited in the first quarter of 1998 through an automated process which verified the BIOS for each PC in service and continues to verify any additional unit added to the network. Through this analysis, 1.1 million software executables were

identified of which 2551 applications were unique. Non-IT assets were identified using a combination of a structured form and on-site visits by our consultant partner, CBSI, to assist staff in data collection. The objective was to identify those non-IT assets that have date calculations or are programmed on a recurring basis to monitor activities or control functions.

In the *assessment and planning* phase of the project, impact analyses were undertaken for several in-house applications to validate and refine initial estimates for renovation/replacement/retirement of various systems, applications and devices in use. For all remaining system software and hardware, the vendor's compliance plan determined the solution the Year 2000 project team will use for Year 2000 compliance. From the assessment of each system/application, a specific Year 2000 compliance-related disposition was made. Therefore, all application software in the scope of this project has been identified with one of the following disposition labels; upgrade; replace; maintain; certify; retire. A significant aspect of the City and County's planning phase includes the development of business continuity plans in the event that despite our due diligence in addressing this problem, system failures occur at the turn of the century. These contingency plans would also address failures in the supply chain, for instance a loss of power to our offices, that may occur as a result of the year 2000 problem. To further protect against a breakdown in the information and supply chain, the purchasing division now inserts year 2000 compliance language requiring that all newly purchased products are certified Year 2000 compliant. Letters recently sent to software, hardware and non-IT vendors of existing assets request that a statement of compliance and sample test plans demonstrating year 2000 certification procedures be sent to the Year 2000 Project Management Office.

This quarter marks the intensive beginning to the *renovation* and concurrent *testing* Phases. All mission-critical systems marked with a certify disposition are being scheduled for certification testing in a Year 2000 simulated environment managed by the Year 2000 project team. The Team ensures that from an enterprise perspective a consistent and thorough approach to testing is maintained throughout the project. Furthermore, the team manages the master schedule of renovation and upgrade projects to ensure they are managed to completion according to schedule.

RESOURCES

The initial estimate following the inventory phase for complete remediation totaled more than $19 million. Following the risk assessment phase, this value was reduced to nearly $13 million. In 1999, the combined City and County annual operating budgets totals more than $600 million making this one-time appropriation 2 percent of one year's operating budget.

Twenty-five percent of the estimated costs cover infrastructure-related expenses. To certify mission-critical systems, a limited partition in our mainframe environment has been created so that applications can be tested operating under a system date of the January 1, 2000, February 29, 2000, and March 1, 2000. Test servers for mid-range applications are also included in the project plan. An additional forty-eight percent of the costs remediate and certify systems mission critical to public safety. The majority of these applications are Legacy applications requiring extensive code renovation and certification testing.

At the peak of our remediation efforts, an additional 30 programmers will be required to finish the project according to plan. Contracts for securing these additional programming contractors will be finalized in mid-September 1998.

Congress can assist municipalities such as Indianapolis and Marion County by directing grant funds to more timely replace some outdated, Y2K non compliant hardware. For example, the Automatic Fingerprint Identification System (AFIS) used by local law enforcement is not Y2K compliant. We have been seeking grant funds to replace it thereby removing not only the year 2000 concern, but also being able to properly

communicate with AFIS technology to be employed by the Indiana State Police and other agencies. In another example, local law enforcement could benefit from a records management system (RMS) upgrade which would not only be Y2K compliant but also would be more efficient in the manner of gathering and using crime data. An RMS upgrade that was planned for 2001 could be advanced to 1999 with help from an appropriate grant source. If there were a defined funding source, a tailored list could quickly be developed for appropriate use.

LIABILITY

In view of the potential for lawsuits filed against government entities, the Congress could take steps to assist those entities to avoid unnecessary costs by adopting some protective language. One suggested text follows:

"The tort liability of any municipal entity for damages alleged to have resulted from and/or resulting from, in any way, directly or indirectly, any computer software of hardware malfunction, failure to perform, error or omission caused or alleged to have been caused by a failure to correct a Y2K problem shall be limited to those situations where the municipal entity acted intentionally or with gross negligence. Mere negligence in failing to correct such a problem is not sufficient to expose a municipal entity to liability in this situation."

A standard definition of *Y2K* should be incorporated to remove doubt in the courts concerning the full intent of this suggested language.

CONCLUSION

As you know, the millenium bug poses a significant challenge to public and private organizations across all sectors of industry. Ultimately our universal goal is to overcome technical limitations of the past with the technology of today and tomorrow. We all must do so under the constraint of an unchangeable deadline. Furthermore, the proliferation of this problem extends beyond computer systems to many chip-driven and supported assets. Conservative estimates of the impact that the year 2000 bug will have on chip embedded technology range from 5 to 10 percent. While most computing year 2000 problem corrections are straightforward programming jobs, completing projects on time and diagnosing data sensitivity in non-IT assets are foreign territories to most IT professionals. We will continue to address the problems that are discovered through this detailed process and seek advice and counsel from other industries and units of government for clarifying the "unknown" as it relates to how the Year 2000 may affect our non-IT assets. We understand that we must first look to our own resources to answer the needs for correcting these problems. We understand that the needs of many are sometimes consistent one with another and that solutions may be shared. Such sharing may reduce the aggregate expense to all. Hearings such as this one allows the Congress to define where they may play a significant role for the entire country. For your willingness to come to us, hear our local issues, consider how our problems and solutions may assist the greater good, and direct resources toward solutions, I sincerely thank you!

Ms. LARIMER. Thank you very much.

My comments today will be organized around the following outline. First, I would like to talk a little about the background of the year 2000 efforts in Indiana State government, including the strategic approach that we are taking to address this issue. Then I will report on the status of those remediation efforts. Finally, I will discuss outstanding issues and some steps that we are taking to address them.

The year 2000 office has a mission to coordinate the efforts of State agencies in preparing their systems, hardware and software, to operate properly with dates of year 2000 and beyond. The year 2000 office concentrates on six areas: custom systems and applications, software, hardware, telecommunications equipment, facilities and medical devices.

The year 2000 office began making our agencies aware of the problem in early 1996. In late 1996, Andersen Consulting was hired to do an assessment of the State's year 2000 exposure and to prepare an estimate of the cost to rectify the problem. Agencies were given the option of participating in that assessment or conducting their own assessment and remediation efforts. Approximately 50 percent of State agencies chose to participate in the assessment. Those that did not choose to participate fall into one of three separate categories: (1) agencies that did not have custom systems and who had plans to upgrade hardware and software within current budget means; (2) offices of separately elected officials who chose to take responsibility for their own remediation; and, (3) very large agencies with significant investment in computer systems and supporting staffs that could demonstrate a plan and capacity to remediate their own year 2000 problems. The estimate for participating agencies was presented to the Indiana General Assembly in early 1997 and the resulting budget bill included the majority of the requested funds.

We began work in May 1997 with the hiring of Keane, Inc. to do our project management analysis and testing as well as non-mainframe remediation. The State's mainframe remediation is being done by the in-house Information Services Division in partnership with a local application development company known as Indecon.

To make custom systems year 2000 ready, three steps may be required; analysis, remediation and testing. In analysis, the computer code is examined to see how extensively the dates are used and determine the best approach to remediate the code. In the remediation, the code is changed. Whenever possible, we are leaving two digit years intact and adding program logic to interpret the year correctly based on a window of 75 years into the past and 25 years into the future. This windowing technique saves time since fewer programs need to be changed and the data can remain unaltered. I believe that Mr. Smith will be speaking more on this technique and the development of it as his testimony comes around. There are cases where expanding the year from two digits to four is required, however. In some cases, the only practical method to remediate the system is to rewrite it in another language using hardware and software that will work with year 2000 dates.

At this time, the year 2000 project in Indiana, defined as the scope of work for agencies that participated in the assessment, is

on time and on budget. Analysis, remediation, and testing of custom computer systems in this scope are expected to be complete in June 1999. For the other five areas, our process is to get an inventory of the hardware, software, telecommunications equipment, facility processors and medical devices from the agencies, get compliance information on these products from the vendors, and disseminate that information to our agencies. The agencies then will use their usual procurement methods to obtain and install the upgrades or replacements. With the exception of medical devices, we have completed the inventory of products. We have 18 percent of the inventory complete for medical devices. We expect to have all compliance information from the vendors by November of this year.

Two agencies that did not participate in the assessment have significant data exchanges with the Federal Government. They are the Indiana Department of Workforce Development that exchanges data with the Federal Bureau of Labor Statistics, Social Security Administration, Department of the Treasury, and the IRS and the Indiana Department of Transportation that exchanges data with the Federal Highway Administration. We are pleased to report that remediation efforts in these agencies are also progressing according to plan and that they are working effectively with their Federal counterparts to ensure successful data interchanges. The year 2000 office is in the process of following up with other agencies that did not participate in the assessment to track their progress in each of the six areas.

We have several outstanding issues that we are addressing. First, we are making good progress on the work that the agencies have identified, but there may be things that have been overlooked. Time and resources will be limited to fix any systems that are identified later. Thus, we continue to probe for missing items.

Second, our approach for hardware, software, telecommunications equipment facilities and medical devices is dependent upon timely and accurate responses from the vendors. So far, the responses that we have received indicate a very high rate of compliance, but we still have a number of vendors who have not responded. If we do not receive responses soon, we may need to replace the products with products that are known to be year 2000 ready. If this becomes necessary, it will have an unanticipated budget and operational impact.

Third, the successful operation of systems is dependent upon data interchanges. That is, exchanging information electronically with external entities. This includes other State agencies, local units of government, financial institutions and the Federal Government. The National Association of State Information Resource Executives [NASIRE], of which Indiana is a member, has posted a table of Federal/State data exchanges. The State agencies are identifying a contact for each data exchange so that testing may be done. We currently have approximately 70 percent of the contacts identified.

Fourth, we are dependent upon utilities such as electric, gas, and water to continue operation of State government, as well as to ensure continued public safety for our citizens. We need to determine the preparedness of the utilities for the year 2000. In addition to their computer systems, utility manufacturing facilities typically

have many embedded processors that could fail. Finding and repairing all the embedded processors is very time and resource intensive. Some non-Indiana utilities that tested their manufacturing operations for year 2000 found that the operations could stop for several days or longer until repairs are made. The Indiana Utility Regulatory Commission sent a survey to 26 Indiana utilities. They intend to form a task force to assist regulated utilities toward year 2000 preparedness.

A fifth issue is supply chains. There are supplies that are critical to State operations, such as paper and office supplies, food for State institutions, and gas, oil and parts for State vehicles. We are planning to contact critical State suppliers and request their plans for preparing for the year 2000 so that they may continue to supply our needs.

Finally, we are concerned about the small cities, towns, schools, libraries and businesses throughout Indiana. We are considering outreach programs to make these entities aware of the problems and what they should be doing about them. This outreach program may include workshops to get common entities together and discuss the problem and identify workable solutions. We have started to work with the State Library and the Indiana Association of Cities and Towns to determine the best plan of action for this much needed outreach effort.

In conclusion, I would like to thank the committee for its time and attention to this critical issue and for the opportunity to comment on the efforts of Indiana State government to be prepared for the new millennium. Thank you.

[The prepared statement of Ms. Larimer follows:]

Good morning. My name is Laura Larimer and I am the Director of Information Technology for Indiana state government. With me today is Bill Pierce, Director of our Year 2000 office. I will be making the prepared testimony today and together, Mr. Pierce and I should be able to answer any questions that you may have. If you have questions that we cannot answer today, we will promptly investigate the issue and follow up in writing.

My comments today will be organized around the following outline. First, I will discuss the background of the Year 2000 efforts in Indiana state government including the strategic approach that we are taking to address this issue. Next, I will report the status of our remediation efforts. Finally, I will discuss outstanding issues and the steps that we are taking to address them.

Background

The mission of the Year 2000 Office is to coordinate the efforts of state agencies in preparing their systems, hardware and software to operate properly with dates of year 2000 and beyond. The Year 2000 Office has concentrated on six areas: systems, software, hardware, telecommunications equipment, facilities, and medical devices. Systems are the custom computer applications written specifically to handle a specialized portion of state business. These custom applications are maintained by the state. Software, on the other hand, is commercially available and is supported by a third party vendor. Word processing, spreadsheets, electronic mail, operating systems and accounting and billing packages are included in the software category. Hardware includes the computers and peripheral devices on which the systems and third party software operate. Mainframe and midrange computers, local area network servers, and PCs are examples of hardware devices. Telecommunication equipment includes telephone systems and switching equipment. Many state facilities have embedded computer systems to control things such as door access, heating, air conditioning, and elevators. We recently added medical devices for the state hospitals.

The Year 2000 Office began making agencies aware of the problem in early 1996. In late 1996, Anderson Consulting was hired to do an assessment of the states' year 2000 exposure and prepare an estimate of the cost to rectify the problem. Agencies were given the option of participating in the assessment or conducting their own assessment and remediation efforts. Approximately 50% of state agencies chose to participate in the assessment. Those that did not choose to participate fall into one of three separate categories: 1) agencies that did not have custom systems and who had plans to upgrade hardware and software within current budget means, 2) offices of separately elected officials who chose to take responsibility for their own remediation, and 3) very large agencies with significant investment in computer systems and supporting staffs that could demonstrate a plan and capacity to remediate their own Year 2000 problems. The estimate for participating agencies was presented to the Indiana

General Assembly in early 1997 and the resulting budget bill included the majority of the requested funds.

In May 1997, Keane, Inc. was contracted to perform the year 2000 project management, analysis, testing and the non-mainframe remediation. The state's Information Services Division and a local application development company known as Indecon are handling the mainframe remediation.

To make custom systems year 2000 ready, three steps may be required: analysis, remediation, and testing. In analysis, the computer code is examined to see how extensively dates are used and determine the best approach to remediate the code. In remediation, the code is changed. Whenever possible, we are leaving two digit years intact and adding program logic to interpret the year correctly based on a window of 75 years in the past and 25 years in the future. This windowing technique saves time since fewer programs need to be changed and the data can remain unaltered. There are cases where expanding the year from two digits to four is required, however. In some cases, the only practical method to remediate the system is to rewrite it in another language using hardware and software that will work with year 2000 dates.

Status

At this time, the Year 2000 project – defined as the scope of work for agencies that participated in the assessment - is on time and on budget. Analysis, remediation, and testing of custom computer systems in this scope are expected to be complete June of 1999. For the other five areas, our process is to get an inventory of the hardware, software, telecommunications equipment, facility processors and medical devices from the agencies, get compliance information on these products form the vendors, and disseminate the information to the agencies. The agencies then will use their usual procurement methods to obtain and install the upgrades or replacements. With the exception of medical devices, we have completed the inventory of products. We have 18% of the inventory complete for medical devices. We expect to have all compliance information from the vendors by November of this year.

Two agencies that did not participate in the assessment have significant data exchanges with the federal government. They are the Indiana Department of Workforce Development that exchanges data with the federal Bureau of Labor Statistics, Social Security Administration, Dept of the Treasury, and the IRS and the Indiana Department of Transportation that exchanges data with the Federal Highway Administration. We are pleased to report that remediation efforts in these agencies are also progressing according to plan and that they are working effectively with their federal counterparts to ensure successful data interchanges. The Year 2000 office is in the process of following up with other agencies that did not participate in the assessment to track their progress in each of the six areas.

Issues

We have several outstanding issues that we are addressing. First, we are making good progress on the work that the agencies have identified. But, there may be things that have been overlooked. Time and resources will be limited to fix any systems or products that are identified later. Thus, we continue to probe for missing items.

Second, our approach for hardware, software, telecommunications equipment, facilities and medical devices is dependent upon timely and accurate responses form the vendors. So far, the responses that we have received indicate a very high rate of compliance, but we still have a number of vendors who have not responded. If we do not receive responses soon, we may need to replace the products with products that are known to be year 2000 ready. If this becomes necessary, it will have an unanticipated budget and operational impact.

Third, the successful operation of systems is dependent on data interchanges, that is, exchanging information electronically with external entities. This includes other state agencies, local units of government, financial institutions, and the federal government. The National Association of State Information Resource Executives (NASIRE), of which Indiana is a member, has posted a table of federal/state data exchanges. The state agencies are identifying a contact for each data exchange so testing may be done. We currently have approximately 70% of the contacts identified.

Fourth, we are dependent upon utilities such as electric, gas, and water to continue operation, as well as to ensure continued public safety for our citizens. We need to determine the preparedness of the utilities for year 2000. In addition to their computer systems, utility manufacturing facilities typically have many embedded processors that could fail. Finding and repairing all the embedded processors is very time and resource intensive. Some non-Indiana utilities that tested their manufacturing operations for year 2000 found that operations could stop for several days or longer until repairs are made. The Utility Regulatory Commission sent a survey to 26 Indiana utilities. They intend to form a task force to assist regulated utilities toward Year 2000 preparedness.

A fifth issue is supply chains. There are supplies that are critical to state operations, such as paper and office supplies, food for state institutions, and gas, oil and parts for state vehicles. We are planning to contact critical state suppliers and request their plans for preparing for the year 2000.

Finally, we are concerned about the small cities, counties, towns, schools, libraries and businesses throughout Indiana. We are considering outreach programs to make these entities aware of the problems and what they should be doing about them. This outreach program may include workshops to get the

common entities together and discuss the problem and identify workable solutions. We have started to work with the State Library and the Indiana Associations of Cities and Towns to determine the best plan of action for this much needed outreach effort.

In conclusion, I'd like to thank the committee for its time and attention to this critical issue and for the opportunity to comment on the efforts of Indiana state government to be prepared for the new millennium. If you have any questions, I would be happy to address them at this time.

Mr. HORN. We thank you. That is a very thorough statement and I am sure we will come back to it on questions later.

Jerry Smith is president of Sion Group. Maybe you would like to explain what the group is, Mr. Smith.

Mr. SMITH. Good morning, Mr. Chairman; Congressman Souder, ladies and gentlemen.

My name is Jerry Smith and I am the founder and president of the Sion Group, Inc. My company was formed to fill a void in most information technology pursuits to solve mainframe application year 2000 problems. The missing ingredient to me is simplicity. Utilizing straightforward and simple approaches to solve the year 2000 problem is producing outstanding results from some central Indiana entities.

When the year 2000 problem first surfaced, expanding the two-digit fields to four-digit fields was the prevailing thought and is what, to me, catapulted the huge cost estimates that surfaced. Some of us in the industry were saying there is not enough time and definitely not enough resources available to accomplish expansion of files and the tremendous amount of testing required validating the changes. Do not get me wrong, I do believe that expansion is the best true approach; however, our industry has not proven over the years that it could meet its objectives on time and within budget. Year 2000 projects are somewhat unique in that the end date absolutely cannot be moved. Time is so critical today that our industry has finally been forced to embrace other more simple approaches.

Before founding Sion, I was the director of administrative computing operations at Purdue University. In 1988, Purdue had its first year 2000 problem. That was 10 years ago. While registering a student for the upcoming school year, 99 was entered as a date instead of the correct year 89. That evening as the mainframe processed the students' information, it looked ahead to the year 2000 and rolled right into it. The program that was written at least two decades earlier for that process could not handle the year 2000. Further processing halted and fortunately the problem was quickly identified and fixed by the analyst in charge.

Purdue's inventory of systems consists of approximately 8,000 programs made up of 7.5 million lines of code. In 1994 Elaine Brown, a Purdue senior analyst developed a solution to enable the University's mainframe applications to run up to and through the new millennium.

The results were tremendous. We averaged less than 2 hours per program to scan, modify, test and put back into production the remediated programs. This was at a time when the industry average was up closer to 15 to 20 hours per program. We also averaged less than 20 cents per line of code. Again, this was at a time when the industry was between $1.50 and $2 per line of code.

In 1996 the Purdue Research Foundation copyrighted and sold the worldwide distribution rights to Venture 2000, Inc. out of Jacksonville, FL, therefore making it available commercially. Prior to the arrangement with Venture, Purdue shared the solution with its sister schools in the big 10, and several of those today have taken advantage of this technology transfer.

Now it cannot be said with absolute certainty that all possible problem areas were found and remediated, but by using the windowing technique, keeping the two-digit files in place, using simplified, proven project management and testing efforts, the risks are greatly reduced.

In my opinion, it is really too late for us to still be talking about the problem. At this late date, more than ever cost effective, simple solutions are the answer and panel discussions like this should become more involved in presenting viable solutions. Solutions like that developed and successfully utilized at Purdue and later utilized successfully at companies in central Indiana, such as Farm Bureau Insurance, Essex Wire, Inland Container, Caterpillar, Vigo County, the Indiana Department of Transportation and Alcoa and others.

The IT industry throughout its young history has failed miserably in managing IT projects. There are surveys from industry watchdog groups who identify upwards of 80 percent of all IT projects fail to come in on time and within budget or are canceled all together.

Several years ago, I started my own research. What turned up everywhere I looked was a lack of simplicity in the way projects are managed. From the largest IT shops to the smallest, complex methodologies and solutions are the norm.

Peter Drucker once wrote in one of his management books, and I do paraphrase him, "if we are to be successful as managers, then we first must simplify the process of management." During the last several years, I have developed simplified processes of which some were incorporated into the year 2000 solution used at Purdue. In the commercial world, we are also using these simplified solutions.

As an example, one of our clients is averaging less than an hour per program and is within a few weeks of completion. Their cost will be less than 50 cents per line of code. The project will be completed several weeks ahead of original schedule. Another company who used the Purdue-developed solution completed its year 2000 mainframe project 4 months ahead of schedule.

There are other similar stories and I highly encourage all appropriate committees and year 2000 groups who are able to get in front of large audiences to turn their primary focus from talking about the problem to finding and bringing people forward who can discuss solutions that will be implemented quickly. Help them locate companies, companies like mine who can simplify the process and be flexible enough to bend quickly and not be hampered by bureaucratic and complex methodologies. Can this really be accomplished in enough places to make a difference? The answer is a resounding yes. Everything noted here can be replicated at almost every site.

As a result of my testimony, I would relish the idea of using our core group of successful companies and the staff involved who have used the solution to form a strong year 2000 coalition commissioned to assist others. I am open to suggestions on how we can make that happen. I do feel strongly that if we do not pull together as the American people are capable of doing and fighting this problem together, we will experience several technology failures as a result of the year 2000 problem.

In conclusion, let me say that Purdue University helped educate and train the first person and the last person to walk on the moon. The year 2000 problem can only be solved with the same type of dedication and focus we as Americans used to place these men on the moon.

Thank you for giving me the opportunity to share the central Indiana success stories made possible by the insight and dedication of a few IT professionals. There have to be others across the country with similar stories. Let us locate them and resolve this year 2000 problem using the more simple and cost effective processes. Thank you.

[The prepared statement of Mr. Smith follows:]

The Year/2000 Problem: Simplifying a Year/2000 Project for Success

By Jerry Smith

My name is Jerry Smith; I am the founder and President of Sion Group, Inc. My company was formed to fill a void found in most Information Technology's (IT) pursuits to solve mainframe application Year/2000 problems. The missing ingredient is "simplicity". Utilizing straightforward and simple approaches to solve the Year/2000 problem is producing outstanding results for some Central Indiana entities.

When the Year/2000 problem first surfaced, expanding the two-digit date fields to four-digits in databases and other file types was the prevailing thought, and is what catapulted the huge cost estimates. Some of us in the industry were saying there is not enough time and definitely not enough resources available to accomplish expansion of files and the tremendous amount of testing required validating the changes. Don't get me wrong, expansion is the best true approach; however, our industry has not proven over the years it could meet its objectives on time and within budget. Year 2000 projects are somewhat unique from all other information technology projects in that the end date (2000) absolutely cannot be moved. Time is so critical today that our industry has finally been forced to embrace other more simple approaches.

I appreciate the efforts of Tim Davis, from Congressman Burton's office, in helping bring me before this hearing, and Congressman Burton along with Congressman Horn in giving me the opportunity to appear and share real success stories using one of these more simple approaches. I am evidence here today that we do have simple solutions available which are cost effective and timely.

Purdue University's Story

Before founding Sion Group, Inc., I was the Director of Administrative Computing Operations at Purdue University. In 1988, Purdue University had its first year 2000 problem. While registering a student for the upcoming school year, "99" was entered as a date instead of the correct year "89". That evening, as the mainframe processed that student's information, it looked ahead to the next semester and rolled into the year 2000. The program written two decades earlier for that process could not handle the year 2000. Further processing for that system halted. Fortunately, the problem was quickly identified and immediately fixed by the Analyst-in-Charge.

In 1994 Elaine Brown, the original Purdue analyst who corrected the problem in 1988, developed a solution to enable the university's mainframe applications to run up to and through the new millennium. We had previously searched for a solution that could be purchased off-the-shelf. Most solutions were date-field expansion and included functionality we felt was beyond the Year/2000 scope. We also knew there was not enough money, time and labor available to modify every system and test every program. Purdue's inventory of mainframe administrative systems consist of approximately eight thousand (8,000) programs made up of seven and a half million (7.5 million) lines of code (L.O.C).

Ms. Brown developed a "sliding-window" algorithm, allowing Purdue to keep the two-digit year fields. Using this approach, we only had to test those systems and programs containing date

fields, which were, considered year 2000 problems. Using keywords as a search mechanism, Ms. Brown developed a scanning process that would look for the keywords in all COBOL source code. Year 2000 project team members inserted the century subroutine algorithm where appropriate, allowing the programs to process year 2000 dates.

The results were tremendous! We averaged less than two hours per program to scan, modify as appropriate, test as appropriate and put back into production the remediated programs. This was at a time when the industry average was up closer to 15 to 20 hours' average per program. Using Purdue's labor rates for its staff and selective utilization of contracted labor, we averaged less than twenty cents ($.20) per line of code. Again, this was at a time when the industry was between $1.50 and $2.00 per line of code.

Seeing this tremendous result, the Purdue Research Foundation copyrighted Ms. Brown's solution and sold the worldwide distribution rights to Venture 2000, Inc., Jacksonville, Florida, making it available commercially. Prior to the arrangement with Venture 2000, Purdue shared the solution with its sister schools in the Big Ten. Several of them have taken advantage of this technology transfer.

Risk Assessment

It cannot be said with absolute certainty that all possible problem areas were found and remediated. By using the windowing technique, keeping the two-digit files in place, using simplified, proven project management efforts, having the end-user approve the testing results before putting the programs back into production, the risks are greatly reduced. We recommend using the approach Purdue University is taking to cover any possible problems that may occur as the time approaches. For themselves, Purdue will identify SWAT teams made up of key personnel who will be available and respond immediately on year 2000 issues, if any.

Where Do We Go From Here?

In 1997 I took a year's leave of absence from my position as the Director of Administrative Computing Operations at Purdue to work with companies using the Purdue solution. Even though the marketing efforts by Venture 2000 were not as successful nationwide as I had envisioned, a core group of Central Indiana businesses and government entities who purchased the solution have all had similar results as what was experienced at Purdue University.

In my opinion, it is too late for us to still be talking about the "problem". If the awareness is not already there for the prime decision-makers, it is most likely too late for their businesses or agencies. At this late date, more than ever, cost-effective, simple solutions are the answer to the Year/2000 problem. Panel discussions like this should become more involved in presenting viable solutions - solutions like that developed and successfully utilized at Purdue University, and later utilized successfully at companies in Central Indiana, such as Farm Bureau Insurance, Essex Wire, Inland Container, Caterpillar, Vigo County, Indiana Department of Transportation, and Alcoa.

From my experiences, IT Year/2000 projects associated with mainframe and mid-range business applications are relatively simple. On the other hand, the IT industry throughout its young history has failed miserably in managing IT projects. There are surveys from industry watchdog groups who identify upwards of 80% of all IT projects fail to come in on time and within budget, or are cancelled altogether.

Several years ago, I started my own informal research to determine the reason for such failure. I knew there could be other ways! What turned up everywhere I looked was the lack of simplicity in the way projects are managed. From the largest IT shops, to the smallest, complex methodologies and solutions are the norm.

Keep it Simple

Peter Drucker once wrote in one of his management books, and I paraphrase, "If we are to be successful as managers, then we must first simplify the process of management". I believe that and during the last several years, have developed simplified processes and of which some were incorporated into the Year/2000 solution used at Purdue. In the commercial world, we are also using these simplified solutions. It is applicable to any industry, not just education.

As an example, one of our clients is averaging less than an hour per program and is within a few weeks of completion. Their cost will be less than fifty cents ($.50) per line of code. The project will be completed several weeks ahead of original schedule. Another company who used the Purdue-developed solution completed its Year/2000 mainframe project four months ahead of schedule.

There are other similar stories from entities that have used or are currently using the solution developed at Purdue. I highly encourage all appropriate committees and Year/2000 groups who are able to get in front of large audiences to turn their primary focus from talking about the problem to finding and bringing people forward who can discuss solutions that will be implemented quickly. Help them locate companies like mine who can simplify the process and be flexible enough to bend quickly and not be hampered by bureaucratic and complex methodologies.

Can what I have been talking about really be accomplished in enough places to make a difference? The answer is a resounding YES! Everything noted here can be replicated at almost any site. In a very short period of time (hours, not days or weeks) project teams and project managers can be taught how they can obtain similar results.

As a result of my testimony, I would relish the idea of using our core group of successful companies who have used the solution and the staff involved, to form a strong Year/2000 coalition commissioned to assist others. I am open to suggestions on how we can make that happen. I do feel strongly that if we do not pull together as the American people are capable of doing and fight this problem together, we will experience several technology failures as a result of the Year/2000 problem.

Conclusion

Purdue University helped educate and train the first person to walk on the moon, and the last person to walk on the moon. The Year/2000 problem can only be solved with the same type of dedication and focus we as Americans used to place these men on the moon.

Thank you again for giving me the opportunity to share the Central Indiana success stories made possible by the insight and dedication of a few IT professionals. There have to be others across the country with similar stories. Let's locate them and resolve this Year/2000 problem using more simple and cost-effective processes.

Mr. HORN. Thank you. That is a very interesting display of innovation.

Our last witness on this panel is J. Gregory Garrison, attorney and host of the Greg Garrison Show, WIBC Radio. What is a nice young man like you in radio doing in computing?

Mr. GARRISON. It is the only job I ever could find where I did not have to stay up all night and worry about what was going to happen tomorrow, Congressman.

Thank you very much, Mr. Chairman, Congressman Souder, ladies and gentlemen. I apologize for my absence for a few moments, but I was putting on the radio hat and interviewing Steve Forbes. I did not want him to get out of town, it took me 6 months to find him.

The subject before this committee needs no introduction, as the problems attendant to rollover dates on January 1, 2000 are well known. However, as a broadcaster in central Indiana for WIBC Radio, I have had the opportunity to visit with many experts both on the air and privately; and more importantly, with scores of people who call in to express their concerns and share information from the community. As a practicing attorney in the Indianapolis area for the past 26 years, I have a sense of the priorities and concerns of the people of this community. It is the synthesis of those sources that I offer today.

Of course, the four broad areas of concern garnering public attention are electrical power, finance, communications and transportation. In addition, government operations, to include defense as well as domestic issues, are substantive. However, it is not the presence of concerns in these areas that produces such distress among my listeners and those who appear on the show, but the absence of real honest answers to the probing questions being asked.

For example, our efforts to address Y2K issues with large banks as well as power companies have met with failure. The Indianapolis Power & Light Co., the utility that serves much of our listening area, and this building, responded to an invitation to appear on the show by politely declining. When I personally attempted to obtain an interview with public relations persons from NBD Bank, they also refused to appear.

Similar experiences have been common and this silence in the face of mounting evidence that substantial and pervasive interruptions in power and other essential services are probable, has created an atmosphere of increased unrest. This is not to say that the population is facing panic or that they are hiding from the facts. Truly, it is those whose operations are the most suspect who have hidden from the public discourse.

I choose to confine my remarks today to the issue of electrical power, both in the interest of time and because it is the most difficult and potentially the most dangerous problem. The interdependent grid that delivers electricity to the continental United States, Canada and some of Mexico is, by all accounts, very vulnerable to the effects of computer programs which are both antiquated and which provide, by virtue of their interconnections with a myriad of other power station computers, great exposure to mutual data corruption. We are given to understand that the major power companies that have appeared before this and other congressional

committees have not been able to provide answers to these questions. Moreover, given that a large power failure also implicates massive shutdowns in every other area of American life from health care and emergency services to finance and the operation of the global positioning satellite transportation system, candor and aggressive efforts to find solutions should be required.

The electrical grid, as we understand its present architecture, utilizes what is sometimes called a fractional requirements concept. Rather than maintaining excess capacity for delivery of power at peak times, various areas of the country buy and trade power, with the west providing power to the east early in the day and during the summer months when temperatures are higher on the east coast, and then switching roles when the temperatures rise out west. This system of interdependency relies on computer analysis of predicted needs and shutdown of a power plant or a station needed to provide power to another geographic area during its peak period will have sort of an electrical domino effect. The pervasive brownout experienced recently on the west coast was a result of the shutdown of only one line, but at a particularly critical time. The impact of a shutdown of a large number of such lines or plants that power them, simultaneously, is obvious. And what the power companies are so reluctant to tell us is how long will it take to get them running again if they quit.

The implications of even a short term power failure of that magnitude are difficult to imagine. The entirety of the upper midwest as well as the upper latitudes and mountainous areas in general will be in the middle of winter with mean temperatures in the areas of single digits in most places. Modern housing, totally dependent on central heating that circulates heat by means of forced air, will become unhabitable in a few hours unless backup systems or plans are made available. Worse still is the problem of sanitation. The vast majority of modern subdivision residential developments are based upon forced main sanitary sewer systems. Electrically powered lift stations pump raw sewage uphill, sometimes in great quantities and over several miles to treatment plants that also run on electricity. Within only a few hours of the cessation of power to those pumping stations, the sewage either pours out into existing water routes—streams, rivers, ditches—or backs up from whence it came. Both results produce dangerous contamination almost at once.

Water purification facilities themselves operated by computers and electricity, even if not interrupted by the loss of either, may suddenly find themselves overwhelmed with millions of gallons of now dangerously contaminated water for treatment and even if they are operating, they could in no way purify it well enough to make it safe for drinking to those whom they serve. The results, not over an extended time, but within a matter of a few days, might very well be an outbreak of diseases such as cholera, dysentery and the like. This potential is not based upon some Orwellian fantasy, but only upon a few days of pervasive power failures. Warm climates will suffer from this set of problems even more than will those where the temperatures are cold, as these dangerous bacteria will grow and spread more quickly there.

Finally, a 2-week power failure or an extended brownout would certainly curtail delivery of health services and emergency police and fire protection as well. Hospitals maintain diesel generator backup capacity, but the fuel is only sufficient for a few days or just a few hours. And such power is said to be inadequate for anything approaching full service health care. Electrical demands for emergency, police and fire personnel are also obvious, as modern safety services are heavily computer and communications dependent. One need only imagine trying to run the Chicago Police Department without radios for a few hours in order to recognize the magnitude of that problem. And the delivery of emergency services and fire protection is simply impossible under such circumstances.

In summary, while financial and transportation problems deserve intense scrutiny, and also while the dangers to national security attendant to non-compliance of mission critical systems, are clear, there is simply no subject more important than the delivery of electrical power to 250 million Americans. All other areas of concern are immediately impacted by it, and compared to the specter of life in January without heat or clean water, they are little more than trivial. I urge the Congress to require answers of the power companies and once that truth is known, I implore our leaders to disseminate it—good or bad—to the people. We are a great people, capable of enduring much and caring for each other, but it is too much to ask that we face such privations without warning and without the opportunity to plan and prepare as well as to remedy this dangerous situation.

Thank you very much.

[The prepared statement of Mr. Garrison follows:]

BEFORE THE CONGRESS OF THE UNITED STATES

Testimony of J. Gregory Garrison Regarding

Y2K and the Millenium Debate

The subject before this Committee needs no introduction, as the problems attendant to the rollover of dates on January 1, 2000, are well known. However, as a broadcaster in the central Indiana area for station WIBC, I have had the opportunity to visit with many experts, both on the air and privately, and, more importantly, with scores of people who call in to express concerns and share information from the community. As a practicing attorney in the Indianapolis area for the past twenty-six years, I have a sense of the priorities and concerns of the people of this community. It is the synthesis of those sources that I offer today.

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I choose to confine my remarks to the issue of electrical power, both in the interest of time, and because it is the most difficult and potentially the most dangerous problem. The interdependent grid that delivers electricity to the continental United States, Canada and some of Mexico, is, by all accounts, very vulnerable to the effects of computer programs which are both antiquated and which provide, by virtue of their interconnections with a myriad of other power station computers, great exposure to mutual data corruption. We are given to understand that the major power companies that have appeared before this and other congressional committees have not been able to provide answers to these questions. Moreover, given that a large power failure also implicates massive shutdowns in every other area of American life, from health care and emergency services to finance and the operation of the Global Positioning Satellite transportation system, candor and aggressive efforts to find solutions should be required.

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of electrical domino effect. The pervasive brown out experienced recently on the West Coast was the result of shutdown of only one line, but at a critical time. The impact of shutdown of a large number of such lines or the plants that power them, simultaneously, is obvious. And what the power companies are so reluctant to tell us is, how long will it take to get them running again, if they quit?

The implications of even a short-term power failure of that magnitude are difficult to imagine. The entirety of the upper Midwest, as well as the upper latitude states and mountainous areas in general, will be in the middle of winter, with mean temperatures in many areas in the single digits. Modern housing, totally dependent on central heating that circulates heat by means of forced air, will become uninhabitable in a few hours, unless backup systems or plans are made. Worse still is the problem of sanitation. The vast majority of modern subdivision residential developments are based upon forced main sanitary sewer systems. Electrically powered lift stations pump raw sewage uphill, sometimes in great quantities and over several miles, to treatment plants that also run on electricity. Within only a few hours of the cessation of power to those pumping stations, the sewage either pours out into existing water routes--streams, rivers, ditches--or backs up from whence it came. Both results produce dangerous contamination almost at once.

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In summary, while financial and transportation problems deserve intense scrutiny, and also while the dangers to national security attendant to non-compliance of mission critical systems, are clear, there is simply no subject more important than the delivery of electrical power to two hundred fifty million Americans. All other areas of concern are immediately impacted by it, and, compared to the specter of life in January without heat or clean water, they are little more than trivial. I urge the Congress to require answers of the power companies, and, once that truth is known, I implore our leaders to disseminate it, good or bad, to the people. We are a great people, capable of enduring much and caring for each other, but it is too much to ask that we face such privations without warning and without the opportunity to plan and prepare, as well as to remedy this dangerous situation.

Respectively Submitted,

J. Gregory Garrison

Mr. HORN. We thank you for that helpful statement.

I now yield 10 minutes to Mr. Souder for questioning the witnesses.

Mr. SOUDER. Mr. Willemssen, do you know, has the Federal Government done any similar approaches to what Mr. Curry described in Indianapolis where they would evaluate whether in fact some of these programs ought to just not be there? In other words, the information is not worth the cost of change and/or what he said was that they cost two or three times as much as remediation—taking that approach?

Mr. WILLEMSSEN. Yes. In fact, one of the ironies of the entire Y2K problem is that a side benefit of the exercise has been the identification of systems which either are not that important or are simply not necessary any more, and with the limited time left especially, many agencies have gone about just terminating those systems and not remediating them, and essentially throwing them away.

In terms of the testing point that you raised in your question, I totally agree with the point that was made. What we have seen repeatedly is under-estimation of the amount of time and money involved in testing, especially from an end-to-end perspective on Y2K. And that is in large part the reason for much of our pessimism on where the Federal Government is at because much of the testing challenge remains, and that is going to take longer than many of the agencies are now realizing. That is what the experience is showing in those agencies that are ahead. And other private and public sector organizations are finding the same thing.

Mr. SOUDER. Are there some of the agencies that have been far better at this than others?

Mr. WILLEMSSEN. Definitely. There is a wide disparity.

Mr. SOUDER. What would be some good examples?

Mr. WILLEMSSEN. The best one by far would be the Social Security Administration, which started its program in 1989 and has had a very aggressive effort since that time. They have remediated almost all of their systems. They are deeply engaged in testing right now. Again though, pointing out something that the chairman raised in his opening comments, no matter how good the Social Security Administration is, if the Treasury Department's Financial Management Service is not up to speed, all that good effort will go for naught because Treasury is the one cutting the checks. That is why one of the things the Social Security Administration is looking at right now in its contingency planning is other avenues to get the checks out in the event Treasury does not come through. And we applaud that kind of effort.

You see, one of the ironies is you have somebody like Social Security Administration which is the furthest ahead in their remediation efforts, they are also the furthest ahead with contingency planning, because they realize that they have to be in a position to deal with the unforeseen problems that could result, even if it looks like they have dealt with everything that they could.

Mr. SOUDER. So you see a prioritization within the administration? I mean it is great if your fingers work, but if your heart stops, it does not do any good to have your fingers working.

Mr. WILLEMSSEN. We issued a report on April 30 and we recommended to John Koskinen, the chairman of the President's Conversion Council, that priorities be set because there is not enough time to do everything. Those priorities need to be based on health and safety, adverse financial impact to the individual, national defense, and economic ramifications. To date, those priorities have not been set. Instead, each agency is on its own, in some cases setting priorities, in other cases not. That approach will not work because there is not enough time.

Mr. SOUDER. That was encouraging. [Laughter.]

Ms. Larimer, in the State, have you been going through a similar thing of analysis on whether or not a program could be dropped or whether something could be remediated?

Ms. LARIMER. Absolutely. I would say that is a common part of our practice, whether it is within year 2000 or just day-to-day operations. We are constantly looking at re-engineering efforts within each of the agencies, as well as within the central computing operations. And so that kind of philosophy carried over into the year 2000 planning. If a system can go away without affecting the job that we need to get done for the citizens of Indiana every day, there is no reason to spend their dollars on that system.

Mr. SOUDER. Mr. Curry, you had a recommendation in tort liability. We have had some discussion and hopefully we can do something at the Federal level. Indiana, when Governor Bowen was Governor, did medical malpractice and took care of it here even though we still are fighting with it at the Federal level. Do you see anything happening in the State legislature on this? Do you know if there is any pending legislation?

Mr. CURRY. I am unaware of any particular endeavor. As you know, our legislature really will be meeting in January, and as we put our legislative package together for Marion County, I am hopeful that this will be included in it.

Mr. SOUDER. I think it would be a worthy effort for all cities and towns, anything we can do in Indiana and not depend on Washington—I do not want to speak too ill of the place where I spend some of my time, but nevertheless, I would not depend on it. But we will do what we can.

Ms. Larimer, the biggest concern I had in your testimony—and it is not a commentary on you, I can tell you are working hard at this—but there seemed to be a lot of "intend", "planning", "considering", "may need" in a number of these areas and I would like to pursue a couple of these.

You said the Utility Regulatory Commission has sent a survey and they intend to form a task force; is it not getting pretty far down the road?

Ms. LARIMER. The survey was sent recently, the analysis has been done, the task force is being formed now. Our objective, the objective of the Indiana Utility Regulatory Commission is to raise the awareness, much as we are trying to do here today, amongst our utilities, to direct them to appropriate resources so that they can stay in operation and continue to provide those services to the citizens of Indiana. We feel very—we are fairly confident in the larger utilities and their abilities to move forward and that they have moved forward in that regard. It is the smaller utilities that

we feel that we need to continue to work with and talk to and investigate in order to ensure they continue to work in the interest of public safety.

Mr. SOUDER. Have you prioritized, like we were just talking about the Federal Government has not, a ranking in priority, because that would seem to be a fairly high ranking, given Mr. Garrison's comments and as a resident of Indiana, I would like to see my sewage not back up and my phone work and power be there. I mean if it occurs in January, that is not a good time of year in Indiana to have those kind of problems.

Ms. LARIMER. Certainly. And I think in regard to some of the things that we have been talking about, about prioritization, there are two different ways to take a look at that. Previous conversations have been in regard to prioritization of what systems need to be remediated first so that State government can continue. And what you are talking about here has to do with the prioritization of public policy rather than the information technology systems.

Clearly, it is a priority that we continue to have electrical systems working in the State of Indiana. And clearly, the extent to which the administration can assist the private sector in making sure that happens, is obviously a priority.

I am not here representing the Indiana Utility Regulatory Commission and so if I may, Mr. Souder, I would be happy to get back to you from their chairman any comment in regard to this so that you have a greater sense of comfort in what Indiana is doing in this regard.

Mr. SOUDER. Yes, and I do not mean to take you past where you have direct control. I would point out that this is not totally private sector, it is an oligopolistic situation, at minimum monopolistic; in most cases, the Governor does control the appointments to that Commission and therefore there is a little more direct—we as consumers in Indiana do not have the choice to go out and get a new gas company if our gas company is not ready. I am not big on heavy-handed State over the private sector, but in this case, this is what I am concerned about.

Similarly, I was wondering, you said if you do not receive responses soon, we may need to replace some products with products that are known to be year 2000 ready. Do you have a timetable on this, are you letting the suppliers know that they are going to be terminated at a certain date if they are not ready? Is this something you are just considering at this point?

Ms. LARIMER. At the end of November, we expect to have all vendor responses. Whatever vendor responses we do not have at that point in time, we will have to take action.

Mr. SOUDER. Is the city of Indianapolis doing a similar thing, and Marion County?

Mr. CURRY. Yes, included in my testimony, we have been surveying and are making those decisions so that we can determine on the critical vendors what alternatives have to be done immediately.

Ms. LARIMER. This is Bill Pierce——

Mr. HORN. You are going to have to go ahead and relay—get at the table, if you would, get a chair, and be at the table.

Ms. LARIMER. May I introduce——

Mr. HORN. Sure, but——

Ms. LARIMER [continuing]. This is Bill Pierce, the head of our year 2000 office.

Mr. HORN. I should have sworn him in when you said he accompanied you.

[Witness sworn.]

Mr. HORN. Mr. Pierce has been sworn. Say whatever you want.

Mr. PIERCE. I wanted to add that in the correspondence that we have had with all of our vendors, we have sent at a minimum three letters to each of these vendors. And in each of those letters we have said that if we do not receive a response from you saying that you are compliant, then we will replace your products. So they have been warned that that is what we are considering.

Mr. SOUDER. Thank you. I yield to the chairman. I have a few additional——

Mr. HORN. Go ahead, finish some of your additional ones.

Mr. SOUDER. Mr. Smith, are you still affiliated with Purdue University or are you——

Mr. SMITH. No, sir, I took a leave of absence last year, in 1997, and that was up in May of this year.

Mr. SOUDER. You mentioned in your testimony that Purdue and other big 10 universities had your technology before it was turned over. Are they allowed to utilize that in assisting others or just for their internal campus?

Mr. SMITH. Just for their campus.

Mr. SOUDER. You said that it probably will work in most cases. I also noted that I think Ms. Larimer made a reference that—were you using the system that he was talking about? And you said there were some cases where it did not. Has that been minimal, is it hard to find? How exactly do you test for the holes? I mean I see the tremendous advantage to having something that can take care of 90 percent of the problems fast or 95 percent—what percent are we talking, and how do you discover, however, where it did not? Like all of a sudden stop lights shut down or could you elaborate a little bit?

Mr. SMITH. As an example, at Purdue University, we have approximately 130 or 140 subsystems. Of all of those, we had to expand the files to four digits in one system, and that was the property management system, because the buildings are older than 100 years old. So there was one system that we had to expand to four digits that the sliding window approach did not work on.

Mr. SOUDER. And your feeling was that was because of the age, it went into the previous century?

Mr. SMITH. That is correct. We have a 100 windows to work with, and with utilizing, as Ms. Larimer said the State is doing, 25 years into the future and 75 years into the past, all of the systems that we put the sliding window process into at the university will work up to and including the year 2074.

Mr. SOUDER. I believe, Ms. Larimer, you said you had a number of things. Could you explain what you may have run into?

Ms. LARIMER. I am sorry, I am not sure where——

Mr. SOUDER. In your second page, I think you said that Mr. Smith was going to refer to it.

Ms. LARIMER. I am going to pass that to Mr. Pierce, please.

Mr. PIERCE. The primary reason why we have not been able to use the windowing technique has been Federal requirements. One example is the State Police interaction with NCIC, they are requiring a format of a four digit year, and rather than window the current system and then bridge it to convert it and send it over to the NCIC, we are expanding the dates in all of those. So any time that we have a Federal system—a system that is interacting with a Federal system that has a requirement of four digit years, we are expanding the dates. And I do not know the exact percentage, I think it is probably around 20 percent of the systems.

Mr. SOUDER. Mr. Willemssen, do you have any comment on that or do you know what——

Mr. WILLEMSSEN. A couple of comments. One, the windowing technique for a given organization is generally speaking a lot less costly, a lot more efficient approach to take.

Second point, one of the difficulties you can run into with windowing, if it is not properly managed, if you have a high degree of data exchanges or interfaces with other organizations, you need to make sure that somebody is building an electronic bridge so they can handle that two digits appropriately.

Third, in this particular example that was mentioned, I am assuming the Federal Government did not want—or that the Federal agency just did not want to deal with the electronic bridging issue and just said expand it to four digits, that is all we will accept.

You know, on the surface, it does not necessarily have to be that way. If indeed, from an overall perspective, it is a more cost-effective route to take windowing and have somebody build a bridge, then so be it. But there is not always a quick and easy answer. Every situation is a little different. The bottom line is the partners need to agree so that if the State of Indiana wants to window, that may indeed be a more cost-effective solution, as long as their partners know they are windowing and that when they get that data reading two digits, they know how to read it as to whether it is 19 or 20 in front of it. That is the only caveat I would place. But again, windowing generally is a more cost-effective approach for a given organization.

Mr. SOUDER. This sounds like the VCRs and the digital television questions all over again. I mean, if private sector companies, Farm Bureau Insurance, how do you even know who they are going to interact with?

Mr. WILLEMSSEN. Well, that is one of the difficulties that I would point out. They need to understand where their interfaces are and understand how that exchange partner is addressing the date, and what kind of format they are sending it in, if it indeed is an expanded four digit or they are going to do two digit because they are windowing. And the thing I would point out is what we have seen in the last 12 to 18 months across the country, very similar to what Mr. Smith said, more and more organizations are windowing rather than expanding because there is not enough time to expand. Again, the flip side of that is just make sure your partners know what you are doing so you can build the electronic bridges.

Mr. HORN. If the gentleman would yield, I want to get Mr. Curry in on this before he has to leave. Go ahead, Mr. Curry.

Mr. CURRY. Mr. Chairman, and in particular Mr. Souder, what we are exhibiting here is a magnificent example of a leadership gap because the city of Indianapolis just received a proposal—let me say a pre-proposal—at a meeting I attended this week for windowing, but our reference year does not match either one. So if we are going to do these sorts of things, and in particular this happened to deal with our public safety issues, we had better be thinking about reference years that make sense between users of data. I just wanted to get that in.

Mr. HORN. Before you leave that, and I think it is a very interesting discussion here that you are giving us some grist to followup on, I would be curious, both on Mr. Curry's situation and Ms. Larimer's and Mr. Pierce helping there, what is the biggest challenge you have encountered in addressing this problem that perhaps came as a surprise to you, Mr. Curry?

Mr. CURRY. That came as a surprise?

Mr. HORN. Yes.

Mr. CURRY. Actually, I do not believe I was surprised. I happen to be a Purdue graduate——

Mr. HORN. You believe in the frailty of the human race to start with.

Mr. CURRY. Yes, I do. The only surprise we had in Marion County was we are actually missing 90 sets of source code. And to that, sir, I shake my head and so we are looking for alternatives to find that stuff so that we can apply the various techniques that have been not only developed by others but are being developed locally to get to our goal within the next 486 days.

Mr. HORN. Is some of that in Cobol or what?

Mr. CURRY. We have Cobol, we have a bastardized version of Cobol called Ideal, we have one system that in and of itself has almost 2,700 different sets of programming sets of instructions, we have some 7 million lines of code that have to be analyzed. The task and the reason why the city-county council got involved is that as our legislative body, we in fact pass on the budgets of some folks who do not answer directly to the mayor's office. And so I find that the people who have a vote on the budget sometimes have a way to get people's attention. And so in your role, I think you have a magnificent opportunity to get people's attention, to drive some really smart folks and their assets toward a solution that we can all live with.

Mr. HORN. I am thinking of also getting information from agencies and vendors, has that been difficult, as well as senior management?

Mr. CURRY. Yes, it has been difficult. Some people have really come forward though, I must say. It is not a gloom and doom scenario, but like Lord George once said, if one plans to leap a large chasm, it is best not to plan two jumps. [Laughter.]

So in our case, as we face this chasm, we have to really make sure that we get all the way across, 90 percent is not good enough.

Mr. HORN. Before you leave, is there any point you want to make that has not been made in this dialog?

Mr. CURRY. I would like to suggest that if there is going to be a Federal standard of some sort primarily dealing with public safety—now realize I am talking from a municipality issue. If I were

back on the Maintenance Steering Group 3 when I used to work on aircraft safety, I would talk about something else. But if I were talking just from a municipality issue, I would like to see a standard be quickly established by the Federal Government, particularly where the National Crime Information Center is involved, that data, and FBI, anything of that sort, so that as we approach patches, as we approach bridges, as we approach reprogramming, as we approach buying new elements of contractual services, that we are all buying to the same reference. If we could do that, then some of what I hear today—as I now have new concerns—if we could do that, I think those concerns would be substantially reduced.

Mr. HORN. Well, we thank you for your very helpful presentation and also your response.

Ms. Larimer, would you like to comment on those questions?

Ms. LARIMER. Certainly. Again, with Mr. Curry, I am not sure that I am particularly surprised by the challenge that I am going to mention, and that challenge is a people challenge, and perhaps not the one that you are expecting me to say. Because in the press every day, we hear about the lack of programmers to work on this effort, we hear about the rising costs of technology salaries due to the year 2000 fact. While that has certainly been a challenge for us, the other one that we are managing against, and so far we are managing against effectively, is that we need the testing expertise of subject matter experts on each of these programs. And making sure that we have people who are available to do the testing of these programs as well as continue their day-to-day operations, is something that we have to plan effectively for, and so far have been able to do that. A part of our challenge in the year 2000 office is to make sure that we continue to do the awareness raising of the criticality of this with each of the agencies, so that that kind of testing smoothness continues to happen.

Mr. HORN. You know, on this question that has been raised as to vendor surveys and if they do not respond just drop them, I agree with you on that. They ought to provide you the information you need, but are you in any situation at all where they could litigate that they are no longer the supplier and have you protected yourself in any purchase agreements or any assurance that it is 2000 conformable and that kind of thing? Where are you on that and what do your lawyers advise you?

Ms. LARIMER. I am not sure I can answer that question with all certainty. Bill, can you answer?

Mr. PIERCE. Not really, I mean we have not truly looked into that. We believe that the licenses have been issued for the products that we have and it should be at our discretion in order to replace those if they no longer suit those needs, but we have not discussed those with the Attorney General's Office.

Mr. HORN. Bring that mic closer to you, we cannot hear you.

Mr. PIERCE. We have not explored that with the Attorney General's Office, although we believe that we have the licenses for each one of the vendors that we have talked to and we should have the right to replace those products with compliant versions if we need to, because they do not continue to meet our needs.

Ms. LARIMER. Mr. Horn, if I may. I do know that a part of our standard contracting practice in the State of Indiana is to be sure

that there is a clause that indicates that if at any time the vendor cannot continue to meet the needs, that we can immediately cutoff that contract. So I believe that we are covered simply by that standard contracting practice, but I would need to check with the Attorney General's Office to be absolutely certain.

Mr. HORN. Mr. Willemssen, your colleague next to you there, Mr. Curry's proposal for a standard in public safety issues, what do you think of that?

Mr. WILLEMSSEN. I think it is a great idea; unfortunately, it is probably too late because many organizations have already gone through their remediation efforts, so if now we put a standard out, those organizations, for example, may have already windowed and now a new standard comes out and says well, you can window, but use a different pivot year, use 50 instead of 40, you can imagine the outcry that would happen.

So I think the concept is very good, I just do not know if the timing would necessarily work, but you can look at individual situations; for example, the particular sector that Mr. Curry mentioned, maybe it will work in that particular—the NCIC situation, but as a general rule, as many of our organizations now move into the validation and implementation phases, to ask them in some cases to go back and redo your remediation efforts in order that you adhere to a standard—is a little risky.

Mr. HORN. Do we know what is going on in the administration between public safety agencies, which are divided all over in many ways, not just Justice.

Mr. WILLEMSSEN. It would be hard for me to generalize on that without having some of the specifics in hand, and I can try to get more of the specifics for the record, Mr. Chairman.

Mr. HORN. It might be helpful, we will save a spot here without objection, to put that answer.

Mr. WILLEMSSEN. OK.

[The information referred to follows:]

According to the Department of Justice's November 1998 quarterly report, 121 of its 223 (54 percent) mission-critical systems were Year 2000 compliant. In addition, with respect to data exchanges, Justice reported that (1) 71 of 195 (36 percent) Federal Bureau of Investigation data exchanges were Year 2000 compliant, (2) the Immigration and Naturalization Service was exchanging compliant data with the Department of the Treasury's Customs Service, and (3) the Drug Enforcement Agency was working to ensure that all external data exchanges are compliant by December 31, 1998.

In its November 1998 quarterly report, the Department of the Treasury reported that (1) 10 of 24 (42 percent) mission critical systems at the Alcohol, Tobacco, and Firearms bureau were Year 2000 compliant, (2) 14 of 18 (78 percent) mission-critical systems of the Secret Service were Year 2000 compliant, and (3) Custom's 3 mission-critical systems were Year 2000 compliant.

Mr. HORN. Did my colleague have any——

Mr. SOUDER. I have a couple. For example, I do not fully understand, and I apologize for my ignorance on this, but you are saying that if different companies have used different standards and the point now is that the Federal Government would have to figure out how to talk with multiple systems and yet the Federal Government is not even set themselves, that they are sure. Take for example, energy. You are saying that different power companies and utility companies could have used different base years and they may not be able to swap information, but the Energy Department is not——

Mr. WILLEMSSEN. They could have used different base years and if they did, it is—yes, that is why the partners in the exchange have to know how they are exchanging data, they should have written agreements on how they are exchanging data, they should test those agreements to make sure it works like they think it is going to work. That is a very time-consuming exercise, but it has to be done for our most important systems, and in particular the infrastructure areas that have been touched on today.

Mr. SOUDER. When you say they have not prioritized, were you mostly talking about their internal processes or were you including this as one of the things they are not getting done?

Mr. WILLEMSSEN. Yes, that would be inclusive. Our prioritization would be in terms of business areas and the supporting systems for those business areas. If you look, for example, at the Federal Government for any critical mission area, it invariably crosses agency and organizational boundaries and therefore, you have this interface and data exchange issue. Somebody needs to take the lead on that kind of issue, especially as we move closer to the date and we have got to do end-to-end testing. What that is, is not a particular system, but from the beginning point to the end point of doing a particular business, like separating aircraft from the point that we get a flight plan to the point when the pilot is getting information from controllers. All of that needs to be tested end-to-end. That involves a lot of organizations, not just FAA. It involves the National Weather Service, it involves airlines, it involves the Department of Defense. That has to be tested.

Mr. SOUDER. So you are sitting in there at the FAA and you are trying to worry about whether the weather information is coming in on one system, whether each individual airline may have a different system and so on—how many different potential bridges are we going to need?

Mr. WILLEMSSEN. It is a tremendous number. That is why—that is much of the reason for our pessimism, much of the reason for what we have got to further prioritize and ratchet this up to make sure that the most important things are done correctly. I would prefer to see more time and attention focused on testing the most important areas than even beginning remediation on the lower important areas.

Mr. CURRY. Mr. Chairman, may I be excused at this point?

Mr. HORN. Sure, and we really appreciate you coming in.

Mr. CURRY. I apologize for having to leave, but——

Mr. HORN. If you have any thoughts on the way to the plane or while you are in the plane, write us and we will put it in the record at this point.

Mr. CURRY. Thank you, sir.

Mr. HORN. Thank you very much, Mr. Curry.

Mr. Smith, you referenced the company in your statement that reduced its cost to 50 cents per line of code, as I remember, and of course we have been told when we started this thing in 1996 that oh, well it is going to be about $1 for a line of code. Now are we simply the victim of eastern prices and you are the beneficiary of midwest wage levels? How does this work?

Mr. SMITH. Our American way of marketing has certainly driven the high cost estimates. From my perspective, when we look at how our marketing does business, we write a lot of white papers, we do a lot of advertisements and we talk a lot about the full blown problems that could be. And we look at it from the worse case scenario instead of getting down to the very basics and trying to find the most simple way to accomplish something.

So when, as I noted in my testimony, when we first looked at this situation and everybody in our industry of a guru nature said that we had to expand every file and test every program and so forth, when we look at that, that is very, very complicated and there is absolutely no way the world would be able to do that. So early on at Purdue University when we looked at that and said we cannot do that, we do not have the money and resources, we had to look for simpler ways.

Now the way, again, that things are sold at the level where they can make the most money. So when the large consulting companies and so forth bid on projects, what are they doing? They are trying to bid at the level where they can put resources in and keep them there for as long as possible. What we want to do is to show people and places that we can go in very fast, use a simple approach and ask questions before we do anything to those systems, is there a more simple way. And we can get in and we can get out real fast, and that is what we are looking to do. So we are kind of flipping the business philosophy of consulting companies. We are not interested in staying in there forever, we want to get in, help you and get out and help somebody else as fast as possible.

That is why I went on leave of absence from Purdue University, was to try and help as many companies as we could, utilizing the solution like we developed at the university. And it has gotten to the point now, in central Indiana, there are at least a dozen companies who have used this solution and who have tremendous results. Opening the doors to other companies to either go in and get them started or do partial services is almost impossible. The corporate lawyers have closed those doors, they will not let them talk to us, and that is what has to be changed, as Mr. Forbes said, we have got to allow companies to talk about this situation.

But there are simple solutions, they do work, and yes, they may not be the best way to do something, but together we can identify more simple ways before going ahead and accepting at face value that we have got to do something. And that is where we have been tremendously successful.

Mr. HORN. I believe you noted earlier in your testimony that Purdue had shared a lot of this information with big 10 universities. Do you have any views as to whether it is more difficult or less dif-

ficult for higher education institutions to make the necessary remediation, than perhaps corporations?

Mr. SMITH. No, from my perspective and from the experiences that I have noted, it does not matter what industry you are in. Certainly some industries are more date oriented, but from business to business, computer programs all do the same things and in those cases where it is heavily date oriented, that is when the sliding window process really saves a lot of time. We are not looking at a situation that we can say, as some Federal agencies have said, that they are not going to finish their year 2000 until after the year 2000, 4, 9, 10, 18. We cannot live with that. So we have got to face the realistic situation that we have to find more simple ways and I am here today telling you there are simple ways if we can get enough people together to go after them and allow companies like ourselves to replicate and to train those people. We can train them in hours, not weeks or days. This is a simple process. The year 2000 is a simple technical solution.

Mr. HORN. Just a matter of doing it.

Mr. SMITH. There is a lot of it.

Mr. HORN. Let me ask both the State representatives and you who are familiar with the universities, did they do most of this work on reprogramming existing funds or did they need an additional budget authorization out of the legislature in order to do this work? I am just curious.

Mr. SMITH. At the university, we used existing funds.

Mr. HORN. Reprogramming it basically. What did you do in State government?

Ms. LARIMER. The State had an additional appropriation of $57 million.

Mr. HORN. And was that sufficient?

Ms. LARIMER. We are on budget with that, yes.

Mr. HORN. Are you on a 2-year budget or a 1-year budget here?

Ms. LARIMER. Two.

Mr. SOUDER. We have the lottery.

Mr. HORN. I found out, Mark, they had so much they said they would give education, well it was a drop in the bucket and everybody thinks we are funded with big bucks from the lottery—it is not worth a hoot in California's case.

Ms. LARIMER. Mr. Horn, if I may add to my comments in that regard, that was, as Mr. Curry would have said, the new money that was required. There were also programs and there is also work that is being done out of existing budgets.

Mr. HORN. Makes a lot of sense because every bureaucracy has lots of money left over before the end of most fiscal years, so it can be put to use.

Mr. Willemssen has repeatedly noted that you need to prepare for the what-if scenario. What actions have been taken by the State government or the universities in terms of simple contingencies of maybe using people will quills or something, but have we looked at that in case some of this remediation does not work and you have to get down to get those checks out, as he would say?

Ms. LARIMER. I know that we have looked at that. I am not familiar with the specifics and so I would like to turn that question to Mr. Pierce, as I think he would be more familiar.

Mr. PIERCE. We are not anywhere done with contingency planning as a whole; however, there are a couple of steps that we have taken. One, the example that I would use is the State personnel department, they are in the process of replacing their application. However, getting that done on time before the year 2000 is, I guess I would say, dubious because of delays that have happened in contract negotiations, et cetera. They have developed and we have reviewed a plan where they are using Excel spreadsheets and Access data bases to continue their operation. So we are still using technology, however, we are not going to be using the full blown system, since their existing system will fail.

The other area we have looked at with contingency planning are those again systems that were planning on being replaced, where the plan may not get done on time or before the system failure. We have done what we have called a contingency plan on the existing system to find out what it would take to remediate that. So we have the time and the cost estimate to do that work if that should be needed, and we are tracking that against their plans for replacement so that we should know the timeframe of, for example, 6 months out, before the failure date, that we need to put the replacement plan on hold and start working on remediation effort.

Mr. HORN. Besides partners that you have in the Federal Government on data production and interchange, are there any partners that you have in the State and industry? I do not know what kind of systems you have developed, but is it simply government agency to government agency or are there private sector involvements?

Mr. PIERCE. Primarily the banks, financial institutions, because we send checks to retirees, et cetera, and our payroll, there are a lot of direct deposits and things like that, so there are a lot of financial institutions that we would have interfaces with.

Mr. HORN. Do the people in Indiana feel good about direct deposits or do they worry that they would rather have a piece of paper in their hand?

Mr. PIERCE. I really have no idea.

Mr. HORN. Well, we had this argument at the national level and of course what we are trying to eliminate is fraud and stealing of checks and if you are going to do that and get access to your money sooner, you need electronic deposit. And yet some people want that check, and a lot of people are robbed of their Social Security check every month by some gang in the neighborhood or whatever. And I was just curious if you confronted some of that problem.

Mr. SOUDER. We love direct deposits as long as they can have the check too. [Laughter.]

Mr. HORN. Well, you lose a day. In other words, if you have it go in by check, you have got to put it in and it is hard to get to the bank sometimes, rather than just write a check.

Ms. LARIMER. I suspect Indiana's citizens are not that much different than citizens throughout the United States in regard to this. We know that demographically there is more acceptance of the electronic deposit among younger population and less acceptance of that amongst the elderly population, and unfortunately that is the risk you are talking about, they are the ones who are being affected by that. But I suspect we very much reflect the rest of the Nation.

Mr. SMITH. Mr. Chairman, excuse me. May I address real quickly the contingency plan that you talked about?

Mr. HORN. Yes; go ahead.

Mr. SMITH. And I have been talking about simplicity and keeping it simple. Let me bring it back to that part. Our industry has, over the years, always had people on standby, programmers who get called in the middle of the night to address problems, and there are always problems that happen in the computer industry during the night, and they address them.

When we look at contingency planning, the process of addressing the year 2000 effort, if we do not get all of the issues and do not find all of the issues, and no one can say with certainty that they will all be found, if we get 99.7 percent of all of those problems, what have we just done? We have got it down to a manageable level that can be addressed through our normal way of doing business. That is what I am talking about when we look at simplistic ways and understanding what it is we already have in place and then we can use to address.

So Purdue University will have SWAT teams available as we move into the year 2000 and they will be on standby and they will get calls if something happens, to address those issues. Let us keep it simple.

Mr. SOUDER. Our contingency plan in Indiana is to give sabbaticals at Purdue and three credit hours to half the university and fan them out.

Mr. HORN. Let me ask you on this programmer issue, in Congress, in the Senate and they might well in the House, bring us legislation to waive visa considerations, to bring in foreign programmers. Now personally I am objecting to that, for the following reason—our Silicon Valley types in California are all anxious to have them. I cannot understand why Silicon Valley, be it Indiana; Massachusetts; Fairfax County, VA; Santa Clara County, CA, all the little Silicon Valleys of the world that pop up in this country, I cannot understand why they cannot sit down with the community college presidents in particular, and some of the 4 year colleges and universities as well, especially ones with distinguished engineering schools such as Purdue, my own university of California State University-Long Beach. They turn out loads of programmers. These are $30 to $40 to $50 to $60,000 dollar jobs on either coast, I do not know what they are in Indiana, but do you feel that we can educate programmers and we do not need to bring people in? These are big jobs, they should be thinking about them in high school with the proper mathematics background and so forth. What is your feeling on that?

Mr. SMITH. If we were to use the more simple methods, I believe we have the resources necessary to address that. We have not taken full advantage of those programmers that we already have, the technicians. For example, one thing that we highly advocate is using part-time help, and there are ways that we could make it work where companies whose programmers are working a normal 8-hour day, could work 15 to 20 hours a week part-time helping another company. And we have not taken advantage of that because we have not all come together, because we have not been allowed to share resources, we have not been allowed to talk about it and

go at it from that perspective. But I believe the resources are here, I would certainly hate to see our borders opened up for more and more visas coming in when we have enough resources and then after this is over with, what is going to happen?

Mr. HORN. I am talking the long run, not just this issue, when I am talking educational resources. The argument they are making is gee, we cannot get the talent we need and with other countries we are getting bachelor of science degree holders and we are not getting enough in the United States. I do not agree with that. I have phoned up the chancellor of the community colleges in California and a number of the presidents and said where are you people. Now I do not know if it occurs in Indiana, but having run a State university in California in pretty lean years and pretty good years, the fact is the State is always behind in the amount of money they give the campuses to get the current generation of computing. We are often a generation or two behind. Purdue might be the exception, but it seems to me that if the people that produce the modern computing equipment could see the payoff by having programmers that use their equipment—it is like when I took typewriting my junior year in high school, Royal had given us the complete laboratory. Guess what I bought when I went out to look for a typewriter—I bought a Royal typewriter. Computer people know that, they know that if you give them a Macintosh or whatever it is early on—and Macintosh did a lot of that, as you know, with the schools—that was developing a tremendous market for them. And it is just simply good business. It is like when you loan the coach a car, pretty soon some of the stars of this or that get the same car—this kind of thing.

So I just wonder is anything going on in Indiana schools where you can have a supply, not just for the year 2000, but beyond and all the other things, of educated, trained programmers? Do you see that happening or are students saying the heck with it, I am not interested in that job?

Mr. SMITH. There are, of course, the large vendors, Hewlett-Packard, IBM, that furnish the equipment to the schools in grants and so forth, that do that. At Purdue in the computer technology school, they have a 100 percent placement after graduation. But also what I am seeing in the industry are students coming out with history majors, with psychology majors and so forth, who have utilized and programmed and used computers all the way from grade school all the way up, so they are very familiar with it, and they do not necessarily go after the technical degrees. And that is our long-term effort I believe. And I agree with that concept because if you are utilizing your technical skills and you can go after another degree that would be very helpful in your management work or whatever, utilize it and go after those.

No, we have—I believe we have in the pipeline for the future enough resources that are being trained to take care of our technology issues.

Mr. HORN. Any other comments on human resource development? Ms. Larimer.

Ms. LARIMER. I will only comment that at the K through 12 level, there is a significant effort in the State of Indiana to make sure that every elementary and—every K through 12 classroom is con-

nected to the Internet and that each of those students has the opportunity to get the familiarization that Mr. Smith is talking about before they enter the system of higher education. And so I believe we are going to see a perpetuating of that just increasing kind of familiarity with those tools as they do reach their higher education.

Mr. HORN. Mr. Garrison, you have your finger on the pulse of the community. Do you think the thread of self-fulfilling fears exists with this year 2000 problem? As I stated earlier, these hearings have found that most banks are on track to solve the problem and we obviously do not want a run on the banks. And yet some sort of fear mongers will try to scare the living daylights out of the radio audience or the TV audience or the newspaper audience or the National Enquirer audience, whatever it is. What is your feeling on it?

Mr. GARRISON. The absence of candid response is the thing that has troubled us the most, as I said in the prepared remarks. If the bank is on track, the bank should say it is on track. They should not say I do not want to come on your show, somebody will sue me. That is fine, that is what they have got lawyers for, that is why they built a courthouse. As far as I am concerned, that is the epitome, that is the emblem of cowardice. If your bank is fine, then get on the air on my show or somebody else's show and say here is what we did and here is how we will handle things with the automated clearinghouses and here is what we have done with the Fed for wholesale wire transfers and here is why, because of our tests that we have done, that we know that at 1 minute after midnight the year 2000, we are going to be fine and when you wake up in the morning and you are still toasty warm in your bed, your bank is going to be alive and well and your funds will be right where you set it.

They will not say that. They will not say it to me and if they have said it to you—I read the text of the Bank of Boston's presentation who testified before a congressional committee, I do not know if it was this one or not, and he went to great lengths to say what they had done, but he was—and he was not afraid, he was cautious. He said now this assumes facts not in evidence, that is that all our correspondent banks have also done these things and we do not know that they have. Remember, no one has—I do not think you have had anybody say do not worry, be happy, we get the big 6, the big 8, the big 12 banks done and if Bloomington State Bank is wrong and they do not do things right, we do not have a problem with them corrupting our data. No one will say that because that is not true. I understand the financial version of the Internet, which I have worked in as a lawyer for many years, the ACH network, the automated clearinghouse networks, to be very interdependent. And if you get some garbage in, you are going to put some garbage right back out and you are not going to just mess up my account because mine was not right, you maybe are going to mess up yours too. No one has said that to us.

And what I feel going on among the listeners to our show and the comments I hear in the street is a growing sense of unrest. If you guys have got such a great handle on this thing, how come you will not say so. What we hear instead is people like Yardeni, a young man by the name of Hyatt who has written a book called

"The Millennium Bug" and who was recommended to us by Yardeni to be on our show—they have said to the contrary. Anybody that does much study, anybody that works very hard is saying you do not know how bad this is going to be.

And so we call up Indianapolis Power and Light. We politely decline to be on your show. And I got the same thing, that you were asking questions about earlier, Congressman Souder, well we are forming a commission, well we are going to get together by golly and we are going to get to the bottom of this. And then page 2 of that letter said, but we do not know yet, it is an interdependent grid, it may go down and if it goes down, we do not have any liability, the statute says we do not have the responsibility to give you anything and that is what you are going to get. Signed very truly yours. I called the guy that wrote the letter—would not be on the show.

Do we have a sense of concern? You bet. And the thing that is at first irksome and then becomes very, very concerning to people in my position is, this is a population of people for 200 some odd years, 300 years, who have always been very good at dealing with reality. Right now all we think about is tee times and getting our lawns mowed because things are great. There is just no worry because hey, the economy is fine, and even if the stock market goes to hell for a couple of days, it comes right back—things are fine.

Nobody is saying yeah, but do you know. What are we going to do if. I have heard no one say, not today, not any place else, these are the contingency plans if we lose our power for a few days. It will come back—how long? I have tried to get them to say to me OK, fine, we may have a problem, we may have a brownout, but here is how we will handle it if it goes down, we have this contingency plan, we can shut down this that is computer driven and go to this that is hard wired. I know from talking to electrical experts that what happens is you begin to pull in. If your power station works and the guys around you do not work and they start making demands at the rate of 60 cycles per second for power because theirs is not working, what you do is you start shutting them off and bring yourself back closer and closer to your own area. Well, that is fine if your area is working. What happens when the computer says it is OK to go back on now. Does it pull the other one down with it? We do not know because they will not tell us.

It is very different—you raise a great question and you categorize it very well, there are those—and Rush Limbaugh among them—that say there is no problem here, do not worry about this, this is nonsense, you guys are making a lot of money writing books. Well, I would invite Mr. Limbaugh to read first and have him find somebody who really did what these guys have been charged with doing—testing. What did you find out? An F for the government of the United States, mission critical systems to protect us from our pals in China that we gave all this technology to—an F. Why do we believe in this do not worry, be happy answer—I do not. And the people that call my show are amazed that we will even talk about it because they cannot—you want to shut down the conversation at a cocktail party? Two ways—start talking about the second coming of Jesus Christ or start talking about Y2K and the potential for your sewage backing up in your backyard in January. Those

are two ways to get yourself all by yourself at the table in a hurry. [Laughter.]

And I would suggest to you that that is a very fair test of just how important this subject is. If you can evacuate a room by talking about a problem, then you have got people that do not want to hear about it. The do not worry, be happy crowd, the Rush Limbaughs—and I like Rush Limbaugh, you know, he has made it possible for me to have this second occupation of mine. He made talk radio what it is, but he is not using his head.

When you decide well I think I had better look at the government, what did you find out? I will bet you did not sleep very well. You are going hmm, they have got security problems, they have got money problems. I have got a trillion, quadrillion dollar budget and nobody is really sure how the thing works. That tells me that without panic, without the fanning of the flames by people that are trying to make money for themselves, the people of this community know down in the gut this is not good. We all know a little bit about a computer and we all know they have got dates in them and we all know they have got two digits for the year. You do not have to know much more. And so we are concerned, and what they say when they call me is not only who is doing what, but worse, what do we do if it fails.

I think the Indianapolis Power & Light Co., the Public Service of Indiana, that the RAMCs should not be hiding behind their lawyers' skirt, they ought to be out front saying we are not sure, but we will tell you this much, here is how we are going to handle it. If the computer goes blotto, then I have got this fix. We are going to be in here doing this and unplugging this and doing that and we are going to have a way to deliver safe water to you—believe you me there is no water utility on the planet that can handle what the subdivisions in Marion County, IN will do to them if things go down. We are almost totally dependent, totally dependent, on forced main sewage treatment. What happens to our sewage if the forced mains quit? Goes in the rivers. Well guess what we get from our rivers? We get our water and then we have to treat that. There is no sewage treatment plant in the cosmos that can handle what would happen if 1,500 homes lose the ability to pump the stuff in the right direction at the same time. That is a fair fear. And if it is not addressed, sure you get panicky. If you tell them about it and make these guys come out from behind their big heavy door and talk about it, then we will get an answer.

But believe me, the biggest way to create pandemonium will be not to tell anybody anything and have them wake up in January with no heat.

Mr. HORN. I think you are absolutely right, and they have got to talk the truth as they best know it. Now if they are lying to us, that is something else. But they should not be lying to us. They should tell us——

Mr. GARRISON. Well, they do not tell us anything.

Mr. HORN. Yeah, and this is where I think their lawyers are making stupid decisions and not helping them, they are hurting them by saying hey, chief, do not say a word on it, they might sue you or use it against you. If you are talking the truth, you do not

have to worry about it. It just seems to me they ought to move ahead on some of these contingency things.

Let me just note in closing, we have microphones here on each side of the audience. Chairman Burton wanted it that way, I have used it that way at a number of meetings, and I would ask any of you that would like to ask a question of this panel, please feel free to do so. We would like to limit the question and any speech some makes to 1 minute, and we are going to have the counsel time it. But I would like to start with one individual that is here, Connie Nass, who is the former mayor of Huntingtonburg, IN is here, and if he would come up, I think he wants—or she——

Ms. NASS. It is she.

Mr. HORN. And you are on that side, not the other side.

Ms. NASS. Would you like me to go on the other side?

Mr. HORN. No, no, I thought you were on this side, but that is OK. Please say anything you would like and you have got 1 minute, and then anybody else—let us get in line behind each other if you would like to ask a question of the panel.

STATEMENT OF CONNIE NASS, FORMER MAYOR, HUNTINGBURG, IN

Ms. NASS. Well, I will try to move quickly. I do want to thank the committee for encouraging action, it is very important and good leadership is critical at this point.

I want to first state my credentials for speaking, I was mayor of Huntingburg, IN for two terms and I managed four utility companies. And speaking from a local level, I know how vital this is because, for instance, just a gas utility, we bought all of our gas on the spot market, we are completely computerized. Sewage is another good example, also water. All of them are very integral to fixing the problem.

I am concerned about at the State house also as a candidate for auditor of Indiana, the failure of power is of vital importance, should we be looking at generators to take over that day when the power goes off? The Office of the Auditor of the State is responsible for a major portion of the State's financial bookkeeping and thus its computing requirements and there are several crucial areas of the State's business that are date sensitive.

And I wanted to answer a couple of questions that you had in regard to the State's payroll. Indiana employs approximately 38,000 people in 130 agencies around the State and the Auditor's Office computer system accepts payroll largely on disks that are compiled, prepared and submitted by the individual payroll clerks at each separate agency. And the auditor's computer system then calculates how much salary is due an employee and all the requisite involuntary deductions such as taxes and FICA and also the voluntary deductions such as insurance payments and deferred compensation plans, and without a functioning payroll system capable of reading the accrual dates and the tax calculation dates, State employees would simply not get paid in a timely manner, and that is very important.

The interaction of the payroll area is not just in the Auditor's Office, but also with every State agency. Without the capability of every agency preparing disks and time entry, they would have to

be submitted entirely on paper to be entered manually by the staff of the Auditor's Office, an impossible task.

Second crucial area affecting the entire State is the vendor payments.

Mr. HORN. We would be glad to have your statement as part of the record, but if you can summarize quickly, please.

Ms. NASS. All right, I appreciate that.

And so I wanted to end by asking that we continue this work and that legislation—that the government help the taxpayers by passing legislation at all levels that would limit liability arising from the year 2000 non-compliance because we are looking at a tremendous amount of money, not just for the State of Indiana, but for people in all areas of the States, if we do not have such legislation.

Thank you very much and I encourage you to continue making people aware.

[The prepared statement of Ms. Nass follows:]

Connie Nass
FOR STATE AUDITOR

TO: Congressman Dan Burton
Committee on Government Reform and Oversight

FROM: Connie Nass, Former Mayor of Huntingburg, IN
GOP Nominee for Auditor of State--Indiana

SUBJECT: Year 2000 Computer Problem / A State's Perspective

Even before the clock winds down on the end of the 20th century, the Year 2000 presents us with an explosive problem: the millennium bug or Y2K computer glitch. The implications of the millennium bug demand careful planning and action now.

It is almost comic when you consider that the Y2K culprit consists of two digits at the end of a computer code. But the consequences are anything but funny. The implications for the government of Indiana alone are massive. We are a mere year away from the day that critical systems must have completed code changes and should be in the testing phase. Of course, the government of this state is not an island in this simultaneously complicated and simple problem. The state interacts with thousands of businesses across the country including service and supply vendors, banks and other government agencies. The computers for these broad- reaching entities communicate electronically in hundreds of transactions a day.

The office of the Auditor of State is responsible for a major portion of the state's financial bookkeeping, and thus it's computing requirements. There are several crucial areas in the state's business that are date sensitive. One of the most crucial, but perhaps also one of the easiest to understand is the state's payroll. The state of Indiana employs approximately 38,000 people in 130 agencies around the state. The Auditor's office computer system accepts payroll largely on disks compiled, prepared and submitted by the individual payroll clerks at each separate agency. The Auditor's computer system then calculates how much salary is due to an employee and all the requisite involuntary deductions such as taxes and FICA, as well as voluntary deductions such as insurance payments and deferred compensations plans. All of these calculations including vacation and sick pay accruals are date sensitive. Without a functioning payroll system capable of reading accrual dates and tax calculation dates, state employees would simply not get paid in a timely manner. With a payroll of 38,000, manual calculations are simply not possible.

The corollaries to this internal system of the State Auditor are the numbers of computers that interact in the payroll area alone. There are, as mentioned above, the computers in the individual agencies that prepare disks on which employees time information is submitted to the Auditor's system. Without the capability of preparing these disks, time entry would have to be submitted entirely on paper to be entered manually by the staff of the Auditor's office, thereby increasing dramatically the amount of time needed to produce the payroll. Furthermore, Federal taxes are submitted at least bi-weekly to a designated depository via electronic transfer, and thousands of employees receive payment through direct deposit at their many individual banks

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across the state. Without corresponding computers capable of accepting these transactions, the Auditor would be forced to provide all payments by check. Employees, whose banks are incapable of accepting electronic payments, may well have difficulty conducting any financial transactions with their banking institutions.

A second most crucial area affecting the entire state, and again, an area under the auspices of the Auditor's office is that of vendor payments. The available funds for payments from state agencies are calculated on the Auditor's computer system, and authorized payments from the agencies are then entered and deducted against available funds. As in the payroll system, many of the invoices and vouchers are downloaded to the Auditor's office through a diskette procedure, and consequently computer interaction is critical. Furthermore, an increasingly large number of payments are made electronically through the Automated Clearing House and requires all of the myriad of computers involved in the transactions (from the initializing agency to the recipient's bank) to be Year 2000 compliant. The State of Indiana pays interest on payments to vendors that are more that thirty days past due. Any delays in payments caused by the computers inability to process these date sensitive transactions could well cost the state large sums of money.

It would be impossible in this forum to list all of the areas in state government that use mission critical and date sensitive computer programs. Certainly there are numerous highly sensitive areas outside of the office of the State Auditor: the State Police and the Department of Motor Vehicles to name but two. All of these computers and programs are contingent on even more basic systems functioning: power and telephones. Of course, all of these utility functions are now computerized and require Year 2000 compliance themselves. It is also true that these utilities have been working to ensure that there is no interruption of service for any of their clients.

As no doubt anyone even remotely familiar with the Year 2000 dilemma knows, it is enormously expensive. The nation will spend billions repairing the problem. What we do not know is how expensive any missed code will cost the nation. The State of Indiana's liability for Year 2000 alone could run into the hundreds of millions of dollars. Interest penalty on late vendor payments could certainly add up very quickly. Liability for contracts that are not fulfilled could carry huge penalties.

The State has committed money and manpower to solve this problem and all of the critical systems are actively being fixed. However, again, the State is not an island and depends on many other systems that all must be compliant. It will be critical for governments on Federal, state and local levels to cooperate to repair any systems not yet compliant, and to actively monitor and encourage compliance in the private sector.

There is one further thing that governments can do to protect the interest of the taxpayers: pass legislation at all levels that would limit liability arising from Year 2000 non-compliance. It is difficult to speculate how much potential litigation might cost the taxpayers, but it will surely be enormous no matter how valiant the effort to mitigate the computer glitch. A cap on liability monies paid out to litigants by Federal, state and local government would enable any further computer manipulations to be feasibly funded. Let us not let this expensive technical problem cost the taxpayers any more than is absolutely necessary.

Mr. HORN. We thank you. Please state your name and where you are from and so forth, so we can get a feel for your background.

STATEMENT OF CINDY NOE, BUSINESS OWNER, INDIANAPOLIS, IN

Ms. NOE. My name is Cindy Noe, I am from Indianapolis, I am a business owner. We have approximately 200 employees. And I have recently become aware of a bill that has been introduced at the Federal level, and I probably would have directed this to Mr. Forbes, however he is no longer here.

The bill is a response, as I understand it, to government having—us having the perception that government is not responding to the year 2000 problem efficiently and effectively and quickly, and so this bill has been introduced. And a portion of this bill—and I forgot to say I am trustee and fiduciary of a couple of retirement plans for our employees—and this bill that has been introduced says that fiduciaries of employment benefit plans must consider the year 2000 computer problems in making investment decisions. It then goes on to state that I as the fiduciary of this plan must determine that, first, the issuer of any security in which the fiduciary seeks to invest the assets of the plan has or is taking steps to substantially eliminate any year 2000 computer problem faced by the issuer; No. 2, I must determine that such security is traded on a market that is prepared to operate without any interruption during the year 2000 computer problem. It then goes on to say that if I have assets invested by an insurance carrier, bank or similar institution, that those two prerequisites that I just mentioned also pertain to that scenario.

And this upsets me greatly.

Mr. HORN. Do you know which bill——

Ms. NOE. It motivates me to go back and absolutely——

Mr. HORN. Do you know which bill we are talking about?

Ms. NOE. Yes, they very appropriately named this bill S. 2000. [Laughter.]

Mr. HORN. Well, it is not in the House that I am aware.

Ms. NOE. No, I think it is a Senate bill.

Mr. HORN. Who put it in the Senate, do you know?

Ms. NOE. This is what I do not understand. Mr. Bennett, who I thought he had a very high level of understanding about what was going on. And I will tell you, this bill—you talk about a feeding frenzy for trial lawyers. Every fiduciary and trustee of retirement plans—and I do not know, you know, maybe the big companies can withstand this kind of a barrage more than small and medium size business owners, but my answer to this is X the plan and that serves no one's purposes.

Mr. HORN. Well, we wish you would give counsel whatever information you have, that would be very helpful. I am not aware of a similar bill on the House side.

Ms. NOE. I do not know that there is one on the House side, this is a Senate introduced bill, I believe.

Mr. SOUDER. There is not the slightest chance that a bill like that is going to pass, but I think in supposition that Senator Bennett is trying to force one of the questions that I have and that is why is the private sector not in effect coming up with some sort

of a good housekeeping seal that can in fact, if you do not meet certain conditions, certain plans are not certified, I believe that the private sector has done that in other areas and in trying to stimulate that. But we are not going to pass something that makes you liable for something that—you really do not have the time or the detail to go into every company that you invest in and find, and furthermore—because we all want to get re-elected—furthermore, the unintended consequences—my background is in business, an MBA—you are right, companies will just drop the plans, which accomplishes nothing.

So I think he has held that up, but do not lose a lot of sleep and do not drop your plan because that bill is not going to pass.

Ms. NOE. Well, you know, we need real rules made, we do not need throwing these fleeces out and this is I believe what this is. And this is, I believe, counterproductive, and I am very disappointed that my government would even entertain the thought of putting me on the line for these types of responsibilities and it certainly is not a position they would ever think of putting themselves on the line for. And this is very problematic. Whatever the motivation by Mr. Bennett was, this is inappropriate behavior.

Mr. HORN. Well, I hope you write——

Ms. NOE. I believe.

Mr. HORN. He is chairman of the Senate Select Task Force, as you know, on this issue.

Ms. NOE. Uh-huh.

Mr. HORN. I would hope you would write him a letter on the subject.

Ms. NOE. I believe I will.

Mr. HORN. Good.

Ms. NOE. Thanks.

Mr. SOUDER. Also, get the National Association of Manufacturers in Indiana to raise some concerns about this. He is very active in that association and in fact has a business and it would put himself on the line.

Ms. NOE. I plan to take this to the Chamber of Commerce and the NFIB because they both need to know about this. Who did you say you wanted to see this? Counsel?

Mr. HORN. Counsel to the committee, chief counsel.

Yes, sir.

STATEMENT OF KEVIN MCCARTHY, ATTORNEY, INDIANAPOLIS, IN

Mr. MCCARTHY. Good morning, Mr. Chairman, my name is Kevin McCarthy, I am an attorney here in Indianapolis.

The reason I am here, I have had three separate clients come to me totally independently about 2 months ago with serious concerns about the year 2000 computer malfunction potential. As a matter of background, I have been a lawyer for about 26–27 years and went to the same school as Greg Garrison did and I was glad to hear his comments because in the school we went to, we were taught to be rather forthright. Purdue is well represented here but that school was Indiana University Law School. So I thought I would get a little pitch in for IU.

Mr. GARRISON. I forgot that, thanks, Kevin, I should have said that, yes.

Mr. MCCARTHY. Well you are kind of on your lonesome there, Greg.

Mr. HORN. Truth in advertising, right?

Mr. GARRISON. Yes.

Mr. MCCARTHY. But I speak as a person who was counsel to two different congressional committees at one time in the 1970's and the 1980's, so I have——

Mr. HORN. Which ones were those?

Mr. MCCARTHY. Interstate and Foreign Commerce, I was a subcommittee counsel and then the Committee on Public Works and Transportation, I was counsel for the full committee.

Mr. HORN. I serve on that committee, it is a very efficiently run committee, as you know. Was Mr. Shuster there then?

Mr. MCCARTHY. Well, Newt Gingrich was the freshman Republican Member when I was counsel and the Democrats ran it.

Mr. HORN. He still reserves his place, you know. If anything else happens, he can always be chairman of Public Works and Transportation or what we now call Transportation and Infrastructure.

Mr. MCCARTHY. Well, the gentleman from Texas did the same thing, you may recall, the former Speaker, but he was also a Public Works and retirement member.

But I make my comments as a person who has tried to quickly educate myself as a Republican precinct committeeman and as the head of my neighborhood association.

The biggest concern I have drawn from this is I see that the U.S. Government, and without any criticism, it is so large and complex, it really does not have a handle on this, at all. OK? Individual parts of the government have a handle on it, but the coordination problem does not appear to be any place near where it should be, especially the interrelationship of systems and so forth.

I see individuals who want to deal with their own life and their own situation and institutions like cities and States at a lower level. And I would like to hear the panel comment on the concept of the U.S. Government itself being a burden on interstate and foreign commerce in this matter. And perhaps this is something where the Federal Government should be very careful not to interfere with very good solutions by State and local governments or especially by the private sector.

Mr. HORN. Any reaction of members of the panel on that? Mr. Garrison, do you have any comments about your fellow alumnae?

Mr. GARRISON. My worthy colleague from Indiana University is, as you can tell, there are two of us that they taught to talk plain. I think we share a fear that there is nothing that a bureaucracy cannot mess up and nothing can mess it up as fast as a big one. And there is no big one better at messing it up than the Federal Government. So it is a pretty short chain of logic that would suggest that the more they get into things the more we have to worry about it, as again your report card would indicate.

More a matter of awareness I think in raising cain with the problem than prescribing some kind of solution. I think that the NCIC problem was one that would have been funny if it were not so sad. Here we are trying to get the things squared up and you get to

NCIC, no, we cannot do it that way, you have got to do it the hard way. Any of you that have ever worked as lawyers with any bureaucracy, particularly at the Federal level, they have got a way to make it hard. And if they make this one hard, it will be real cold in that January.

Mr. HORN. Mr. Smith, any thoughts on this?

Mr. SMITH. When I first saw your report card on the Federal Government, I approached Congressman Burton's office and tried to find a way that solutions like we use could help. The process to try and get through the bureaucratic maze up there was mind-boggling. I was put in touch with one of the subcommittee members and was told that in order for another vendor to do business with the government, No. 1, you have got to go through the process which takes over a year just to get approved. When I would not take no for an answer, they said OK, there are 20 vendors who have been approved at the Federal level to work on year 2000 issues for all of the agencies, and if a company like yours, a small company, wants to do business then try and get, become a subcontractor through those companies. And those vendors are the biggies, the Price, Waterhouse, Ernst & Young, IBM. And it is impossible for smaller companies to approach them. I tried it, I tried it when I was at Purdue. We offered this solution for free to many of those large companies and they refused it.

So the bureaucracy is——

Mr. HORN. But why did they refuse it when you are offering it to them free? You would think they would jump at it?

Mr. SMITH. Oh, it is too easy, it is not a big money maker. That is the absolute truth. There is no way. I even offered it to Computer Associates, as an example, to put in their toolkit, but because it addressed one small portion, it was not big enough as a money maker for them, and others. The stories go on.

So what I proposed to Congressman Burton's office was that legislation be introduced that would temporarily break down the barriers through legislation, that would allow the agencies to contract individually with companies that they come across, instead of having to go through the larger process. And do not worry about the—what is the word I am looking for—favoritism at that point, do it temporarily, make a legislative process that just temporarily until we get through this, that allows, wherever agency heads come across a solution, they can immediately contract, if they feel—let them use their management responsibilities to do that and contract and go forth. And that is why then I kept coming after Congressman Burton's office to get in front of you guys to try to get some of these issues raised and maybe help the Federal Government at any level that we possibly can.

Mr. HORN. Makes a lot of sense, that is a good idea.

Ms. Larimer.

Ms. LARIMER. Could I ask you to repeat the question?

Mr. HORN. Yes, the question is this: There is a very big concern by my clients that the U.S. Government will not deal with this effectively and that the political and governmental response of the U.S. Government will be extreme and monolithic. And what I am hearing today is that in an environment where they are not yet even—at least the executive branch is not really—has a sense of

urgency. I am not talking panic but a sense of productive urgency. Obviously they do not have this, at least in the White House. That this could quickly switch from fiddling while Rome burns to being very dictatorial, very monolithic, very centralized and visiting upon the people the lack of competence the government has so far displayed, whereas if you leave the lower levels of government and society to their own devices, the broad education of our population, they may be able to solve many of their own problems themselves, including dealing with contingencies under some of the scenarios that are not so good.

Ms. LARIMER. Yes, I can comment a little on that. While I have no story to tell as Mr. Smith does about any direct interaction with the bureaucracy, one of the things that we do work on every day are the Federal data interchanges. And this was a problem some time ago. The National Association of State Information Resource Executives came together—brought together several State officials—actually, I believe, all State chief information officers and many Federal officials and began the process of putting together some policies to deal with these Federal data exchanges. That was done amongst the chief information officers of the States and of many of the Federal agencies and we came together in a cooperative kind of way and we got things done in 1 day.

So I can say to you that while we certainly do have problems of the bureaucratic type, as long as we are looking at this as a problem that we need to solve for the citizens of our mutual States and of this Nation as a whole, and we direct ourselves to getting that done and staying focused on that objective, then I know that there are people out there who care about getting that done who will see to it that it does get done and people like Mr. Smith who will continue to try to make sure that the rules and regulations allow us to get those things done because we do have a date certain and we cannot change the date. Occasionally maybe we need to change the regulations.

Mr. HORN. Mr. Pierce, do you have anything to add?

Mr. PIERCE. I think what I would add is that I guess it could be said that the Federal Government as a whole probably got started a bit late, but we have had several interactions with the Federal Government and they have been very positive. I attended a National Governors Association Summit on the year 2000 in July in Washington, DC. They were represented by many Federal agencies and they shared their plans with the State representatives there. I think there was about 46 States represented there. I came away certainly with a much better understanding of what many of the Federal agencies are doing.

Also, John Koskinen has participated in a State conference call that I listened to last Friday and offered again what we were doing on data interchanges, offered whatever assistance the States may need for that. So, I think his area certainly has been taking a lot of initiative in trying to coordinate things at not only the Federal level but also the State and local level as well. So all of the experiences with the Federal Government have not been, you know, totally negative and they certainly have been helpful.

Mr. HORN. Mr. Willemssen.

Mr. WILLEMSSEN. Two points in relation to the question. I think if we did have a more aggressive Federal approach, it could be beneficial if it was limited to the types of things like sharing information, sharing data bases on biomedical devices and their compliance status. Sharing data bases on particular vendor products and whether they are considered compliant. So I would not say in total that a more aggressive stance would necessarily be bad. It would likely be more negative if it was from the perspective of you shall do this and you shall do that. That is point one.

Point two, I think it is important to also recognize—and certainly we have been critical of the Federal Government and Federal agencies, but it is important to recognize that the Federal Government and Federal agencies are transparent and it is readily evident where their progress is. Not everyone has congressional committees and the General Accounting Office going in and finding out, based on data, not talk, where they are at on Y2K. Frankly, we as a Nation do not know where we stand on key infrastructure areas like power, water and telecom. The reason for that—lack of data. There's a lot of talk but when you get beneath that talk there is no underlying data, which is what we have been pushing for.

I think that gets back to a point that was made earlier. Much of the concern in these areas stems from people's uncertainty and lack of knowledge about what is out there, whereas in the Federal agencies, we have data. We have knowledge about how bad it is in certain agencies and how much better it is in others. And to the extent that kind of data was available in other sectors, I think it would go a long way to eventually reducing any panic that may occur down the road.

Mr. HORN. I thank you all for responding.

We have three people standing. That is going to have to be it because we are supposed to be out of here at 12 noon. So we are going to get the three of you into it. Go ahead.

STATEMENT OF MARK SLUKA, PASTOR

Mr. SLUKA. My name is Mark Sluka and I am the pastor of a small church in the small town of Tipton, about 5,500 people. I hope to be kind of a microcosm of what is going on in thousands of small communities. As such, I have evacuated many rooms with both of those subject matters you mentioned earlier. [Laughter.]

Mr. HORN. Does that include the Sunday sermon you also evacuated?

Mr. SLUKA In fact, I have integrated that and then rumors come back, you know, about how he has gone off the deep end. But my question relates to contingency planning in a small community such as ours. Issues such as food, water, heat and so forth when it seems impossible to even communicate issues of Y2K. I have spoken to local officials. They do not—I understand that they do not know the scope of this problem. Are there any helps available, plans for local communities such as ours, what to do in a worst case scenario?

Mr. HORN. How about at the State of Indiana? Communities are merely a subset of the State. The Constitution only recognizes States not communities. So what is the State doing about it?

Ms. LARIMER. Again, Mr. Chairman, I find myself outside my area of expertise.

Mr. HORN. Well, I will give you an example. We have been in other States and I think it was mentioned here this morning that you have got various associations of supervisors and mayors and all the rest. I assuming that there has been an interchange with the State.

Ms. LARIMER. The Association of Cities and Towns I know is beginning to address the issue of year 2000 with their constituency—with their membership, as I presume is also the—the Association of Counties, I believe, is the name of the counties association.

Mr. HORN. There is a National Association of Counties and there is usually one in every State. Counties are fairly powerful organs of government and administer a number of Federal programs such as welfare.

Mr. GARRISON. The problem that I see there, Congressman, is the answer we just got, nobody knows. I mean, we—where is the list that says at your church dig a well? What is wrong with that? That is not sexy, is it? That is not—that does not—you cannot—there is no photo opportunity there. Spend $1,500, put down a well and put a hand pump on it. Well how many hundreds of people could get clean water if that were there? No one—there is no list like that any place.

Mr. SOUDER. But what we need realistically is assurance from the State in particular as a leader, as well as I asked Mayor Goldsmith a similar question. The goal here is not to develop contingency plans, the goal is to fix the problem and we do not want to spend so much time worrying about the contingency plans. But there needs to be a point where citizens are reassured that there is an auditing procedure going on in Indiana, as well as nationally, that says we have certain utility companies in Indiana that are not following through. We have certain police departments that are not following through. We have certain systems that we ran into more problems and in those areas we will in June 1999 start into contingency plans or we will have—maybe in January we will give them 3 more months. But some sort of a system because we do not want people just randomly digging wells out of panic. What you need to know is where the problems are going to be, that there is some sort of sense of order. Right now everybody is so drowning in trying to take care of their own things we do not see the longer term plan, but as we move into 1999, I think the legislature is going to feel that pressure as well as the Governor. I think that is more where people are coming from. There is no real need to have a contingency plan for Tipton yet because hopefully we will not have the problem. But at some point you need to be reassured that if there is a 3-day, 7-day, 30-day problem, that something is going to be done with it. Or if we have—particularly the utilities—you know, the hierarchy that was talked about earlier that you could not even control at the State level is what we are pressing on. But we could really get diverted in the contingency, instead of Tipton figuring out the problems, figuring out how they are going to deal with people digging wells rather than fixing their sewer treatment.

Mr. HORN. Mr. Willemssen on this question.

Mr. WILLEMSSEN. Well, I think it is—beyond what has been discussed, I think it is especially important that you continue—I recognize what Mr. Garrison has said about this being a conversation killer. But you have to continue pushing awareness. You have to continue pushing your county and State officials to give you data on where they are at with this particular problem. That includes power, water and telecommunications. Here today, we do not have any regulators of those particular sectors but at other field hearings we have. Frankly, they have not always known for sure where their regulated entities are at because they do not have the data. So, I think you have got to continue to push that. My own belief is, starting next calendar year when we begin to have a few well publicized failures, this will no longer be a conversation killer and it will turn into a very hot topic.

Mr. HORN. In other words, you will be the rage of the parties at Tipton. [Laughter.]

Justice will out. God works in mysterious ways, right?

Yes, ma'am.

STATEMENT OF LINDA MOBLEY, REPUBLICAN PRECINCT COMMITTEEMAN

Ms. MOBLEY. I am Linda Mobley and I have been a Republican precinct committeeman for 20 years and active in the political arena.

I am concerned about the military. I have heard that the military will not be ready until the year 2012 and I was wondering if any of you are alarmed about how our country will be protected. Also, I might add, I have a son—I have one son who just graduated from Rose Holman Engineering School and he is now a second lieutenant in the Army and I am concerned for his safety because the military is not ready for this crisis.

Mr. HORN. Let me respond. I think you are using a figure that we issued and that was based on the pace of these various executive departments. Some did not conform to the year 2000 until the year 2017 and the military was among them. It was not so much the military as the soldier's error, et cetera. It was the Department of Defense primarily, as a whole, and largely in the civilian sector. The military equipment will be working. I think Secretary Cohen was right when he said he is going to share with the Russians to make sure there are no accidents on nuclear weapons what we are doing on that situation because we do not want any accidents. The fact is, there is a lot of embedded chips, millions of them, in the military that make various things do thus and so. And we—well, all I can say is, we are on them to get the job done. We have asked them to identify critical missions and that means they have got to put the military critical missions above all other things. So I frankly think they will work it out, but they have been very lackadaisical for several years and their whole top team that was in charge of making these conversions, General Page retired, his deputy retired and two directors below his deputy retired and took early retirement rather than grapple with it. So Secretary Cohen now has a new assistant secretary in there just confirmed by the Senate about a month ago and he will have to pick up the pieces and see what can be done.

Mr. SOUDER. If I may add a brief supplement to that? As you know, all of our bases in Indiana have been shut down but we still have the finance center in Crane and naval research, who I assume are progressing faster than the other. We have in Ft. Wayne, which I represent, the Air National Guard with the F16s. They are already year 2000 compliant and they are going through step by step the bookkeeping part. So that is an Indiana example, and I assume since the Air Guard tends to be even less of a priority than the reserves and of the research facilities and the active military, that is probably the pattern where they are behind is more in their bookkeeping functions rather than in their military preparedness. But that is one where we have also been appropriating more money and where we are on it harder. The big concern, quite frankly, is more international with our allies.

Ms. MOBLEY. Will the soldiers get their pay so that they can provide for themselves and their families?

Mr. HORN. I can assure you on that because I have asked them among the critical mission systems, all agencies, have the payroll up there, because you cannot run a program without people and you have to pay people. That is high on the critical mission list.

Ms. MOBLEY. One more comment. It has been mentioned here several times today that leadership and management is one of the most important things in this whole issue. I am really concerned about the leadership vacuum that we have in our country now. There is no integrity or truthfulness in the leadership that we have in the White House now and I am very, very frustrated with the Congress and the Senate for not taking action toward impeachment when there is just mountains of evidence there. To get us through this crisis, we need a leader that is truthful and that we can depend on to tell us the truth.

Mr. HORN. Thank you for your views.

And the last questioner.

STATEMENT OF SANDY MILLER, STILESVILLE, IN

Ms. MILLER. I am going to move this down. I am a little shorter than everybody else. I am Sandy Miller and I am from Stilesville, IN. My background is I am an ordinary person. I am here, I have concerns. I think contrary to what some of the perception in this room might be, not everybody knows about Y2K, certainly not in my little farming community. They are not concerned. They think I have a computer—I do not have a computer, I mean, so that does not affect me.

I have two questions. No. 1, what is the subcommittee doing to get the information out to people to at least get on top of it, talk to their Congressman, talk to their utilities, talk to their banks? And No. 2, in the event that—because I wanted to come away with a sense of optimism from this meeting and I am afraid I am not going to be able to do that. The Federal Emergency Management Association, what are they looking at for contingency in the cases that we are talking about if things fail?

Mr. HORN. I think we can be a little more optimistic than you suggest here. It does not mean that we do not have problems. As I said earlier, the administration sort of has run this like the old Perils of Pauline in the Saturday movies, but I think they are fi-

nally getting into gear. The question is, can you do all of the things that have to be done between now and January 1, 2000. We have made it very clear to them that if they have budget requests, the Speaker has said we will give you every dime you want to deal with this problem. So there is no partisan aspect to this. We just want them to run the executive branch on this problem and get the job done and not just talk about it. The President, I have urged him personally to talk about it because we do not want people running on banks.

We just held a hearing in New York with the markets testifying, as well as the clearing house of the check clearing. That is in excellent condition. You do not have to worry about that. But we knew that frankly going back in the summer of 1996 because we also had them as witnesses there. They were already working on it and getting it under control. That affects the American economy substantially as the major part of a global economy.

So all I can say is, I am optimistic about a number of things. It is a management problem and they have got to get to it and I think they are, but they are getting to it late and the clock is ticking. That means a lot of people are going to be working overtime.

I do not know what your answers would be, Mr. Willemssen. He goes and investigates in the Pentagon and other places. When they send us these reports sometimes the old line of rosy scenario is what we get in their self-reporting, and we have caught the Pentagon in all sorts of things that they just were not being honest with us.

Mr. WILLEMSSEN. I would just add, Mr. Chairman, I think the subcommittee succeeded though in part of its mission today and that is raising awareness, because you mentioned in prefacing your question how people really had not heard of it. That is what really the chairman—one of the major things he wanted to accomplish in holding this set of field hearings throughout the country is to get the word out so people are aware of it and aware that hey, we have got some major issues that we have got to address and they are not fully addressed yet.

Ms. MILLER. Could I comment on that because I found out about this meeting just by happenstance, by a quick comment by Congressman Burton on the radio. Nobody else that I worked with or that I am around knew this was going on and I heard some comments from other people that the word got out very late that this was even going on and that is why this room is not packed to the gills, I think, because people do not know and they are not hearing about it.

Mr. WILLEMSSEN. Well I think with the media here, I think that will assist in further getting the word out though.

Ms. MILLER. The two that stayed, you mean.

Mr. HORN. Mr. Souder.

Mr. SOUDER. One of the most encouraging things in an ironic way that I heard today was that in January of this coming year we are going to get a forerunner, because some of the systems trigger at the beginning of 1999, which means that will do more than any news media or any hearing can do. I mean, that will carry through and hopefully—particularly once it starts to get into the dollars question. To me the biggest concern here, because it is not

a dollars question, is the energy, sewer type questions which are not necessarily as direct a threat in advance because investments are going to be there. But we will start to see the stories escalate. And just like today that plants a seed, hopefully there will be some things in the legislature and the city the State can do. So you take it a step at a time. This is not extremely unusual, but it is very disconcerting how far we have gotten. The question is, are the President and Vice President too distracted. It is a fundamental question we have to keep looking at.

Ms. MILLER. Thank you.

Mr. HORN. Thank you for asking the question.

I think letters to the editor might help. Why are you not telling us more about this? Some of the major national papers, such as the Los Angeles Times, where I come from, has a whole section on computing and that is the age we live in. I think increasingly, whether it be a weekly paper or not, there will be columns on this. This is the 21st century and when the 5-year olds come home from kindergarten and they have operated a computer and they have learned numbers and reading and composition and everything else, which you can do, and when you have the eighth graders and the high school students coming home, they educate the parents. I think that is important.

Well, I want to thank the staff that have been involved here. I might add that I have some documents to put in the record. One is the opening statement of Mr. Burton if he had been here. Unfortunately he is in Washington and last night let us know that he had no choice because several members are sitting down with the Attorney General and this involves the Committee on Government Reform and Oversight, which is our parent committee. He has done a splendid job as chairman of it and he has been judicious to take the heat from minority members who frankly did not help us any time this year, as opposed to the Nixon situation where Howard Baker and the Republican minority helped the majority get at the truth. So you have got a good man in Indiana as far as I am concerned.

[The prepared statement of Hon. Dan Burton follows:]

Statement of

The Honorable Dan Burton (R-IN)

Chairman

House Committee on Government Reform

and Oversight

Oversight of the Year 2000 Problem:

Lessons to be learned from State and

Local experiences

Subcommittee on Government Management,

Information and Technology

Wednesday, September 2, 1998

I want to welcome my colleagues to America's heartland to discuss one of the most pressing issues that our nation faces as the millennium approaches. The promise of a new century also brings the possibility of chaos due to the Year 2000 computer problem. Virtually every governmental and private sector organization is affected by this most pressing problem.

I am quite pleased to have my good friend from California , Steve Horn, who chairs the Government Management Information and Technology Subcommittee, presiding over today's hearing. Chairman Horn is recognized as the leading expert in the Congress on Y2K, and Speaker Gingrich has appointed him co-chair of the House Task force on the Year 2000 problem. He has been holding hearings on this issue for over two years and has been instrumental in raising public awareness of the potential problems we face if we don't take action.

The purpose of this hearing and the series of hearings Chairman Horn has been holding is, as he states, to "inspire action". We cannot postpone or negotiate with the fact that the Year 2000 is coming and is right around the corner.

With that thought in mind, at the request of the Administration, I recently introduced H.R. 4355. This bill encourages the disclosure and exchange of information about computer processing problems and related matters in connection with the transition to the Year 2000. This bill is a good first step in attempting o work out a solution to the problem, and I look forward to working closely with Mr. Horn in getting productive Y2K legislation signed into law.

We have an excellent panel of witnesses today and I look forward to hearing their testimony on the Y2K problems they have encountered and what they're doing to fix them.

Mr. HORN. Now let me thank the people on the staff that have helped here. To my immediate right is the staff director and chief counsel of the subcommittee, J. Russell George. John Hynes who is not here, professional staff member, has worked on this particular hearing. Matthew Ebert, our staff administrator and chief clerk is also here. No, he is in Chicago now where we will be tomorrow. Megen Davis, the General Accounting Office detailee to the subcommittee is probably in Chicago too. Mason Alinger is here, who is staff assistant. And then Bill O'Neill of the full committee's staff worked with us on this. Bill Warren is our court reporter here.

Then I want to thank Mr. Burton's staff, Claudia Keller and John Williams and Tim Davis. It takes a lot to get one of these hearings in the right place at the right time and I thank my colleague from Indiana, Mark Souder, who has done a splendid job for his district and the State and the country in Washington. I am glad to see him here.

So with that, we are in recess until the Chicago hearing which will begin tomorrow morning.

[Whereupon, the subcommittee was recessed at 12:12 p.m., to reconvene on Thursday, September 3, 1998, in Chicago, IL.]

OVERSIGHT OF THE YEAR 2000 PROBLEM: LESSONS TO BE LEARNED FROM STATE AND LOCAL EXPERIENCES

THURSDAY, SEPTEMBER 3, 1998

HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON GOVERNMENT MANAGEMENT,
INFORMATION, AND TECHNOLOGY,
COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT,
Palatine, IL.

The subcommittee met, pursuant to notice, at 10:05 a.m., in the Palatine Village Hall, Palatine, IL, Hon. Stephen Horn (chairman of the subcommittee) presiding.

Present: Representatives Horn, Crane, and Davis.

Staff present: J. Russell George, staff director and chief counsel; Matthew Ebert, clerk; and Faith Weiss, minority professional staff member.

Mr. HORN. The Subcommittee on Government Management, Information, and Technology will be in order for this "Oversight of the Year 2000 Problem: Lessons to be Learned from the State and Local Experiences."

We are delighted to be here in Illinois, and I want to ask Mayor Rita Mullins, the mayor of Palatine. The mayor will give us a welcoming statement. We are glad to be in your beautiful city hall.

[The prepared statement of Hon. Stephen Horn follows:]

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"Oversight of the Year 2000 Problem: Lessons to Be Learned from State and Local Experiences"

Opening Statement of Chairman Stephen Horn
Subcommittee on Government Management, Information and Technology
September 3, 1998
Palatine, Illinois

A quorum being present, the Subcommittee on Government Management, Information, and Technology will come to order.

We are here today to discuss the Year 2000 computer problem. We know that the Year 2000 computing problem affects just about every aspect of Federal, State, and local governmental operations. It also affects private sector organizations and could affect the lives of most individuals.

Over two years ago, this subcommittee held the first Congressional hearing on the Year 2000 problem, and since that time, we have held numerous hearings to assess the status of the Federal Government's Y2K fixes. Today's hearing marks the sixth in a series of field hearings on the Year 2000 problem focusing on non-Federal entities.

This is being done in the context of the recent action of the Speaker of the House, Newt Gingrich. He designated the Subcommittee on Government Management, Information, and Technology—along with the Science Committee's Subcommittee on Technology—as the House Task Force on the Year 2000 Problem.

The chief objective of this task force is to inspire action. No single organization, city, State or even country can solve the Year 2000 problem alone. Data exchanges and interdependencies exist at all levels of government and throughout the private sector. A single failure in the chain could have severe repercussions.

For example, State disability determination systems provide data on whether an individual qualifies for disability benefits, how long he or she should receive benefits, and how much the beneficiary should receive. The Social Security Administration uses this data to approve the disbursement of the disability payment. The Department of the Treasury cuts the check and sends it to the local bank. The local bank deposits the check into this individual's account. The bottom line is: If any one of these entities fails, from the State office through to the local bank, a deserving individual will not receive the payment. Now multiply this situation by the millions of people that receive benefits and you can appreciate the magnitude of just one aspect of the Y2K issue.

Accordingly, the testimony we receive today will help us to understand the extent of the problem at the State and local levels as well as the private sector. Our witnesses include representatives from government, mass transit, utilities, academic, and agricultural sectors.

We welcome our witnesses and look forward to their testimony.

STATEMENT OF RITA MULLINS, MAYOR, CITY OF PALATINE, IL

Ms. MULLINS. Thank you, Mr. Chairman.

Good morning. On behalf of the Village Council and the residents of Palatine, Chairman Horn, Congressman Crane, and Congressman Davis, welcome to the Village of Palatine. We are pleased that your subcommittee has chosen Palatine to hold a field hearing on the oversight of the year 2000 problem and lessons to be learned from the State and local experiences.

Palatine is truly a unique village in that it upholds an old-fashioned hometown image while continuing to grow and prosper. At last count, our estimated population was 62,000 and growing. Year in and year out, Palatine's school and park districts continue to be ranked among the best in the State, indeed the Nation.

This year, I am very proud to share with you that the Village has won two very special awards at the State level. First, the Village was presented with the Governor's Hometown Award for volunteer services. This award came about through hard work of hundreds of volunteers to renovate a transitional home in Palatine for homeless mothers and their children called the Home of the Sparrow.

In addition, the Village has been presented with the Lincoln Award for business excellence, which is the State equivalent of the national Malcolm Baldridge Award.

The Y2K problem is an issue that will affect every person in our world filled with wonderful technological advancements. While the press has focused on its implication into the banking and electronic industry, local governments and services will also be affected. Local governments provide everyday services to its residents, such as drinking water, police and fire services, to maintaining street and traffic lights, which are based on computer applications. The Village of Palatine for nearly a year now has been reviewing its system for year 2000 compliance as Lee Plate, our director of Information Systems, will testify to you later this morning.

However, Mr. Chairman, all the work that local governments may do to become compliant with the year 2000 is only as good as their electric power, which runs the computers. Please keep in mind that Chicago's weather in January is usually very cold and very windy. Many people will be relying on their heaters to keep them warm. I am pleased to see that you have invited a representative from ComEd, our electric distributor, to speak before you on this issue, which is of great concern to my fellow mayors and their constituents.

Today, with our nearly perfect weather and the many things Palatine has to offer to residents and visitors alike, I am sure your brief stay with us will be a very pleasant one. Thank you.

Mr. HORN. We thank you, and we are delighted to be here.

I am going to ask Representative Crane, who represents this district very well and who is one of the key architects in the House with his leadership on tax policy, Social Security policy, trade policy, all of which are major issues before Congress in any session, I am going to ask him to have the opening statement since this is his district.

Thank you.

Mr. CRANE. Thank you very much, Mr. Chairman. I want to congratulate Chairman Horn. He has been involved in this effort for

a considerable period of time and has traveled the country with the kinds of presentations that will be forthcoming here today. I also want to congratulate our colleague Mr. Davis. Tom Davis is the one who has been assisting him in his effort, and I congratulate both of them for the outstanding job they have done.

I found out just today that they have got a shortage of personnel, I have been told, who can deal with a solution to this problem, Y2K. And if you have the talents, you can get a job making $500 an hour. Now that is not all bad because they can keep you occupied, I have been told, well past the year 2000. You could probably retire after 3 years of that and, you know, go chase the sunshine down in the Caribbean. [Laughter.]

But at any rate, it is a very serious problem. One of the biggest concerns I have has to do with our national defense. There are Government departments that are slack in this area, but it has the consequences that Mayor Mullins touched upon, if you had some kind of breakdown as far as your capability of heating your home in Chicago in winter. I have had to explain to these foreigners since, you know, they are from Virginia and California, that God's country starts at Pittsburgh and goes to Denver, but the heart of it is right here in the Chicago area, except from January 1 until April 1, then you run for the sun.

But these are profoundly serious questions, so I look forward to input from all of the experts here that have an infinitely better understanding of this complicated problem than I do. Thank you.

Mr. HORN. Well, thank you.

Mr. Davis, the gentleman from Virginia, do you have an opening statement?

Mr. DAVIS. Chairman Horn, I will be very quick. I will just say that a lot of us wonder about how did this problem start. Our office has researched this and traced it back to the sixth century monk Dynesius Exigus, known as Dennis the Small, because he was the one who invented the consecutive year calendar. We were taught in history that in the year 999 on December 31 that you had—fulfilling scriptural and other prophecies, Christians and pagans were going to be cowering at the moon waiting for the end of the millennium. We now know that did not happen because in the year 999 and the year 1000 only about one-tenth of 1 percent of the people knew what year it was, let alone what day it was. I draw that contrast because in the year 2000 everybody is going to know what day and year it is except possibly the computers that run our lives. So we have kind of come full circle on this.

We are not sure what all of the ramifications are going to be, but with Chairman Horn's leadership, his periodic report card he issues to Federal agencies, and now with oversight of the private sector and some of the local and State governments, we want to know what that impact will be, how we can lessen that, how we can share information back and forth. I congratulate him on what I think will be another successful field hearing.

Also, to my friend Phil Crane who has been a real leader on trade legislation and other items in the Congress. It is just a pleasure to be here in Palatine. And also the mayor, who I have had the opportunity of meeting and speaking to previously. It is great to see this first-hand.

Mr. HORN. Thank you.

Let me just make a little setting for this hearing. We are here to discuss, as most of you know, the year 2000 computer problem. Some call it the Y2K problem. And we know that the year 2000 computing problem affects just about every aspect of Federal, State and local government operations. Also non-profit operations, private sector organizations and the lives of many of us, million of us in this country and throughout the world. It was estimated in our hearings 2½ years ago that this is roughly a $300 billion problem for the United States. We are half the computers in the world. And $300 billion for the outside world. That estimate by the Gartner Group has gone up now to $1 trillion, and the estimate at the time of our first hearing, which was April 1996, was that the Federal Government would have to expend about $30 billion in order to fix the situation.

Now, for some of you who have not followed this, what this is all about is, in the 1960's when we had these huge mainframe computers that would take up the whole room and had very little capacity—in fact, your personal computer has more capacity today than a room full of mainframes had in the 1960's. Somebody said well hey, why are we constantly using a four digit year? Instead of 1967, why do we not simply put in '67 and we can save all that space in our storage, which was very limited at the time. That is what they did. Now, they knew then they would have a problem when the year 2000 came. That the figures would be 00, not 2000, and the computer would not know if that is 2000, whether it is 1900 or whatever it is. And out of that situation is where we are today at a fairly costly situation.

We have had only one Federal agency move on its own initiative without any President, Republican or Democratic, or their Office of Management and Budget saying you need to do something about it, and that was Social Security. They started on this in 1989. They have been considered by many the best run agency in Washington for 30 or 40 years that I am aware of it. They are probably about 93 percent fixed right now, and no one will have to worry about their Social Security check or their disability check or whatever check it is. But to give you an example of the interconnections, they do not cut their own checks. They have the tape of who is eligible for what, and the Financial Management Service in Treasury cuts those checks. They are not in good shape. They keep assuring me they will be, and we will know in another few months whether they can; otherwise we will probably have to give Social Security its own authority to cut their own checks. But the Financial Management Service, generally very helpful in a number of areas, has been very weak in converting from the year 2000 situation. So it is a good example of where you have one agency that has pretty well perfected what has to be done, and another one that does not.

It is the same problem all over the world. We are in a global economy. Plants here in Illinois have subsidiaries abroad and European firms have subsidiaries in Illinois, so we have to make sure these computers can talk to each other in a reasonable way. Our hearings in the field, where we have now visited in the last few weeks New York, Dallas, New Orleans, Cleveland, Indianapolis and now Palatine in Illinois have taught us a lot. We have been

particularly interested in the power grid and that situation. We know nuclear power is the basis for a lot of the power in the State of Illinois and its industry. We recently had the General Motors strike that everybody sort of worried about. That is a drop in the bucket affecting our economy compared to a power outage which runs much of the assembly of almost anything you and I can think of in small business, large business, medium-sized business.

The Speaker designated this subcommittee and the Subcommittee on Technology of the House Committee on Science that is chaired by Mrs. Morella as the comparable committee to what the Senate recently put together, which is the Select Committee by Senator Bennett. So we have two sides of the rotunda of the Capitol, the Senate and the House, that are working on this matter as an oversight committee. The witnesses that come before us we will swear in—since we are part of the House Committee of Government Reform and Oversight, and we by tradition swear in all witnesses.

The bottom line of this is that these entities that I have cited, like the Financial Management Service and the Department of Defense, that Mr. Crane noted, are not in very good shape now. They have millions of embedded chips. They do not know where they all are. They do not know where all of the instructions are. And as was noted by Mr. Crane, $500 an hour is not too far away from some of these contracts because they are bringing out of retirement people who knew COBOL in the 1960's. Now some of you my age will know what COBOL is. Many of the people now being educated to be programmers have very little understanding of it, so people are now coming out of retirement to help us decipher and unravel some of the mysteries we still see in some of these programs.

So we have a very good list of witnesses today. We hope to learn a lot more as a result of this hearing. If panel one will come forward, we will swear you in. Mr. Willemssen, Director, U.S. General Accounting Office; Mr. Vetter, manager, Bureau of Communication and Computer Services, State of Illinois, who is accompanied by Randy von Liski. Please have Mr. von Liski with you. Ms. Beth Boatman, chief information officer for the city of Chicago and Lee Plate, the director of information systems here for your own Village of Palatine. So if you will raise your right hands.

[Witnesses sworn.]

Mr. HORN. The clerk will note that all five witnesses have affirmed the oath. We will begin as we have at all of these hearings with Mr. Joel Willemssen. He is the Director of the civil accounting portion of the Accounting and Information Management Division of the U.S. General Accounting Office. The GAO, as we call it, is part of the legislative branch. They have done an outstanding job in this area. Every Congress, regardless of who controls it, they issue a series of reports; what are the best practices, what are the high risk areas of the Federal Government. Our committee has followed those seriously, as have other authorization committees such as Mr. Crane's Ways and Means Committee, where we try to improve Government, to simplify it, to make it smaller, to make it more effective, to be results-oriented. Mr. Willemssen has been very helpful in going into the particular agencies with his fine staff and find-

ing out if they are telling us the truth, and we have had a lot of cases where they were not telling us the truth.

The Pentagon is one example. They had a series of critical-missions systems that they had identified and were presumably doing something about. They gave the allusion of that in the next report. We knew something was wrong and he went over there. The Inspector General of Defense turned in a report and said hey, they are not telling you the truth. They are redefining what a critical-mission thing is. They are not fixing it, they are not dealing with it. So the GAO is our agency to go in and find out what the truth is, and come back and report.

In that context, I will call on Mr. Willemssen to give us the latest information the GAO has put together. Thank you.

STATEMENTS OF JOEL WILLEMSSEN, DIRECTOR, ACCOUNTING AND INFORMATION MANAGEMENT DIVISION, U.S. GENERAL ACCOUNTING OFFICE; WILLIAM VETTER, MANAGER, BUREAU OF COMMUNICATION AND COMPUTER SERVICES, STATE OF ILLINOIS, ACCOMPANIED BY RANDY VON LISKI, MANAGER, INFORMATION MANAGEMENT SERVICES; BETH BOATMAN, CHIEF INFORMATION OFFICER, CITY OF CHICAGO; AND LEE PLATE, ACTING VILLAGE MANAGER, VILLAGE OF PALATINE

Mr. WILLEMSSEN. Thank you, Mr. Chairman, Congressman Crane, and Congressman Davis. Thank you for inviting GAO to testify today on the Y2K problem. I am going to briefly summarize our written statement and in doing that, I will cover three areas. One, briefly where the Federal Government currently stands on Y2K. Second, the issues confronting State and local governments and then third, talk in a little bit more detail about the critical data-exchange issue that faces many organizations, both public and private.

First of all, regarding the Federal Government. Overall, the 24 major Federal agencies continue to make slow progress. For example, in May 1997, OMB reported that about 21 percent of the mission-critical systems of these agencies were year 2000 compliant. A year later, we were up to 40 percent compliant. Obviously, at that kind of a pace, we are not going to make it in time. And, in fact, with the limited amount of time left and the daunting testing challenge ahead of us, we do not think that the Federal Government can make it for all of its mission-critical systems. Given that, it is especially important that Federal agencies embark on business continuity and contingency planning to make sure that in the event of likely systems failures, they have backup plans in place to address their mission-critical processes and systems. As you know, Mr. Chairman, the most recent set of quarterly reports have just come in from Federal agencies, and we are beginning to analyze them to again see what kind of progress is being made.

Next, let me turn to State and local governments. Similar to the Federal Government, State and local governments face major challenges in addressing Y2K, not the least of which is the infrastructure challenge, including power, water and telecommunications. They also face challenges in making sure that they continue to pro-

vide benefits payments, continue with public safety and also the transportation network.

Recent surveys of State year 2000 efforts have indicated that there is a lot still to be done. For example, there was a recent survey conducted by the Department of Agriculture that revealed that only three States had software, hardware and telecommunications that were year 2000 compliant to support the food stamp program. To effectively manage their year 2000 programs in State and local governments, they have to follow much of the same best practices that Federal agencies do. Those would include things like priority-setting, progress reporting and contingency planning.

One of the things that we have seen in the field hearings beyond the chairman getting the word out across the country, is we have also seen some best practices that could be adopted by others nationwide. For example, when we were in New York, we saw that the State there, recognizing that it could not get everything done in time, had come up with a top 40 priority list of the most important systems that had to be fixed regardless. That is the kind of best practice that we think needs to be replicated in other States and localities.

Also, when we were in Dallas, we heard about the city of Lubbock, TX, planning a year 2000 drill this month, where it would run some mock year 2000-induced failures to see what kind of contingency planning that the city could have in place to address that.

Third, let me wrap up with talking a little bit about the critical data-exchange issue. Essentially, this has to do with the fact that there are thousands—hundreds of thousands of data exchanges and interfaces between all levels of government and the private sector. The bottom line is, no matter how good an individual organization fixes its own systems, if it has not appropriately dealt with the data exchange issue, all of that good effort may go for naught because non-compliant data could get into the systems and corrupt the data of that particular organization. Dealing with the data-exchange issue is a very time-consuming, resource-intensive activity. To date, we have seen some efforts in this area, but there is a long way to go, because among the things that have to be done in dealing with this data-exchange issue is not only understanding your inventory of exchanges but you then have to assess the compliance status. You have to get in contact with your data-exchange partner, reach agreement on how you are going to send data back and forth, in what format, and then you have to test those agreements. That will be, as I said, a very lengthy process and a major challenge for all organizations to overcome. We have made several recommendations to the Office of Management and Budget on this particular issue, and we are hopeful that more action will be taken to make sure this issue is addressed.

Mr. Chairman, that concludes the summary of my statement. After the panel is finished, I would be pleased to address any questions that you may have. Thank you.

[The prepared statement of Mr. Willemssen follows:]

United States General Accounting Office

GAO

Testimony

Before the Subcommittee on Government Management, Information and Technology, Committee on Government Reform and Oversight, House of Representatives

For Release on Delivery
Expected at
10 a.m.
Thursday,
September 3, 1998

YEAR 2000 COMPUTING CRISIS

Severity of Problem Calls for Strong Leadership and Effective Partnerships

Statement of Joel C. Willemssen
Director, Civil Agencies Information Systems
Accounting and Information Management Division

GAO/T-AIMD-98-278

58-486

Mr. Chairman and Members of the Subcommittee:

Thank you for inviting us to participate in today's hearing on the Year 2000 problem. According to the report of the President's Commission on Critical Infrastructure Protection, the United States--with close to half of all computer capacity and 60 percent of Internet assets--is the world's most advanced and most dependent user of information technology.[1] Should these systems--which perform functions and services critical to our nation--suffer disruption, it could create a widespread crisis. Accordingly, the upcoming change of century is a sweeping and urgent challenge for public- and private-sector organizations alike.

Because of its urgent nature and the potentially devastating impact it could have on critical government operations, in February 1997 we designated the Year 2000 problem as a high-risk area for the federal government.[2] Since that time, we have issued over 50 reports and testimony statements detailing specific findings and recommendations related to the Year 2000 readiness of a wide range of federal agencies.[3] We have also

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[1]Critical Foundations: Protecting America's Infrastructures (President's Commission on Critical Infrastructure Protection, October 1997).

[2]High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997).

[3]A list of these publications is included as an attachment to this statement.

issued guidance to help organizations successfully address the issue.[4]

Today I will briefly discuss the Year 2000 risks facing the nation; highlight our major concerns with the federal government's progress in correcting its systems; identify state and local government Year 2000 issues; and discuss critical Year 2000 data exchange issues.

RISK OF YEAR 2000 DISRUPTION TO THE PUBLIC IS HIGH

The public faces a high risk that critical services provided by the government and the private sector could be severely disrupted by the Year 2000 computing crisis. Financial transactions could be delayed, flights grounded, power lost, and national defense affected. Moreover, America's infrastructures are a complex array of public and private enterprises with many interdependencies at all levels. These many interdependencies among governments and within key economic sectors could cause a single failure to have adverse repercussions. Key economic sectors that could be seriously affected if their systems are not Year 2000 compliant include information and telecommunications;

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[4]Year 2000 Computing Crisis: An Assessment Guide (GAO/AIMD-10.1.14, September 1997), which addresses the key tasks needed to complete each phase of a Year 2000 program (awareness, assessment, renovation, validation, and implementation); Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, August 1998), which describes the tasks needed to ensure the continuity of agency operations; and Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, Exposure Draft, June 1998), which discusses the need to plan and conduct Year 2000 tests in a structured and disciplined fashion.

banking and finance; health, safety, and emergency services; transportation; power and water; and manufacturing and small business.

The information and telecommunications sector is especially important. In testimony in June, we reported that the Year 2000 readiness of the telecommunications sector is one of the most crucial concerns to our nation because telecommunications are critical to the operations of nearly every public- and private-sector organization.[5] For example, the information and telecommunications sector (1) enables the electronic transfer of funds, the distribution of electrical power, and the control of gas and oil pipeline systems; (2) is essential to the service economy, manufacturing, and efficient delivery of raw materials and finished goods; and (3) is basic to responsive emergency services. Reliable telecommunications services are made possible by a complex web of highly interconnected networks supported by national and local carriers and service providers, equipment manufacturers and suppliers, and customers.

In addition to the risks associated with the nation's key economic sectors, one of the largest, and largely unknown, risks relates to the global nature of the problem. With the advent of electronic communication and international commerce, the United States and the rest of the world have become critically dependent on computers. However, there are indications of Year 2000 readiness problems in the international arena. For example,

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[5]Year 2000 Computing Crisis: Telecommunications Readiness Critical, Yet Overall Status Largely Unknown (GAO/T-AIMD-98-212, June 16, 1998).

a June 1998 informal World Bank survey of foreign readiness found that only 18 of 127 countries (14 percent) had a national Year 2000 program; 28 countries (22 percent) reported working on the problem; and 16 countries (13 percent) reported only awareness of the problem. No conclusive data were received from the remaining 65 countries surveyed (51 percent). In addition, a survey of 15,000 companies in 87 countries by the Gartner Group found that the United States, Canada, the Netherlands, Belgium, Australia, and Sweden were the Year 2000 leaders, while nations including Germany, India, Japan, and Russia were 12 months or more behind the United States.[6]

The Gartner Group's survey also found that 23 percent of all companies (80 percent of which were small companies) had not started a Year 2000 effort. Moreover, according to the Gartner Group, the "insurance, investment services and banking are industries furthest ahead. Healthcare, education, semiconductor, chemical processing, agriculture, food processing, medical and law practices, construction and government agencies are furthest behind. Telecom[munications], power, gas and water, software, shipbuilding and transportation are laggards barely ahead of furthest-behind efforts."

The following are examples of some of the major disruptions the public and private sectors could experience if the Year 2000 problem is not corrected.

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[6] Year 2000 World Status 2Q98 Update - A Summary Report (Gartner Group, Report #M-04-6957, July 21, 1998).

- Unless the Federal Aviation Administration (FAA) takes much more decisive action, there could be grounded or delayed flights, degraded safety, customer inconvenience, and increased airline costs.[7]

- Aircraft and other military equipment could be grounded because the computer systems used to schedule maintenance and track supplies may not work. Further, the Department of Defense could incur shortages of vital items needed to sustain military operations and readiness.[8]

- Medical devices and scientific laboratory equipment may experience problems beginning January 1, 2000, if the computer systems, software applications, or embedded chips used in these devices contain two-digit fields for year representation.

- According to the Basle Committee on Banking Supervision--an international committee of banking supervisory authorities--failure to address the Year 2000 issue would cause banking institutions to experience operational problems or even bankruptcy.

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[7]FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998).

[8]Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998).

Recognizing the seriousness of the Year 2000 problem, on February 4, 1998 the President signed an executive order that established the President's Council on Year 2000 Conversion led by an Assistant to the President and comprised of one representative from each of the executive departments and from other federal agencies as may be determined by the Chair. The Chair of the Council was tasked with the following Year 2000 roles: (1) overseeing the activities of agencies; (2) acting as chief spokesperson in national and international forums; (3) providing policy coordination of executive branch activities with state, local, and tribal governments; and (4) promoting appropriate federal roles with respect to private-sector activities.

MUCH WORK REMAINS TO CORRECT THE FEDERAL GOVERNMENT'S YEAR 2000 PROBLEM

Addressing the Year 2000 problem in time will be a tremendous challenge for the federal government. Many of the federal government's computer systems were originally designed and developed 20 to 25 years ago, are poorly documented, and use a wide variety of computer languages, many of which are obsolete. Some applications include thousands, tens of thousands, or even millions of lines of code, each of which must be examined for date-format problems.

The federal government also depends on the telecommunications infrastructure to deliver a wide range of services. For example, the route of an electronic Medicare payment may traverse several networks--those operated by the Department of Health

and Human Services, the Department of the Treasury's computer systems and networks, and the Federal Reserve's Fedwire electronic funds transfer system. In addition, the year 2000 could cause problems for the many facilities used by the federal government that were built or renovated within the last 20 years and contain embedded computer systems to control, monitor, or assist in operations. For example, building security systems, elevators, and air conditioning and heating equipment could malfunction or cease to operate.

Agencies cannot afford to neglect any of these issues. If they do, the impact of Year 2000 failures could be widespread, costly, and potentially disruptive to vital government operations worldwide. Nevertheless, overall, the government's 24 major departments and agencies are making slow progress in fixing their systems. In May 1997, the Office of Management and Budget (OMB) reported that about 21 percent of the mission-critical systems (1,598 of 7,649) for these departments and agencies were Year 2000 compliant.[9] A year later, in May 1998, these departments and agencies reported that 2,914 of the 7,336 mission-critical systems in their current inventories, or about 40 percent, were

[9]The Social Security Administration's (SSA) mission-critical systems were not included in these totals because SSA did not report in May 1997 on a system basis. Rather, SSA reported at that time, and again in August 1997, on portions of systems that were compliant. For example, SSA reported on the status of 20,000-plus modules rather than 200-plus systems.

compliant.[10] However, unless agency progress improved dramatically, a substantial number of mission-critical systems will not be compliant in time.

In addition to slow governmentwide progress in fixing systems, our reviews of federal agency Year 2000 programs have found uneven progress. Some agencies are significantly behind schedule and are at high risk that they will not fix their systems in time. Other agencies have made progress, although risks continue and a great deal of work remains. The following are examples of the results of some of our recent reviews.

- Last month, we testified[11] about the Federal Aviation Administration's (FAA) progress in implementing a series of recommendations we had made earlier this year to assist FAA in completing overdue awareness and assessment activities.[12] These recommendations included assessing how the major FAA components and the aviation industry would be affected if Year 2000 problems were not corrected in time and completing inventories of all information systems, including data interfaces. Officials at both FAA and the Department of Transportation agreed with these recommendations, and the agency has made progress in implementing them. In our

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[10]The agencies latest quarterly reports were due in mid-August. We are in the process of obtaining and analyzing these reports.

[11]GAO/T-AIMD-98-251, August 6, 1998.

[12]Year 2000 Computing Crisis: FAA Must Act Quickly to Prevent Systems Failures (GAO/T-AIMD-98-63, February 4, 1998) and FAA Computer Systems: Limited Progress on Year 2000 Issue Increases Risk Dramatically (GAO/AIMD-98-45, January 30, 1998).

August testimony, we reported[13] that FAA had made progress in managing its Year 2000 problem and had completed critical steps in defining which systems needed to be corrected and how to accomplish this. However, with less than 17 months to go, FAA must still correct, test, and implement many of its mission-critical systems. It is doubtful that FAA can adequately do all of this in the time remaining. Accordingly, FAA must determine how to ensure continuity of critical operations in the likely event of some systems' failures.

- In October 1997, we reported that while SSA had made significant progress in assessing and renovating mission-critical mainframe software, certain areas of risk in its Year 2000 program remained.[14] Accordingly, we made several recommendations to address these risk areas, which included the Year 2000 compliance of the systems used by the 54 state Disability Determination Services[15] that help administer the disability programs. SSA agreed with these recommendations and, in July 1998, we reported that actions to implement these recommendations had either been taken or were underway.[16] Further, we found that SSA has maintained its place as a federal leader in addressing Year 2000 issues and has made significant progress in achieving

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[13]GAO/T-AIMD-98-251, August 6, 1998.

[14]Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997).

[15]These include the systems in all 50 states, the District of Columbia, Guam, Puerto Rico, and the Virgin Islands.

[16]Social Security Administration: Subcommittee Questions Concerning Information Technology Challenges Facing the Commissioner (GAO/AIMD-98-235R, July 10, 1998).

systems compliance. However, essential tasks remain. For example, many of the states' Disability Determination Service systems still had to be renovated, tested, and deemed Year 2000 compliant.

- Our work has shown that much likewise remains to be done in the Department of Defense and the military services.[17] For example, our recent report on the Navy found that while positive actions have been taken, remediation progress had been slow and the Navy was behind schedule in completing the early phases of its Year 2000 program.[18] Further, the Navy had not been effectively overseeing and managing its Year 2000 efforts and lacked complete and reliable information on its systems and on the status and cost of its remediation activities. We have recommended improvements to the Department of Defense and the military services' Year 2000 programs with which they have concurred.

In addition to these examples, our reviews have shown that many agencies had not adequately acted to establish priorities, solidify data exchange agreements, or develop contingency plans. Likewise, more attention needs to be devoted to (1) ensuring that the government has a complete and accurate picture of Year 2000 progress, (2) setting

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[17]Defense Computers: Year 2000 Computer Problems Put Navy Operations At Risk (GAO/AIMD-98-150, June 30, 1998), Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program (GAO/AIMD-98-53, May 29, 1998), GAO/AIMD-98-72, April 30, 1998, and Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998).

[18]GAO/AIMD-98-150, June 30, 1998.

governmentwide priorities, (3) ensuring that the government's critical core business processes are adequately tested, (4) recruiting and retaining information technology personnel with the appropriate skills for Year 2000-related work, and (5) assessing the nation's Year 2000 risks, including those posed by key economic sectors. I would like to highlight some of these vulnerabilities, and our recommendations made in April 1998 for addressing them.[19]

- First, governmentwide priorities in fixing systems have not yet been established. These governmentwide priorities need to be based on such criteria as the potential for adverse health and safety effects, adverse financial effects on American citizens, detrimental effects on national security, and adverse economic consequences. Further, while individual agencies have been identifying mission-critical systems, this has not always been done on the basis of a determination of the agency's most critical operations. If priorities are not clearly set, the government may well end up wasting limited time and resources in fixing systems that have little bearing on the most vital government operations. Other entities have recognized the need to set priorities. For example, Canada has established 48 national priorities covering areas such as national defense, food production, safety, and income security.

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[19] Year 2000 Computing Crisis: Potential for Widespread Disruption Calls for Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998).

- Second, business continuity and contingency planning across the government has been inadequate. In their May 1998 quarterly reports to OMB, only four agencies reported that they had drafted contingency plans for their core business processes. Without such plans, when unpredicted failures occur, agencies will not have well-defined responses and may not have enough time to develop and test alternatives. Federal agencies depend on data provided by their business partners as well as services provided by the public infrastructure (e.g., power, water, transportation, and voice and data telecommunications). One weak link anywhere in the chain of critical dependencies can cause major disruptions to business operations. Given these interdependencies, it is imperative that contingency plans be developed for all critical core business processes and supporting systems, regardless of whether these systems are owned by the agency. Our recently issued guidance aims to help agencies ensure such continuity of operations through contingency planning.[20]

- Third, OMB's assessment of the current status of federal Year 2000 progress is predominantly based on agency reports that have not been consistently reviewed or verified. Without independent reviews, OMB and the President's Council on Year 2000 Conversion have little assurance that they are receiving accurate information. In fact, we have found cases in which agencies' systems compliance status as reported to OMB has been inaccurate. For example, the DOD Inspector General estimated that almost three quarters of DOD's mission-critical systems reported as compliant in

[20]GAO/AIMD-10.1.19, August 1998.

November 1997 had not been certified as compliant by DOD components.[21] In May 1998, the Department of Agriculture reported 15 systems as compliant, even though these were replacement systems that were still under development or were planned for development.[22] (The department removed these systems from compliant status in its August 1998 quarterly report.)

- Fourth, end-to-end testing responsibilities have not yet been defined. To ensure that their mission-critical systems can reliably exchange data with other systems and that they are protected from errors that can be introduced by external systems, agencies must perform end-to-end testing for their critical core business processes. The purpose of end-to-end testing is to verify that a defined set of interrelated systems, which collectively support an organizational core business area or function, will work as intended in an operational environment. In the case of the year 2000, many systems in the end-to-end chain will have been modified or replaced. As a result, the scope and complexity of testing--and its importance--is dramatically increased, as is the difficulty of isolating, identifying, and correcting problems. Consequently, agencies must work early and continually with their data exchange partners to plan and execute effective end-to-end tests. So far, lead agencies have not been designated to take responsibility for ensuring that end-to-end testing of processes and supporting

[21] Year 2000 Certification of Mission-Critical DOD Information Technology Systems (DOD Office of the Inspector General, Report No. 98-147, June 5, 1998).

[22] Year 2000 Computing Crisis: USDA Faces Tremendous Challenges in Ensuring That Vital Public Services Are Not Disrupted (GAO/T-AIMD-98-167, May 14, 1998).

systems is performed across boundaries, and that independent verification and validation of such testing is ensured. We have set forth a structured approach to testing in our recently released exposure draft.[23]

In our April 1998 report on governmentwide Year 2000 progress, we made a number of recommendations to the Chair of the President's Council on Year 2000 Conversion aimed at addressing these problems. These included

- establishing governmentwide priorities and ensuring that agencies set agencywide priorities,
- developing a comprehensive picture of the nation's Year 2000 readiness,
- requiring agencies to develop contingency plans for all critical core business processes,
- requiring agencies to develop an independent verification strategy to involve inspectors general or other independent organizations in reviewing Year 2000 progress, and

[23]GAO/AIMD-10.1.21, Exposure Draft, June 1998.

- designating lead agencies responsible for ensuring that end-to-end operational testing of processes and supporting systems is performed.

We are encouraged by actions the Council is taking in response to some of our recommendations. For example, OMB and the Chief Information Officers Council adopted our guide providing information on business continuity and contingency planning issues common to most large enterprises as a model for federal agencies.[24] However, as we recently testified before this Subcommittee, some actions have not been fully addressed--principally with respect to setting national priorities and end-to-end testing.[25]

STATE AND LOCAL GOVERNMENTS FACE SIGNIFICANT YEAR 2000 RISKS

State and local governments also face a major risk of Year 2000-induced failures to the many vital services--such as benefits payments, transportation, and public safety--that they provide. For example,

- food stamps and other types of payments may not be made or could be made for an incorrect amount,

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[24]GAO/AIMD-10.1.19, August 1998.

[25]Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO/T-AIMD-98-205, June 10, 1998).

- date-dependent signal timing patterns could be incorrectly implemented at highway intersections, and safety severely compromised, if traffic signal systems run by state and local governments do not process four-digit years correctly, and

- criminal records (i.e., prisoner release or parole eligibility determinations) may be adversely affected by the Year 2000 problem.

Recent surveys of state Year 2000 efforts have indicated that much remains to be completed. For example, a July 1998 survey of state Year 2000 readiness conducted by the National Association of State Information Resource Executives, Inc., found that only about one third of the states reported that 50 percent or more of their critical systems[26] had been completely assessed, remediated, and tested.

In a June 1998 survey conducted by the Department of Agriculture's Food and Nutrition Service, only 3 and 14 states,[27] respectively, reported that the software, hardware, and telecommunications that support the Food Stamp Program, and the Women, Infants, and Children program, were Year 2000 compliant. Although all but one of the states reported that they would be Year 2000 compliant by January 1, 2000, many of the states

[26]Critical systems were defined as "systems that effect public safety, public health, and financial and personnel aspects of government services."

[27]The Food and Nutrition Service included the District of Columbia, Guam, Puerto Rico, and the Virgin Islands in its survey. The Food and Nutrition Service did not verify the information provided by the states.

reported that their systems are not due to be compliant until after March 1999 (the federal government's Year 2000 implementation goal). Indeed, 4 and 5 states, respectively, reported that the software, hardware, and telecommunications supporting the Food Stamp Program, and the Women, Infants, and Children program would not be Year 2000 compliant until the last quarter of calendar year 1999, which puts them at high risk of failure due to the need for extensive testing.

State audit organizations have identified other significant Year 2000 concerns. For example, (1) Illinois' Office of the Auditor General reported that significant future efforts were needed to ensure that the year 2000 would not adversely affect state government operations,[28] (2) Vermont's Office of Auditor of Accounts reported that the state faces the risk that critical portions of its Year 2000 compliance efforts could fail,[29] (3) Texas' Office of the State Auditor reported[30] that many state entities had not finished their embedded systems[31] inventories and, therefore, it is not likely that they will complete their embedded systems repairs before the Year 2000, and (4) Florida's Auditor General has issued several reports detailing the need for additional Year 2000 planning at various

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[28]Bureau of Communications and Computer Services Third Party Review (July 1, 1998).

[29]State Auditor's Report On Vermont's Year 2000 Preparedness For The Period Ending April 1, 1998 (May 5, 1998).

[30]A Review of Oversight for the State's Embedded Systems Year 2000 Repair Efforts (SAO Report No. 98-056, August 10, 1998).

[31]Embedded systems are special-purpose computers built into other devices. They are used in, for example, security systems, prison control units, and certain medical equipment.

district school boards and community colleges.[32] State audit offices have also made recommendations, including the need for increased oversight, Year 2000 project plans, contingency plans, and personnel recruitment and retention strategies.

In the course of these field hearings, states and municipalities have testified about Year 2000 practices that could be adopted by others. For example:

- New York established a "top 40" list of priority systems having a direct impact on public health, safety, and welfare, such as systems that support child welfare, state aid to schools, criminal history, inmate population management, and tax processing. According to New York, "the Top 40 systems must be compliant, no matter what."

- The city of Lubbock, Texas is planning a Year 2000 "drill" this month. To prepare for the drill, Lubbock is developing scenarios of possible Year 2000-induced failures, as well as more normal problems (such as inclement weather) that could occur at the change of century.

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[32]Examples of these reports include, Report on Audit of the Alachua County District School Board For The Fiscal Year Ended June 30, 1997 (Report No. 13219, April 21, 1998) and Operational Audit of the District Board of Trustees Broward Community College For The Period July 1, 1996 through June 30, 1997 (Report No. 13222, April 30, 1998). The Year 2000 work for these reports was performed in early 1998.

- Louisiana established a $5 million Year 2000 funding pool to assist agencies experiencing emergency circumstances in mission-critical applications and which are unable to correct the problems with existing resources.

Regarding Illinois, according to the state's Year 2000 Internet World Wide Web site, it had created a repository of information on vendor claims regarding the Year 2000 compliance of software packages in use by various state agencies. In addition, Illinois' Treasurers Office announced in July 1998 the creation of a Year 2000 Initiative task force comprised of public and private officials from 10 regions in the state. This task force is charged with monitoring the progress of all financial vendors doing business with Illinois.

FEDERAL/STATE DATA EXCHANGES CRITICAL TO DELIVERY OF SERVICES

To fully address the Year 2000 risks that states and the federal government face, data exchanges must also be confronted—a monumental issue. As computers play an ever-increasing role in our society, exchanging data electronically has become a common method of transferring information among federal, state, and local governments. For example, the Social Security Administration exchanges data files with the states to determine the eligibility of disabled persons for disability benefits. In another example, the National Highway Traffic Safety Administration provides states with information needed for driver registrations. As computer systems are converted to process Year 2000

dates, the associated data exchanges must also be made Year 2000 compliant. If the data exchanges are not Year 2000 compliant, data will not be exchanged or invalid data could cause the receiving computer systems to malfunction or produce inaccurate computations.

Our recent report[33] on actions that have been taken to address Year 2000 issues for electronic data exchanges[34] revealed that federal agencies and the states use thousands of such exchanges to communicate with each other and other entities. For example, federal agencies reported that their mission-critical systems have almost 500,000 data exchanges with other federal agencies, states, local governments, and the private sector.

To successfully remediate their data exchanges, federal agencies and the states must (1) assess information systems to identify data exchanges that are not Year 2000 compliant; (2) contact exchange partners and reach agreement on the date format to be used in the exchange; (3) determine if data bridges and filters are needed and, if so, reach agreement on their development; (4) develop and test such bridges and filters,[35] (5) test and

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[33]Year 2000 Computing Crisis: Actions Needed on Electronic Data Exchanges (GAO/AIMD-98-124, July 1, 1998).

[34]To perform this review, we developed and sent a data collection instrument to survey 42 federal departments, all states, the District of Columbia, and Puerto Rico.

[35]A bridge is used to convert incoming 2-digit years to 4-digit years or to convert outgoing 4-digit years to 2-digit years. A filter is used to screen and identify incoming noncompliant data to prevent it from corrupting data in the receiving system.

implement new exchange formats; and (6) develop contingency plans and procedures for data exchanges.

At the time of our review, much work remained to ensure that federal and state data exchanges will be Year 2000 compliant. About half of the federal agencies reported during the first quarter of 1998 that they had not yet finished assessing their data exchanges. Moreover, almost half of the federal agencies reported that they had reached agreements on 10 percent or fewer of their exchanges,[36] few federal agencies reported having installed bridges or filters, and only 38 percent of the agencies reported that they had developed contingency plans for data exchanges.

Further, the status of the data exchange efforts of 15 of the 39 state-level organizations that responded to our survey was not discernable because they were not able to provide us with information on their total number of exchanges and the number assessed. Of the 24 state-level organizations that provided actual or estimated data, they reported, on average, that 47 percent of the exchanges had not been assessed. In addition, similar to the federal agencies, state-level organizations reported having made limited progress in reaching agreements with exchange partners, installing bridges and filters, and developing contingency plans. However, we could draw only limited conclusions on the

[36]This does not include the status of agreements reported by the Federal Reserve. The Federal Reserve controls the data exchange software used by its partners and does not need to reach agreement with exchange partners on formats.

status of the states' actions because data were provided on only a small portion of states' data exchanges.

To strengthen efforts to address data exchanges, we made several recommendations to OMB. In response, OMB agreed that it needed to increase its efforts in this area. For example, OMB noted that federal agencies had provided the General Services Administration with a list of their data exchanges with the states. In addition, as a result of an agreement reached at an April 1998 federal/state data exchange meeting,[37] the states were supposed to verify the accuracy of these initial lists by June 1, 1998.[38] OMB also noted that the General Services Administration is planning to collect and post information on its Internet World Wide Web site on the progress of federal agencies and states in implementing Year 2000 compliant data exchanges.

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[37]Initial agreements between the federal government and the states on steps to address Year 2000 data exchange issues were reached at an October 1997 state/federal summit, sponsored by the federal Chief Information Officer Council and National Association of State Information Resource Executives, Inc., and hosted by the Commonwealth of Pennsylvania.

[38]According to the National Association of State Information Resource Executives, Inc., as of early August 1998, 16 states had completed the verification of their federal/state data exchanges and an additional 9 states had completed 80 percent of the verification.

In summary, federal, state, and local efforts must increase substantially to ensure that major service disruptions do not occur. Greater leadership and partnerships are essential if government programs are to meet the needs of the public at the turn of the century.

Mr. Chairman, this concludes my statement. I would be happy to respond to any questions that you or other members of the Subcommittee may have at this time.

GAO REPORTS AND TESTIMONY ADDRESSING THE YEAR 2000 CRISIS

FAA Systems: Serious Challenges Remain in Resolving Year 2000 and Computer Security Problems (GAO/T-AIMD-98-251, August 6, 1998)

Year 2000 Computing Crisis: Business Continuity and Contingency Planning (GAO/AIMD-10.1.19, August 1998)

Internal Revenue Service: Impact of the IRS Restructuring and Reform Act on Year 2000 Efforts (GAO/GGD-98-158R, August 4, 1998)

Social Security Administration: Subcommittee Questions Concerning Information Technology Challenges Facing the Commissioner (GAO/AIMD-98-235R, July 10, 1998)

Year 2000 Computing Crisis: Actions Needed on Electronic Data Exchanges (GAO/AIMD-98-124, July 1, 1998)

Defense Computers: Year 2000 Computer Problems Put Navy Operations At Risk (GAO/AIMD-98-150, June 30, 1998)

Year 2000 Computing Crisis: A Testing Guide (GAO/AIMD-10.1.21, Exposure Draft, June 1998)

Year 2000 Computing Crisis: Testing and Other Challenges Confronting Federal Agencies (GAO/T-AIMD-98-218, June 22, 1998)

Year 2000 Computing Crisis: Telecommunications Readiness Critical, Yet Overall Status Largely Unknown (GAO/T-AIMD-98-212, June 16, 1998)

GAO Views on Year 2000 Testing Metrics (GAO/AIMD-98-217R, June 16, 1998)

IRS' Year 2000 Efforts: Business Continuity Planning Needed for Potential Year 2000 System Failures (GAO/GGD-98-138, June 15, 1998)

Year 2000 Computing Crisis: Actions Must Be Taken Now to Address Slow Pace of Federal Progress (GAO/T-AIMD-98-205, June 10, 1998)

Defense Computers: Army Needs to Greatly Strengthen Its Year 2000 Program (GAO/AIMD-98-53, May 29, 1998)

Year 2000 Computing Crisis: USDA Faces Tremendous Challenges in Ensuring That Vital Public Services Are Not Disrupted (GAO/T-AIMD-98-167, May 14, 1998)

Securities Pricing: Actions Needed for Conversion to Decimals (GAO/T-GGD-98-121, May 8, 1998)

Year 2000 Computing Crisis: Continuing Risks of Disruption to Social Security, Medicare, and Treasury Programs (GAO/T-AIMD-98-161, May 7, 1998)

IRS' Year 2000 Efforts: Status and Risks (GAO/T-GGD-98-123, May 7, 1998)

Air Traffic Control: FAA Plans to Replace Its Host Computer System Because Future Availability Cannot Be Assured (GAO/AIMD-98-138R, May 1, 1998)

Year 2000 Computing Crisis: Potential For Widespread Disruption Calls For Strong Leadership and Partnerships (GAO/AIMD-98-85, April 30, 1998)

Defense Computers: Year 2000 Computer Problems Threaten DOD Operations (GAO/AIMD-98-72, April 30, 1998)

Department of the Interior: Year 2000 Computing Crisis Presents Risk of Disruption to Key Operations (GAO/T-AIMD-98-149, April 22, 1998)

Tax Administration: IRS' Fiscal Year 1999 Budget Request and Fiscal Year 1998 Filing Season (GAO/T-GGD/AIMD-98-114, March 31, 1998)

Year 2000 Computing Crisis: Strong Leadership Needed to Avoid Disruption of Essential Services (GAO/T-AIMD-98-117, March 24, 1998)

Year 2000 Computing Crisis: Federal Regulatory Efforts to Ensure Financial Institution Systems Are Year 2000 Compliant (GAO/T-AIMD-98-116, March 24, 1998)

Year 2000 Computing Crisis: Office of Thrift Supervision's Efforts to Ensure Thrift Systems Are Year 2000 Compliant (GAO/T-AIMD-98-102, March 18, 1998)

Year 2000 Computing Crisis: Strong Leadership and Effective Public/Private Cooperation Needed to Avoid Major Disruptions (GAO/T-AIMD-98-101, March 18, 1998)

Post-Hearing Questions on the Federal Deposit Insurance Corporation's Year 2000 (Y2K) Preparedness (AIMD-98-108R, March 18, 1998)

SEC Year 2000 Report: Future Reports Could Provide More Detailed Information (GAO/GGD/AIMD-98-51, March 6, 1998)

Year 2000 Readiness: NRC's Proposed Approach Regarding Nuclear Powerplants (GAO/AIMD-98-90R, March 6, 1998)

Year 2000 Computing Crisis: Federal Deposit Insurance Corporation's Efforts to Ensure Bank Systems Are Year 2000 Compliant (GAO/T-AIMD-98-73, February 10, 1998)

Year 2000 Computing Crisis: FAA Must Act Quickly to Prevent Systems Failures (GAO/T-AIMD-98-63, February 4, 1998)

FAA Computer Systems: Limited Progress on Year 2000 Issue Increases Risk Dramatically (GAO/AIMD-98-45, January 30, 1998)

Defense Computers: Air Force Needs to Strengthen Year 2000 Oversight (GAO/AIMD-98-35, January 16, 1998)

Year 2000 Computing Crisis: Actions Needed to Address Credit Union Systems' Year 2000 Problem (GAO/AIMD-98-48, January 7, 1998)

Veterans Health Administration Facility Systems: Some Progress Made In Ensuring Year 2000 Compliance, But Challenges Remain (GAO/AIMD-98-31R, November 7, 1997)

Year 2000 Computing Crisis: National Credit Union Administration's Efforts to Ensure Credit Union Systems Are Year 2000 Compliant (GAO/T-AIMD-98-20, October 22, 1997)

Social Security Administration: Significant Progress Made in Year 2000 Effort, But Key Risks Remain (GAO/AIMD-98-6, October 22, 1997)

Defense Computers: Technical Support Is Key to Naval Supply Year 2000 Success (GAO/AIMD-98-7R, October 21, 1997)

Defense Computers: LSSC Needs to Confront Significant Year 2000 Issues (GAO/AIMD-97-149, September 26, 1997)

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Defense Computers: Improvements to DOD Systems Inventory Needed for Year 2000 Effort (GAO/AIMD-97-112, August 13, 1997)

Defense Computers: Issues Confronting DLA in Addressing Year 2000 Problems (GAO/AIMD-97-106, August 12, 1997)

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Veterans Benefits Computer Systems: Uninterrupted Delivery of Benefits Depends on Timely Correction of Year-2000 Problems (GAO/T-AIMD-97-114, June 26, 1997)

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High-Risk Series: Information Management and Technology (GAO/HR-97-9, February 1997)

(511477)

State of Illinois

Year 2000 Project

Prepared By

The Illinois Year 2000 Project Office

September 1998

State of Illinois
Year 2000 Project

Introduction:

The Year 2000 Project within the State of Illinois continues to evolve similarly to those of many other large governments and the private business sector. The Project initially started as an information technology (I/T) initiative and has since become one of the largest business challenges ever undertaken by the State, encompassing multiple disciplines throughout State government. The issues associated with this project have been and continue to be, well publicized throughout the state, the nation, and the world. These issues must be addressed and resolved by all state agencies in order to avoid a negative impact on the health, safety, and welfare of the citizens of Illinois. It is imperative this effort does not jeopardize the state's accountability for spending, delivery of service to customers, and revenue streams. To this end, the agencies have been requested to prioritize this effort at the same level as legislatively mandated directives.

The advent of Senate Bill 1674, the Year 2000 Technology Task Force Act, has expanded the focus of State Government into an outreach program for municipalities, counties, and townships. The bill has also united all elements of State Government including the Elected Offices, the General Assembly, the Justice Department, and the Educational Institutions to provide a consolidated strategy to address the Year 2000 issues.

This report is intended to provide a history of the project, a macro view of the current status of the project, and a strategy for addressing the remaining effort over the next fifteen months. The information contained herein represents the collective understanding from various representatives of the State as of September 1998.

58-486

Project History:

The State agencies have been aggressively pursuing the various aspects of the Year 2000 issue in order to minimize the impact of the arrival of the new millennium. Several agencies had the foresight to begin addressing their internal Y2K effort in the mid-1980's and early 1990's, prior to a formal Statewide initiative. In 1996, Central Management Services (CMS) was charged with the responsibility of addressing the Year 2000 effort from a Statewide perspective. CMS is meeting this challenge by providing a leadership and advisory role to all State agencies under the Governor in developing a uniform impact assessment, project methodology, and State project reporting standards, through cooperation and information/expertise sharing among the various State agencies.

In support of the Year 2000 Project, CMS hosted a Gartner Group presentation in April 1996, featuring Kevin Schick, a leading expert on the issue. During the summer of 1996, CMS also hosted three vendor presentations for State personnel. Two assessment surveys and an E-Mail survey were conducted to further assist State agencies in awareness and assessment during 1996.

In October 1996, a full time Year 2000 Project Manager was assigned to the project and the Illinois Year 2000 Project Office was established. CMS initially procured four Y2K-Specific software support tools to assist the agencies in identification, remediation, and testing for the Year 2000 Project. In February 1998, two additional mainframe computer software tools were acquired. Further support tools will be evaluated as availability and needs are identified. Training has been, and will continue to be, made available to all State agency I/T staffs for these existing computer tools.

The State of Illinois Year 2000 Technical User Group (TUG) was formed in December 1996, with the 23 key State agencies represented. The objective of this group is to promote vertical and horizontal awareness, and provide a forum for the exchange of information between State agencies that are impacted by the Y2K challenge. A sub-committee of TUG was formed to address Infrastructure issues for the State, and a second team of 19 State agencies, the PC Year 2000 Task Force, was formed in June 1997 to address specific issues inherent with personal computers and associated software.

Project History

In October 1997, the Manager of the Bureau of Communications and Computer Services attended a national summit meeting of State and Federal representatives to discuss the Year 2000 project with focus on Electronic Data Interchanges and to develop guidelines and interchange standards. During this time period, the CMS Central Computer Facility (CCF) established dedicated mainframe capabilities for Year 2000 certification testing for all State agencies.

The Illinois Year 2000 Project Office developed ***The Illinois Year 2000 Planning Guide*** and distributed this to agencies during a Y2K presentation in July 1997. The Planning Guide represents a systematic and cohesive process of addressing all phases of the Year 2000 effort by each agency and established the foundation for the Illinois Year 2000 effort. The results are expected to provide a comprehensive and consistent identification of the overall magnitude and time requirements for each phase. There are nine phases defined in the Year 2000 effort:

- Awareness - to ensure the entire agency is aware of the Year 2000 issues and to gain management commitment;
- Inventory - to produce a complete list of systems and applications operated by the agency;
- Assessment - to identify which business practices and/or systems need to be modified, enhanced, or replaced;
- Solution Design and Planning - to develop the agency's Year 2000 solution(s), plan the detailed activities, and identify the overall project costs and schedule;
- Remediation - to execute the plans developed within the time and cost estimates;
- Validation - to ensure the applications are tested thoroughly and are accepted by user management prior to certification and production implementation;
- Certification - to ensure all applications are thoroughly tested using a Year 2000 compliant test computer;
- Implementation - to integrate the application into the business practice; and
- Monitoring/Post Implementation Review - to ensure the business practices are operating accurately and to perform a review of Year 2000 projects.

The Planning Guide identifies the deliverables, reporting requirements, and target dates associated with the effort. Each agency was to submit an inventory to the Illinois Year 2000 Project Office on or before August 29, 1997, with the assessment report due by September 30, 1997, and the planning report by November 14, 1997.

Project History

The agencies began reporting their progress on a quarterly basis as of December 1997. The agency specific reports have been and continue to be used to collect status information and to guide the agencies in their efforts. Included in the Quarterly reports are the agencies' appraisal of:

- their overall project completeness;
- detailed budget information and staff requirements by Fiscal Year;
- status reports for their computer hardware, software and firmware on all platforms;
- progress on their electronic data interfaces;
- vendor / supplier communications;
- status of their contingency plans;
- and specific plans for each critical system.

These reports are submitted with the agencies' assessments at the end of each calendar quarter.

The Federal Government has requested information from all States, including Illinois. In January 1998, the Illinois Year 2000 Project Office surveyed the agencies to provide the United States General Accounting Office with pertinent data related to Electronic Data Exchanges between the Federal Government and the State of Illinois. Surveys and questionnaires continue to be routed to the various agencies to support their Federal Government counterparts.

Agencies with specific Federal interfaces have been responding and cooperating with guidelines and requirements established by those Federal agencies.

Illinois participated in the National Governors' Association summit meeting in July 1998 and continues to work closely with the National Association of State Information Resource Executives (NASIRE) in their Year 2000 initiatives.

The Illinois Year 2000 Project Office has frequently polled other States to address specific Year 2000 issues. Illinois has joined and is participating with the Multi State Year 2000 Teleconference Team and the State of Illinois is a registered member of the Midwest Year 2000 SharING Group currently meeting in St. Louis.

Project History

An Infrastructure subcommittee has initiated contact with the state's utilities, telecommunications, and other service providers to determine their Year 2000 status. This effort will continue to expand, with the implementation of a focus group to address all external infrastructure issues within the State.

CMS hosted an Embedded Systems and Infrastructure Seminar in May 1998 to assist the agencies in addressing their embedded systems and internal infrastructure issues. In June 1998, the Project Office provided a Year 2000 embedded systems awareness presentation to the State leasing managers. The Year 2000 Embedded Systems Coordinator was assigned in July and is developing a State of Illinois Year 2000 Embedded Systems Guide to provide to the State's building and leasing managers, a step-by-step approach to address their embedded systems. This oversight activity is to ensure that facilities and equipment within State buildings will continue to function in the Year 2000.

The Project Office implemented an "Enterprise" web site in October 1997. This site is for exclusive use by State agencies to share information and experiences, and to report activities related to the Year 2000 Project.

The most recent Illinois Summary Report includes Status, Planning, and Systems information, reported by the agencies as of June 30, 1998. The intent of the report is to provide the reader with a complete picture, at a glance, of the Year 2000 compliance status of all State of Illinois agencies which report to the Governor.

The agencies are developing plans, with associated costs and staff estimates, to deal with the following major elements of the Year 2000 Project:

- Computer Software and Hardware
- Electronic Data Exchanges (Federal, Other State, Local Governments, and Private Business)
- Vendors and Suppliers
- Contingency Planning.

Conclusion

Beyond the efforts put forth by the State of Illinois, to guide state government into the year 2000, other efforts have taken place and will continue and broaden.

We have less than sixteen months to prepare. Our efforts will continue in Computer Programming, accelerate in Systems Testing, and with a whole different set of resources, push forward in the testing and replacement where micro chips are used.

The State of Illinois must be concerned for the health, safety and well being of all its citizens at all times. Y2K creates an unusual opportunity to address plausible exposure of all citizens at one time, no matter where they are or what they might be doing.

Awareness for all citizens continues to be a top need. The convening of the Subcommittee hearing is an excellent vehicle for highlighting the potential problems and solutions associated with the turn of the century. Awareness, communications and effort will minimize any negative outcome as we enter the new millennium.

This Subcommittee is to be commended for this effort.

Mr. HORN. If I might add, Joel, there is one fact here I think is new to the subcommittee, and that is that study by the Gartner Group you mentioned. They did a survey of 15,000 companies in 87 countries, and they found the United States, Canada, Netherlands, Belgium, Australia and Sweden were the year 2000 leaders, while nations including Germany, India, Japan, and Russia were 12 months or more behind the United States. That is one of our major problems, when you have got a developing world and even an advanced world, as with Germany and Japan, we have problems, and we will have them right down to the wire.

Let me now go to our next speaker Mr. Vetter, manager of the Bureau of Communication and Computer Services for the State of Illinois. He is accompanied by Randy von Liski, the manager of the Information Management Services for the State of Illinois. We are particularly interested in what the States are doing because of the tremendous interconnections with the Federal Government. So we look forward to your testimony. Thank you for coming.

Mr. VETTER. Thank you, Chairman Horn and Congressman Crane, and Congressman Davis. I want to personally thank you for calling this hearing. I guess I need to thank somebody like the Speaker of the House for having the intelligence to put together the committee in the first place because all of that brings an importance to the problem that I think is very necessary. This hearing, as your many other hearings, I believe gives an opportunity to bring additional awareness to the potential problems to be faced with the advent of the year 2000.

Our agency has statutory responsibility for the management or the delegation of management of the procurement, installation, maintenance and operation of all electronic data-processing equipment used by State agencies subject to the Governor. Also, we have the duty to install and operate a modern information system utilizing equipment adequate to satisfy the requirements of the same agency. Now within these responsibilities, the Department of Central Management Services has established a project 2000 office with a goal of providing a leadership and advisory role to all the agencies. Numerous efforts have been developed to this end.

First, a significant awareness campaign which has been centrally coordinated since early 1996. In fact, we kicked it off by having a seminar with Mr. Schick, who a week after appeared before your people.

Second, the Illinois 2000 planning guide, which represents a systematic and cohesive process of addressing all phases of the year 2000 effort, including awareness, inventory, assessment, solution design and planning, remediation, validation, certification, implementation and monitoring with post-implementation reviews.

Third, a set of deliverables, reporting requirements and target dates required from the agencies.

Fourth, a coordination of reports to the Federal Government, including data related to the electronic data exchanges, as already mentioned, between the Federal Government and the State of Illinois as requested by the U.S. General Accounting Office.

Fifth, establishment of a separate mainframe computer specifically utilized for year 2000 testing and certification with all compliant operating software and discovery remedial software.

Sixth, participation in year 2000 summit meetings for Federal and State CIOs where standards were developed and approaches and problems are discussed.

Seventh, establishment of a technical users group made up of Y2K coordinators from our State's different agencies to promote vertical and horizontal awareness and to provide a forum for the exchange of information between agencies.

Eighth, a subcommittee from that technical users group to address infrastructure issues and to specifically address exchanges of data between entities within and outside of State government.

Ninth, a PC year 2000 task force formed to address the issues inherent to personal computers and associated software.

Tenth, assignment of a year 2000 embedded system coordinator to provide the oversight activity to ensure that facilities and equipment within State buildings will continue to function properly in the year 2000.

All of the above are being guided and encouraged to put focus on contingency planning.

Eleventh, legislative establishment of the year 2000 technology task force within Illinois, which expands oversight efforts to all of State government, including all elected offices, general assembly, justice department and educational institutions and an outreach program for local government.

Many of our agencies began to address the Y2K challenge several years ago, even in the 1980's, as did Social Security, and have completed their conversions. Others have had specific instances of exposure to year 2000 already, such as in licensing, and have provided for those needs. Our main ally is awareness, awareness, awareness; thus, we see this hearing, and those like it, to be of extreme importance in addressing this worldwide issue.

I, too, will be happy to answer questions after the panel is finished.

Mr. HORN. Would you like to add anything, Mr. von Liski, at this point?

Mr. VON LISKI. No thank you.

Mr. HORN. OK, Ms. Boatman, Beth Boatman is the chief information officer for the city of Chicago. We are delighted to have you here. When I was in Cleveland, we had a little fun with the chief information officer for Cuyahoga County because they started telling us about the election board, and I said I can hardly wait to get to Chicago and see if the resurrection day of 1936 is still around. So you are my source. [Laughter.]

Ms. BOATMAN. We are just happy there is no election in 2000 for the mayor. [Laughter.]

Good morning, Mr. Chairman, Congressman Crane, Congressman Davis. We are delighted to be here and talk to you about Chicago's approach to the year 2000 project that we have had active since November 1996. I am particularly grateful to Mayor Daley for talking me into this job in November 1993.

Mr. HORN. Remember you are under oath here. [Laughter.]

Ms. BOATMAN. So far, everything I have said is true. [Laughter.]

We began trying to conquer the year 2000 problem by breaking it into three different parts. We see it as an information systems problem, No. 1. Also, an embedded systems problem and a business

partner and third party issue, again related to how we get information and services from our suppliers.

We started in November 1996 by performing an initial mainframe inventory, including our electronic interfaces. We then began, after we kind of figured out what our initial scope of the problem was by issuing an awareness campaign in the winter of 1997 where we visited all 42 department heads and four associated agencies. At that point, we started making some decisions. The mayor had made some decisions regarding actually trying to improve the way the city delivered services. So it actually played very well into our plans for improvement. So we made some decisions in the winter of 1997 about replacement strategies as opposed to remediation strategies, and began working on the requirements and the business process improvements as part of that.

Later that year, we increased our scope in the spring, and we started analyzing those things that we were not going to replace, what kinds of things were going to break before the year 2000. And we also assessed all of our business systems for mission criticality. That's how we started our prioritization. In your packet, there is a table of what we consider our mission-critical systems and where they are in their stage of remediation or replacement.

Beginning in the fall of 1997, we did our distributed network inventory and assessment. So we went out and touched and inventoried every PC, every piece of communications equipment, printers, faxes, those kinds of things. We actually found 10,000 of them out there, of which 35 to 40 percent of them failed.

We are in the middle of privatizing the maintenance and support of our distributed network and our mainframe at this point. So we will begin replacement of those systems this fall. We are ready to sign a contract for that within the next week or two.

This spring, what we decided to do was, we formed a Y2K executive committee at the city's level with the CIO, the chief financial officer and the budget director, the corp. counsel of the city and the mayor's office. The goal of that committee is really to start taking a look at our third-party business partners that are not necessarily electronic business partners. The folks like Commonwealth Edison; our telephone suppliers; the guys who, you know drive trucks at our construction sites, those kind of things. And to also start to tackle the embedded-systems issue. Now we do have an initial inventory of where we think we have embedded chips. We are, next week, advertising an RFQ for somebody to come in and help us—a request for qualifications for someone to come help us manage that project.

Next week, we have our initial meeting with cross-agency Y2K committees. So that will include the city agencies like the CTA, which provides transportation. I see they are on your second panel. The park district, the schools, the water reclamation district that does sewage cleaning and Cook County. Of course, they collect our taxes, so that is kind of important to us.

We also hired outside counsel last month. They are starting our third-party surveying for us, and they are taking a look at our contract compliance issues at this point, and our Y2K language.

Contingency planning, the Y2K executive committee with the CIO, the CFO and the budget director are creating contingency plans at this point.

We are also working on putting a committee together that will study the societal issues, things that are really outside Mayor Daley's control in terms of whether they are year 2000 compliant that will affect the citizens of Chicago anyway. So that will be a—with our real estate concerns in the city, people that provide services to the citizens, cable companies, those kind of things.

Additionally we have—or are in the process of procuring outside audit services. We are making really good progress, we think, on the remediation of our code. We are hoping to have our mission-critical systems remediated. We hoped for December 1998. It is looking like it is probably going to be during the first quarter of 1999 that it will be complete. At that point, we would like to have somebody come in and audit the work that we have done.

That pretty much completes where we are on this project thus far.

[The prepared statement of Ms. Boatman follows:]

City of Chicago
Mayor Richard M. Daley

Year 2000 Project Summary

Department of Business and Information Services
Elizabeth A. Boatman - Chief Information Officer

September 3, 1998

City of Chicago Year 2000 Plan
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- **Introduction and Scope**
- **History of Year 2000 Effort**
- **Project Plan and Organization**
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City of Chicago Year 2000 Plan
Introduction and Scope

The City of Chicago is comprised of **42 departments** and **4 associated agencies**, with approximately **40,000 employees** serving a population of nearly **7 million residents**. The City's technology systems are maintained by the Department of Business and Information Services, under the direction of Chief Information Officer Beth Boatman.

The Department of Business and Information Services is responsible for the City's technology applications and infrastructure, including mainframes, mid-range and LAN servers, personal computer terminals, communications networks, and other miscellaneous equipment. (see Table in Attachments)

The City's Year 2000 (Y2K) effort is divided into three primary categories including:

- **Information Technology**
- **Embedded Systems**
- **Third Parties and Business Partners**

City of Chicago - Year 2000 Project Plan
Introduction and Scope (cont.)

The **Information Technology** (IT) component of the Y2K project includes all systems serving the various City departments and agencies, including hardware, software, and networking for both mainframe and distributed environments.

The mainframe environment consists of hardware, systems software and applications serving the various departments' needs. Of the 42 departments, a total of 35 have applications that reside in the mainframe environment. At this time, all mainframe applications have been assessed for Year 2000 compliance, equaling a total of 4.2 million lines of code in the mission critical applications.

The distributed environment is comprised of nearly 10,000 PCs, midrange servers and communications devices. The distributed hardware and software have been inventoried and assessed for Y2K compliance. Replacement or remediation of non-compliant components will begin in the 4th quarter of 1998 and continue through the 1st quarter of 1999.

City of Chicago - Year 2000 Project Plan
Introduction and Scope (cont.)

The scope of the City's Y2K effort for **embedded systems** includes operational systems for approximately 600 primary buildings, 7,000 vehicles, 3 airports, water purification and distribution, 26,000 street lights, and city-wide Fire,EMS, Police and 911 and other services.

The City of Chicago also has significant interest in **business partners** that provide products and services to the City, as well as various third party vendors, businesses and governmental agencies that share information with the City. The City's Y2K effort includes the formation of a public/private consortium that will study societal issues beyond direct responsibility of the City. Examples of these partnerships include banks, real estate concerns, utilities and transportation authorities.

Additionally, a cross-agency task force has been established to share information, techniques and status across various levels of local government and other public agencies.

The budget for **1998** Y2K efforts is **$28 Million**.

The budget for **1999** is being finalized, and it is estimated at **$24 Million, including $8 Million for the City's Water Department**.

City of Chicago - Year 2000 Project Plan
History of Year 2000 Effort

A brief history of the City's Y2K efforts include:
(see Project Timeline in Attachments)

- Completed inventory and assessment of the mainframe software in November 1996, identifying those applications which were Year 2000 compromised.
- Kicked off its Year 2000 Project with a Y2K Awareness Campaign and User Group in February 1997.
  - All City Commissioners (Department Heads) were briefed on the definition of the Year 2000 problem and their role in helping to solve it.
  - Representatives from each department were assigned to the User Group to serve as points of communication and accountability.
- In January 1997, completed an initial disposition of affected systems, and slated many of the Y2K compromised systems to be replaced with new technology rather than renovated.
- Began requirements gathering and system selection activities for replacement systems projects.

City of Chicago - Year 2000 Project Plan
History of Year 2000 Effort (cont.)

- Began remediation activities for key applications that will not be replaced, in the Fall of 1997.
- Event horizons were calculated for the mainframe and server software in February 1998.
- Completed the assessment of the distributed network in May 1998.
  - All PCs, servers, communication devices, and printers were inventoried and assessed for compliance.
  - Additionally, server software was inventoried and assessed.
- Created a City Y2K Executive Steering Committee in May 1998. This Committee meets every month and members include the CFO, CIO, Budget Director, Corporation Counsel, Comptroller, and Mayor's Office. The Committee tracks overall Y2K readiness and activity, focusing on facilities, fleet, security and other non-information processing areas affected by the Y2K problem (Embedded Systems) including:
  - City business partners that must be compliant by the Year 2000
  - Status of agency and private entities related to the City

City of Chicago - Year 2000 Project Plan
History of Year 2000 Effort (cont.)

- Staffed the City-wide Project Management Office to serve as the central point of coordination and communication for all Y2K activities in August 1998.
- PMO will also focus on the testing approach and environment, as well as risk management and contingency planning.
- Hired outside counsel in August 1998 to assist in the business partner assessment, review contracts and documentation for Y2K issues, and to assist in external communications
- RFQ released in September 1998 to solicit management assistance for embedded systems and for outside audit services.
- Planned an Agency Task Force for September 1998 to include the City, Parks, Schools, CTA, and City Colleges Water Reclamation, and Cook County.
- A public/private consortium is being planned to help the City look at societal issues beyond those for which the City is directly responsible but which would affect the citizens of Chicago.

City of Chicago - Year 2000 Project Plan
Project Organization

Project Organization
(see Organization Chart below)

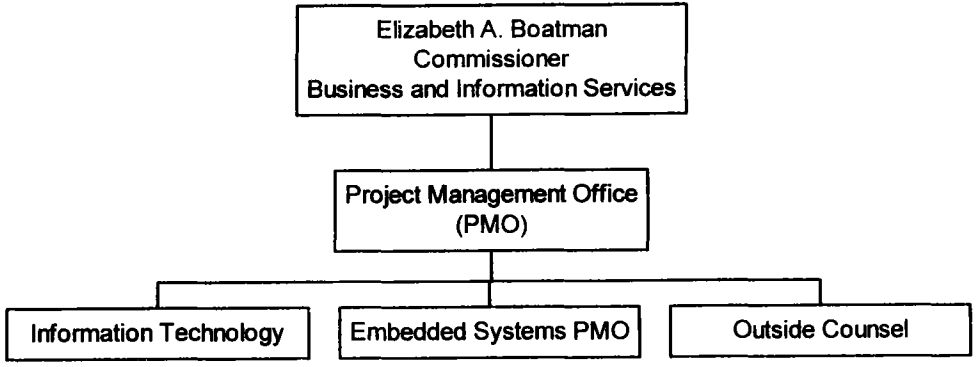
The City's Year 2000 project is focused on collaborative efforts and clear lines of communication. The City's Year 2000 Project Team consists of the CIO and staff from the Department of Business & Information Services. The Project Team is directed by the City's Year 2000 Executive Committee.

The Executive Committee receives regular updates regarding project planning and status from the CIO and the Project Management Office (PMO), established as the communications clearinghouse for the project. Additionally, the PMO also maintains the project workplan and a database for tracking project issues. The CIO and project team meet weekly with the PMO to monitor progress and address project issues.

The project team and PMO manage external and internal communications as well as the ongoing work efforts of the three primary components of the project effort: Information Technology, Embedded Systems, and Outside Counsel.

City of Chicago - Year 2000 Project Plan

Year 2000 Project Organization (cont.)



- Technical Analysis
- Risk Assessment
- Remediation
- Testing
- Vendor Management
- 3rd Party Interfaces
- Communications

- Inventory Embedded Systems
- Assessment/Remediation
- Contingency Planning
- Communications

- 3rd Party Business Partners (non-technical)
- Contracts Review
- Documentation Review
- External Communication

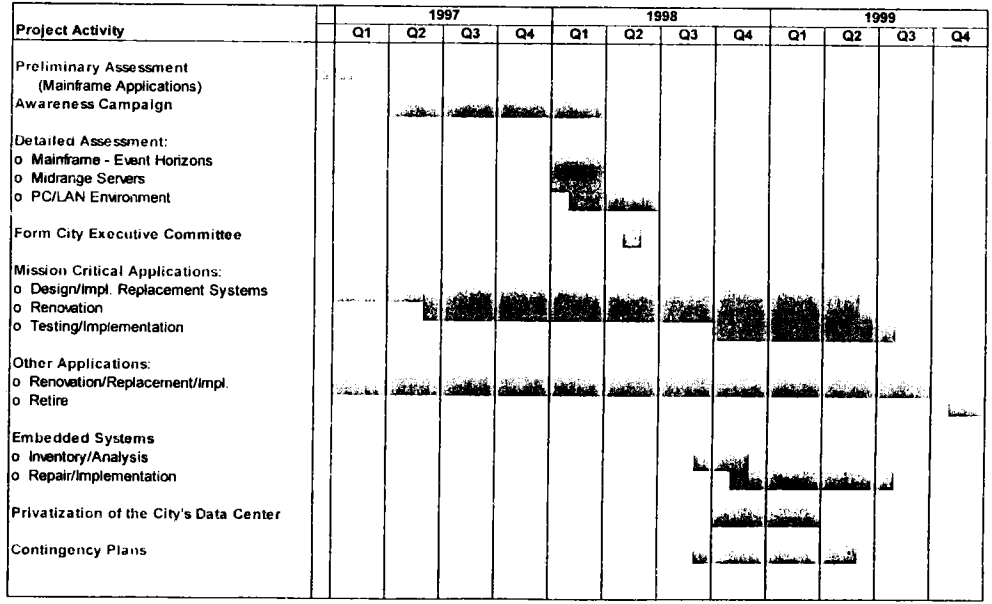
Attachments

City of Chicago - Year 2000 Project Plan
Attachment - Mission Critical Applications

CATEGORY	MISSION CRITICAL APPLICATIONS					PERCENT PHASE COMPLETION		
	Total Number	Compliant	Replace	Repair	Retire	Assessed	Replaced/ Renovated	Certified
PUBLIC SAFETY	5	1	1	3	0	100%	20%	0%
PUBLIC INFRASTRUCTURE	7	1	6	0	0	100%	45%	0%
REGULATORY	6	1	3	2	0	100%	45%	0%
CITY DEVELOPMENT	1	0	1	0	0	100%	80%	0%
COMMUNITY SERVICES	2	0	1	1	0	100%	40%	0%
FINANCE AND ADMINISTRATION	11	1	1	9	0	100%	90%	0%
OTHER AGENCIES	0	0	0	0	0	---	---	---
TOTAL	32	4	13	15	0			

City of Chicago - Year 2000 Project Plan

Attachment - Project Timeline



Mr. HORN. Well we thank you for that overview. You have a very interesting series of charts there that we have gone over. I congratulate you on that presentation.

Ms. BOATMAN. Thank you.

Mr. HORN. Our last member on this panel is Lee Plate, director of Information Systems for the Village of Palatine.

Mr. PLATE. Thank you, Mr. Chairman. I wish I could share in Ms. Boatman's enthusiasm for being selected for this position today. Normally, I talk to computers, and I win all of those arguments generally. But again, thank you for the opportunity to speak to this issue today.

The Village of Palatine embraced Y2K as a project in February 1998 at the direction of the village manager and village council. As a TQM-based organization, we began by selecting representation from a cross section of each of our service areas. We exposed them to the overall issue through outside seminar training and began the process of establishing a plan. As time went on, we quickly discovered that the magnitude of this project was moving beyond our means.

In order to guarantee compliance in each of our service delivery areas, both internal and external, we have to assume responsibility for nearly every major corporation in America. Our council wisely decided not to budget that philosophy. Our focus quickly narrowed down to two strategic areas, our internal operations and the external influences.

We are in the process of addressing our inside operations by testing all of our current IT-related hardware. We have taken steps through software manipulation to correct potential computer failure. Because of this—because this is, in effect, an unfunded mandate, we are also including budget requests back to the council for replacement of those systems that cannot be fixed in a long term, cost-efficient manner. In the next few months, we will parallel most of our network operations on a phantom network, configured to think as though it were rolling over into the year 2000. That testing will continue on through much of 1999.

We are examining our existing data base structures to evaluate the extent of our exposure. That piece is about 50 percent completed. The solutions for maintaining our data integrity will be driven by the final result of that process due in December 1999.

The Y2K success of nearly everything else we do is dependent on others. Maintaining our expense and revenue streams is contingent on the tax collection system, the local banking system, right down to the post office being able to deliver the mail. We may be able to print a lot of checks, but if the money cannot get transferred to our account, we are not accomplishing much.

Our primary call is the delivery of the health, safety and welfare to our customers, the citizens of Palatine. At the most basic level, our customers expect, and are entitled to, fire, ambulance, police responses and the delivery of water and sewer services. While we are prepared for that delivery on an internal basis, all are contingent upon outside vendors solving their problems. If the fire engine will not start and the ambulance defibrillator will not fire, the police dispatch system will not dispatch and the water pumps will not start, we have a problem. What can we do?

Our team has identified more than 200 potential issues that fall under the control of others for resolution. Our approach to these complicated issues was to exercise our due diligence by requesting all our vendors' status on their Y2K issues. We prepared a standard form letter asking a number of pointed questions with regard to their progress in dealing with Y2K issues. Needless to say, our responses are very interesting. In some respects, it would seem that all of our letters went to the same person. "Our company takes the year 2000 issue very seriously" was the opening line of most of our responses. They go on to say how they are looking into how it affects them and how a serious effort is underway to be in compliance by 1999. So we are cataloging those responses, attempting to measure their impact on our ability to provide continuous services to our customers. However, each of those companies that we questioned has the same matrix above them that we have and that they are dependent on. So we are all pretty much in the same position. For us, it translates to this is, at the root, a supply-channel issue, not necessary an IT issue.

I do not know that we will have a contingency plan in place for every possible failure by the time that the clock changes. Prudent management mandates a proactive response as to how we all are going to be spending our New Year's Day. We are working diligently to shore up those mission-critical operations with an effort to project what might happen. We will test as much as we can, anticipate as much as we can, have our resources standing by ready to serve, and wait just like everybody else. The bottom line to all the information available to date is simple, we do not have a clue. The expert predictions range from nothing is going to happen to the second coming of Christ. I would like to think we are somewhere in between those two poles.

I might paraphrase part of an excellent essay, "The Year 2000: Social Chaos or Social Transformation?" by Petersen, Wheatley and Kellner-Rogers. Local government is not immune to the modern business reliance on networks. We have vendors, suppliers and customers, all of which are managed by networked, computerized data bases. These networks mean that no one system can protect itself from Y2K failures by just attending to its own internal systems. The fragility of the systems is magnified by the fact that we cannot see the extent of our connectedness. We will only discover our vulnerability when those interconnections are disrupted. Never before have we seen the potential for such an impact on our lives with an absolutely immovable deadline. We will soon see the ways in which technology has woven the modern world together and our ability to adapt to that unknown.

Thank you.

[The prepared statement of Mr. Plate follows:]

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Member:
Northwest Municipal Conference
Illinois Municipal League
National League of Cities
U.S. Conference of Mayors

September 3, 1998

Field Hearing on "Oversight of the Year 2000 Problem: Lessons to Be Learned from State and Local Experiences."

Submitted by: Lee Plate, Acting Director of Information Systems
Village of Palatine (847) 359-9088

Chairman Horn, members of the subcommittee, distinguished panel members:

Thank you for the opportunity to speak to this issue today. My name is Lee Plate. I'm the acting Director of Information Systems for the Village of Palatine, and the project leader for our Y2K team.

The Village of Palatine embraced Y2K as a project in February of 1998 at the direction of the Village Manager and Council. As a TQM-based organization, we began by selecting representation from a cross section of each of our service areas. We exposed them to the overall issue through outside seminar training, and began the process of establishing a plan. As time went on, we discovered that the magnitude of this project was quickly moving beyond our means.

In order to guarantee compliance in each of our service delivery areas, both internal and external, we have to assume responsibility for nearly every major corporation in America. Our Council wisely decided not to budget that position.☺ Our focus quickly narrowed down to two strategic areas:

- Inside Operations
- Outside Influences

Inside Operations:

We are in the process of addressing our inside operations by testing all our current I.T. related hardware. We've taken steps, through software manipulation, to correct potential computer failure. Because this is, in effect, an unfunded mandate, we are also including budget requests back to the Council for replacement of those systems that cannot be fixed in a long term, cost-efficient manner. In

- the next few months we will parallel most of our network operations on a "phantom" network, configured to "think" it is rolling over to the year 2000. That testing will continue on through much of 1999.
  We are examining existing database structures to evaluate the extent of our exposure. That piece is about 50% completed. The solutions for maintaining our data integrity will be driven by the final result of that process, scheduled for December of 1998.

Outside Influences:

The Y2K success of nearly everything else we do is dependent on others. Maintaining our expense and revenue streams is contingent on the tax collection system, local banking operations, right down to the Post Office delivering the mail. We may be able to print a lot of checks, but if the money can't get transferred to our account, then we've not accomplished anything.

Our primary call is the delivery of the "health, safety, and welfare" set to our customers, the citizens of Palatine. At the most basic level, our customers expect, and are entitled to, fire, ambulance, and police responses, and the delivery of water and sewer services. While we are prepared for that delivery on an internal basis, all are contingent upon outside vendors solving their problems. If the fire engine won't start, the ambulance defibrillator won't fire, the police dispatch system won't dispatch, and the pumps won't start, we've got a problem. So, what can we do?

Our team identified more than 200 potential issues that fall under the control of others for resolution. Our approach to these complicated issues was to exercise our "due diligence" by requesting all our vendors' status on Y2K. We prepared a standard form letter, asking a number of pointed questions with regard to the vendor's progress in dealing with the Y2K issue. Needless to say, our responses have been interesting. In some respects, it would seem most of the letters went to the same person. At some point, nearly every one of our responses states, "Our company takes the Year 2000 issue very seriously." They go on to say they are looking into how it affects them, and are making a serious effort to be in compliance by the end of 1999. We're cataloging these responses and attempting to measure their impact on our ability to provide continuous service to our customers. However, each company questioned has a matrix of companies above them that puts them in the same position that we are in. This is, at its root, a supply channel issue.

I don't know that we will have a contingency plan in place for every possible failure at the point the clock changes. Prudent management mandates a pro-active response as to how we're all going to spend our New Year's Day. We're working diligently to shore up those mission-critical operations with an effort to project what might happen. We'll test as much as we can, anticipate as much as we can, have our resources standing ready to serve, and wait . . . just like everyone else. The bottom line to all the information available to date is simple. We don't know what's going to happen. The "expert" predictions range from nothing, to the second coming of Christ. I'd like to think it will be somewhere in between those two poles.

Summary:

I might paraphrase part of the excellent essay, **The Year 2000: Social Chaos or Social Transformation?**, by Petersen, Wheatley, and Kellner-Rogers. Local government is not immune to the modern business reliance on networks. We have vendors, suppliers, and customers, all of which are managed by networked, computerized databases. These networks mean that no one system can protect itself from Y2K failures by just attending to its own internal systems. The fragility of these systems is magnified by the fact that we can't see the extent of our connectedness. We'll only discover our vulnerability when these interconnections are disrupted. Never before have we seen the potential for such an impact on our lives with an absolutely immovable deadline. We will soon see the ways in which technology has woven the modern world together and our ability to adapt to the unknown.

Thank you.

Mr. HORN. Well, we thank you. We will now throw it open to questions. I am going to ask our host, and your representative in Washington, Mr. Crane, to begin the questioning. It is 10 minutes a person, and Mr. Davis next and finally myself.

Mr. Crane.

Mr. CRANE. Thank you, Mr. Chairman.

Mr. Willemssen, is the Federal Government in any position to help, given the problems it is having in becoming Y2K prepared?

Mr. WILLEMSSEN. The Federal Government, given where it is on Y2K overall, some agencies are in much better shape than others. But it is clear that for some of those agencies that are not in as good shape, they are not going to be able to make it in time with all of their mission-critical systems. That is why we have been pushing hard for business continuity and contingency planning, especially in those situations.

Mr. CRANE. I have heard that the Social Security Administration is perhaps the most advanced.

Mr. WILLEMSSEN. I would concur with that assessment. We have conducted evaluations at many of the Federal agencies, including the Social Security Administration, and they are the best I have seen. Why is that? In part, they got an early start and——

Mr. CRANE. Well, wait. Can you elaborate? Why did they get an early start?

Mr. WILLEMSSEN. In part because they saw—the Y2K ramifications hit them early. They have actuarial projections going many years out into the future, and so they actually had a Y2K-induced failure in 1989.

Mr. CRANE. And they did not share that information with other departments?

Mr. WILLEMSSEN. Oh, yes, they shared the information.

Mr. CRANE. And the others ignored it?

Mr. WILLEMSSEN. I think that is a good generalization, yes, sir.

Mr. CRANE. The most profound concern I have deals with our Defense Department.

Mr. WILLEMSSEN. The Defense Department, we share your concern. There is sort of a mixed message there. One, DOD has a massive number of systems. Two, their progress has not been good to date. They have a long way to go. Even as late as a few months ago, they were still assessing systems, an activity that for all intents and purposes should have been done over a year ago. On the other side, what we have recently seen in the last few months is a much higher commitment on the part of senior leadership at the secretary and deputy secretary level to make this a high priority, going as far as saying that if we do not make better progress, we are stopping all the other applications and focusing on Y2K. We have also seen things like the Joint Chiefs of Staff now saying we have got to identify the most critical war-fighting systems and make sure they are done in time. So there is a mixed message. Progress is slow, a long way to go, but they have gotten the message at the highest levels in the Department of Defense now.

Mr. CRANE. It sounds like a breakdown in the CIA not superintending what was happening at Social Security and reporting it.

Let me turn to you, Mr. Vetter. You stated that agencies began reporting their progress on a quarterly basis in December 1997.

Has the State established a target completion date for its departments and agencies?

Mr. VETTER. Yes, we have, Congressman. January 1, 1999 is our target date for our systems to be completed, leaving the calendar year for things that got missed and that show up as a result of further testing and certification.

Mr. CRANE. Is it your assessment that they will meet the target, the various departments?

Mr. VETTER. With some exceptions, their targets and their plans are showing that they will make that. Those that are showing they will be a few months late, we are putting extra pressure on to back off of other types of work they might be doing. One of the obvious problems, of course, is that there are people, including our legislature, who have things they would like to have done and that obviously gets in the way of the real commitment to the Y2K.

Mr. CRANE. You stated that in January the Y2K project office conducted a survey to provide Y2K information to the GAO. Has that been accomplished?

Mr. VETTER. Yes. There have been several reports sent to the GAO. This is—these are reports in regard to the number and types of interchanges of data between the Federal Government and the State government.

Mr. CRANE. And what challenges have you faced in trying to obtain information from local governments?

Mr. VETTER. Actually the local government outreach program is brand new to us. In other words, at least as far as reporting and an overall coordinated effort is concerned. Some of the agencies within the State have normal connections with the local governments, and they have had information flowing, but it has not been brought forth into a centralized coordinated effort that we are now doing under the guise of this new task force that we have formed.

Mr. CRANE. We are going to hear from a ComEd witness in the next panel, but how would you characterize the readiness of utilities in Illinois, going beyond ComEd's concerns—power, water, sewage, telecommunications?

Mr. VETTER. Well we have the same concerns, of course, that those will be present. I happen to be on a small-town board myself, and we have done the same thing that Palatine has in regard to contacting the utilities and asking them what they are doing and how well they are. The results that we have gotten back sound good. Without going out and testing them myself, I may wonder about that. But as part of the responsibility of my bureau, we have all of the communications for the State and we deal with many, many phone companies. That has been an ongoing process with us in working with them to make sure the phone systems will continue. As you would know, there are a number of "ma and pa" outfits out there that might or might not make it, but the big ones look real good. We also own some of our own PBX systems, and those types of things are under regular scrutiny and testing now to make sure that those will work.

Mr. CRANE. Does the degree of readiness differ between Ms. Boatman's jurisdiction and Mayor Mullins' jurisdiction?

Mr. VETTER. I cannot answer that. In each case they have a different type of problem. Chicago probably has a lot more resources

to carry forth, but they have got a lot more to get done than Palatine, for example, or my town of Buffalo. So it is hard to compare them. I think the major item is that they be aware and that they make a commitment to get it done. That is the same with us, the State or the Federal Government or anybody. It is that awareness and commitment that has really got to be there. In some cases, like I said, it asks for a commitment from the higher ups to stay off of new systems, stay off of things that might pull us back from getting this job done.

Mr. CRANE. Thank you very much. Ms. Boatman, what would you say is the biggest single challenge facing the city of Chicago in preparing for the year 2000?

Ms. BOATMAN. My biggest concern right now is probably the embedded systems piece. We have 600 pieces of real estate. So those trying to get the older equipment and trying to figure out whether or not it will work and what we can do to replace it is probably my biggest concern right now—the biggest challenge we have.

Mr. CRANE. And you stated that you are working with the utility companies to try and determine if they are Y2K prepared. What has been their response?

Ms. BOATMAN. We have not gotten an official response yet. We are surveying them right now. Our outside counsel is preparing those surveys for us. What I do know at this point is informal and anecdotal, and I would be a little nervous about repeating those things. So far, we have been happy—I have been happy with I have heard informally.

Mr. CRANE. Very good. Mr. Plate, how can the State and larger cities such as Chicago help smaller local governments in becoming Y2K prepared?

Mr. PLATE. I think continuing with these kinds of forums, at least where we get the opportunity to meet together and discuss our experiences is certainly very helpful. Again, this is somewhat of an unfunded mandate on our side, so funds would be great. But pretty much I think we need to learn to rely on each other. We all bring some expertise to the table on this, and we are all interconnected in some way or another. So if we continue having forums where we can share our knowledge base, then I think that would be a good thing.

Mr. CRANE. I have been informed that my time has expired, but I appreciate your responses and appreciate your involvement in this critically important issue. God willing, we are going to survive the year 2000.

I yield back the balance of my time, Mr. Chairman.

Mr. HORN. Thank you very much.

Mr. Davis, the gentleman from Virginia for 10 minutes of questioning.

Mr. DAVIS. Thank you, Mr. Chairman.

Mr. Willemssen, let me ask a couple of questions. You testified that the 24 major agencies were making slow progress at the Federal level, most of them. Does that not mean that it is going to cost us more money the longer we wait on some of these items because of the labor market being what it is? The private sector going in and bidding for key personnel?

Mr. WILLEMSSEN. Yes, I would anticipate that the cost will be quite a bit more. The latest current estimate for the 24 agencies is about $5 billion. The estimate for those 24 agencies will continue to escalate. That does not include other costs which are also, in part, borne by the Federal Government, some of the systems that are administered by States. It also does not include many of the other independent agencies. So I would anticipate the cost increasing. I do not anticipate the cost increasing to the point of the prior estimates. Why? There is not enough time to spend that kind of money. The $30 billion estimate that was originally put out in early 1996 by Gartner, in an ideal world that estimate might have been about right. But we are not going to have the time to fix everything and, accordingly, will not be spending that amount of money.

Mr. DAVIS. Well, you do not—you will not spend it all by the year 2000, but you may be 2 or 3 or 4 years after the year 2000 still fixing and updating and correcting things.

Mr. WILLEMSSEN. I would anticipate there will be a significant fixup after January 2000. Yes, you are right, Congressman.

Mr. DAVIS. Is the Government out-sourcing most of this? Obviously it is difficult to keep people in-house with the kind of capability——

Mr. WILLEMSSEN. It is very mixed. I would say as a general rule though, there has been a small element of surprise in who was actually doing the remediation work itself. More of the remediation was being done internally than I think originally was anticipated, and more of the out-sourcing and contractor support has been in the area of independent verification and validation of activities—assistance with contingency planning, assistance with testing, as opposed to actually remediating the code itself. Now every agency is a little bit different, but having looked at most of them, that is my general view of it.

Mr. DAVIS. The Federal Government can have its programs working, but then the programs they are talking to at the State and local level, the embedded microchips and, of course, foreign governments, and in FAA, these kind of issues raise a whole host of concerns, which is why testing is so important to try to get some of that out.

Mr. WILLEMSSEN. That is right.

Mr. DAVIS. Give us kind of a status report on that.

Mr. WILLEMSSEN. That is why it is so imperative that we have individual mission-critical systems, the most important systems, compliant early in 1999, because then what we have to embark on is testing end-to-end critical business processes and all of the supporting systems, the interfaces, the data flows for the most important business areas or business processes. We need all of that time. So when somebody has occasionally questioned me, "Well once we get to March 31, if everything is compliant are we not OK?" No. You are talking about an individual system. We have got to think much broader than that and deal with all of those exchanges and make sure they are appropriately remediated and tested from an end-to-end perspective.

Mr. DAVIS. Last year, I remember finding that some of the Federal contracts that went out, some for information technology, that

some of the systems set up at taxpayer expense were not Y2K compliant, or at least the underlying contract did not call for them to be Y2K compliant. In fact, it appeared that some of them were not. Does the Government have a handle on that now. At least as we buy new systems that we know they are going to be up-to-date?

Mr. WILLEMSSEN. At least we have a handle on making sure that the contract language is in place requiring Y2K compliant systems. That is not to say that we will not still have a few incidents where the systems, unfortunately, are still not compliant. We have had a couple of cases that I know about in the last several months of some PC deliveries that were deemed compliant and then, in fact, when some testing was done, it was found there were some problems.

Mr. DAVIS. Did we make the contractors in those cases make them compliant, or are we stuck because of the way the contract reads?

Mr. WILLEMSSEN. The last time I checked that was still being negotiated out.

Mr. DAVIS. Mr. Chairman, I would just add that that is something we might want to look at because this is something you have been on top of and have been preaching.

Mr. HORN. We have written a letter to the administrator of GSA. Our understanding in 1996 was that they would review all software, all hardware and that it would be 2000 compliant, because we had the mess back in 1996 where the Agency for International Development on our first survey said, "oh, we do not have a problem because we are getting all new computer equipment." Well, of course, they said that it would be in conformity with the year 2000. Unfortunately, they did not write it in the contract, and they did not test it until they bought it. Then they put it in, and they found that it was not compliant with the year 2000. So you are absolutely correct. I hope Mr. Barrem, the Administrator, will come through rather than just passing the buck.

I am told that some agencies are purchasing outside of GSA, the General Services Administration. I do not know if GAO has had a chance to look at that yet. I think that last statement you made, GSA is a little wobbly on what its responsibilities are, and yet that is why it was created after the Hoover Commission, to be the central purchaser, get the economies of scale. It does that very well on airplane tickets, telephone calls, all of that. But this is a key thing where there are millions of dollars, indeed billions of dollars at stake, and I have the sense that they are not doing what they promised me they would do.

Mr. DAVIS. Let me ask a question to our State and local representatives. I know in Virginia we had a conference and one local jurisdiction said, "Well, we are going to go back and look at what we did in 1900, and we are not going to reinvent the wheel when we face this problem." So sometimes there is a lack of understanding about what is involved.

Mr. HORN. Somebody said the other day—would the gentleman yield?

Mr. DAVIS. I would be glad to.

Mr. HORN [continuing]. That Mr. McKinley would be President, and we thought those were the times of prosperity. [Laughter.]

Mr. DAVIS. I think that Senator Thurmond would still be in Congress would be about the only continuity we would have. [Laughter.]

In each case, have you started testing, or when do you expect to really start testing your systems with some of the other private-sector groups and other governmental agencies you deal with? I guess we can start with the State of Illinois and go straight on down.

Mr. VETTER. We are doing some of that already. Certainly, we are not doing everything. We have a consultant on board who guides our testing and we set up a set of cycles, 3 week cycles. And the agencies that have systems ready can bring those in, and we run them through a series of dates—date changes and make sure that they are all working. As we can, we are then running the data from system to system to check that out. That will have to be a much broader type of thing as we go along. The validation/verification is a tremendous job, and there is a lot of effort and a lot of call, if you will, for consultants to come in and do that type of thing. There will not be enough of them obviously, because everybody will want to do it at least in the year 1999, if they make it that far.

We are looking at two other possibilities for that, so that we can get a third-party look. One is within our own house so to speak. Take the auditor general and internal auditors and they do EDP auditing all the time. Let them work into a verification situation. And the other one is to work with the other States and have an exchange of people, if you will, so that we can bring in somebody from Indiana to Illinois to check out our systems. Illinois can go to Missouri and keep exchanging—you know, that type of a thing. I think we can probably make some progress that way. If we wait just to hire consultants to do our validation/verification, we will run out of time.

Mr. DAVIS. Well, let me ask and the other panelists can also respond. It is difficult sometimes finding qualified people, knowing which group is the right one. Is there any clearing house, any group you can go to so that you are sure you are getting really the best quality available in terms of the advice and the expertise you are hiring?

Mr. VETTER. Well, we used the Gartner Group a lot for that type of service.

Mr. DAVIS. Well, if they are not any good, we are all in trouble.

Mr. VETTER. Pardon me?

Mr. DAVIS. If they are not any good, we are all in trouble on this.

Mr. VETTER. We also have a number of people in my agency with a lot of past experience and we do screen, if you will, the different offerings that are made, the different consultants and that sort of thing, but obviously you cannot be 100 percent right. But any kind of references that we can get on those types of people is what we are looking for.

Mr. DAVIS. OK. Let me ask Ms. Boatman, for the same kind of comments in terms of testing and where you are in getting good people and consultants.

Ms. BOATMAN. In terms of the testing we have already done for the systems that have been remediated, one level of testing when

we remediated them. We have got a plan in the fourth quarter—we have locked in resources through our project management office who will provide the next level of testing after the code comes back from the vendor who is making the remediation. And as I said earlier, we are in the process of hiring a third level, which would be the outside auditor, in 1999.

In terms of where we are getting our folks and finding people who can actually solve this problem, I am a member of a local chief information officer group in the Chicago area, and we do have a year 2000 subcommittee there that meets every 6 to 8 weeks. I have gotten a lot of good information from that group. Additionally, we also use the Gartner Group. We all have the same numbers to play with. The committee that the executive committee is putting together right now to study societal impact of the year 2000 problem on the Chicago area, one of the other goals outside of making sure our other people who manage real estate are going to be ready, is also to trade some information among the private sector and public sector of the kinds of best practices we have been using.

Mr. DAVIS. OK.

Mr. PLATE. We are pretty confident that by the end of this year, our internal systems that come under the span of our control will be in good shape. We look forward in 1999 to testing and going into those relationships with things that are outside our span of control and seeing what is happening there.

Mr. DAVIS. You have a much smaller span of control, of course, than the other jurisdictions being a much small village, but testing is going to be more important for you because of the groups you are talking to and depending on, right?

Mr. PLATE. Right. Again, it does not necessarily help us if we can do all of our internal operations but we cannot interface with them. So, you know, we are watching with a keen eye what they are doing, as well.

Mr. DAVIS. When will your key testing back and forth go with all—the State government and the Federal Government, when will that really start in earnest?

Mr. PLATE. Next year in 1999.

Mr. DAVIS. Thank you.

My time is up, too, Mr. Chairman.

Mr. HORN. I thank the gentleman for a good series of questions.

Mr. von Liski, I think you might want to comment on that last question and on personnel.

Mr. VON LISKI. Thank you very much, Mr. Chairman. The issue of personnel, I think, is difficult for everyone because there is such a demand out there. I think one of the things that we do have in Springfield is the relative geographic isolation of the community down there, which probably keeps workers in the community a bit longer. But certainly looking for qualified candidates is a challenge. As Mr. Vetter indicated though, we do have within all of the agencies experienced managers who interview and look at the qualifications of these candidates. And, of course, in many instances what we see is our people who have come back that have been in retirement. We bring them out of retirement to come back and work on these problems—so far at this point, while I cannot say the situa-

tion is excellent, I can say that we are getting through this. I think from a personnel standpoint, we will.

Mr. HORN. The Office of Personnel Management, which reports directly to the President, did loosen the retirement rules so we could get people back at the Federal level, and they can keep their retirement money as well.

In some of our hearings, such as Dallas, the municipality there, a rather large one, as you know, said they had not lost personnel because their people looked at the benefits, the long run and the fact that this is a January 1, 2000 ending, conceivably, although we have projected some departments not conforming until 2017. [Laughter.]

But we hope they will move up a little with that stimulus, once we showed them how slow they were.

But when I think about this programmer thing, it is not completely about the year 2000, it is about programmers generally.

I have got a major concern, we have a bill out of the Senate that will be before us in the House, which, in essence, is permitting more visas to get programmers into the United States. Now what I do not understand, and I guess what got me motivated or boiling when I saw it, was what is the educational system doing in our States. I am a former university president. And what is the community college system doing in our States? And what are the Silicon Valleys of Illinois, California, Massachusetts, northern Virginia where Mr. Davis comes from, doing to work together to train the programmers this country needs? These are not cheap jobs, these are $30,000, $40,000, $50,000, $60,000 jobs. Now, that means we need K through 12 education to be talking about mathematics, among other things, and we need our high schools and we certainly need our community colleges to do this. And I just cannot understand, and I have talked to the head of the California community colleges, as well as several presidents, and said, "What is the matter with you people, why are you not sitting down with the CEOs?" Having been a State university president, I know the budget is usually two generations behind in giving the universities the latest equipment. And the only way you get that, which is what we did, is establish a relationship with industry; when they see we are doing something for them, they will do something for us. And when I left the presidency, I had 1,150 people on 50 advisory boards, all of which were doing that. But we need to do that around the country.

I do not know what is happening in Springfield, you have got a very fine university there, and one of my favorites in terms of interdisciplinary education at Sangamon State University. And I do not know if developing around Springfield are any of the technical groups, but I would think might happen, and it seems to me, we have got to bring that partnership together.

What is your comment on that?

Mr. VON LISKI. Mr. Chairman, we have in Springfield and in the State government, a long tradition of working with the colleges and universities. We have had over the years specific relationships with Lincoln Land Community College in Springfield as well as Illinois State University in Bloomington-Normal. And because State government has historically been a large scale computer user in the

mainframe sense, the need for COBOL programmers and for programmers in the more traditional languages has always been there. And we have worked very closely with the colleges to make sure that they are continuing to provide that level of training. Both Mr. Vetter and I have served on various committees with the colleges in terms of advising them on curriculum over the years, and we have had a steady stream of people who have been trained in these areas. Additionally, within State government, we also encourage this sort of thing by offering internships and those types of opportunities.

Clearly, I think we are in an industry today where many, if not almost all, young people who are going through the college system right now are being trained in newer languages. But in communities like Springfield where you have got a large mainframe type of employer and you have got large systems like we do, working with the colleges, they still are working with us to fill those needs to maintain that stream.

Like I say, I do not want to paint a picture that is totally rosy at this point, but we certainly are not in dire straits either.

Mr. HORN. Do we have any other comments on that question that you would like to add, Ms. Boatman?

Ms. BOATMAN. Thank you, Mr. Chairman. We have had several programs going on. The effort to rebuild the Chicago Housing Authority and tear down some of the large high rises and build scattered-site housing has actually provided an opportunity as we build new homes to wire them for technology. The mayor believes that, in order to get technology savvy workers in the Chicago area, we really need to start targeting our lower-income communities because that tends to be where we do not have technology in the home. He also believes it needs to be in the home in order for people to use it and be able to use it in work. So many of the CHA or all of the CHA buildings that are being built now are being wired for data access, Internet access.

Additionally, we started several programs in a close relationship with the school. One of them is called WIS, Workers in the Schools. We had CEOs and famous people from the city of Chicago in for Principal for a Day in each of the city's 550 schools. The hope there is that those schools will develop relationships with the companies and the CEOs of the companies who came in and therefore will get some donations of PCs and that kind of volunteer work into the schools.

And additionally, we also have a donation program going on in the city of Chicago so as we are turning over some of these PCs, even though they are not year 2000 compliant, we are sending them to a company who is stripping them and fixing them and donating them back to the schools and to the kids. So there are lots of things going on. We particularly are having trouble finding skilled workers, and we think that the issue is that we need to start with a different population and earlier, and that is why we put those programs together.

Mr. HORN. Any other thoughts anybody on the panel has on the personnel situation, how we develop it?

[No response.]

Mr. HORN. Let me move to another one, Ms. Boatman, you mentioned you had hired outside counsel. Is that primarily on the legal side, or is it on the computer side?

Ms. BOATMAN. We have chosen to privatize almost the whole year 2000 project for a couple reasons. One is our attrition is up near 20 percent, and we are constantly seeing people turn out of our technology department. So we did not have a whole lot of choice to use internal people. Additionally, we did not really think that we were experts on how to do this. We are experts on how the city delivers services, not necessarily how to fix year 2000 compromise code. So we have started from the beginning by using outsiders. We started with IBM, we have used Unisys, we have used AMS, we have used just about everybody, we have got a lot of different people in there, because they are bringing that expertise.

Additionally, we wanted to make sure that if something goes wrong after the year 2000 passes, that we have some due diligence that has gone on, and we can prove that by bringing in experts. The outside counsel we hired primarily to take a look at our contracting situation. We have had year 2000 compliance and remedy language in our contracts, but we are concerned not only about our technology contracts, but also the non-technology contracts. The people who deliver services, if they cannot, because they are not able to after the year 2000, we are still in trouble. So we decided to use outside services for just about the whole project, other than some of the management and oversight.

Mr. HORN. Well, what I am wondering is have you had any notice from anybody that the city might well be targeted for possible class action suits. And I would ask this really of all of you. Is there anything out there that we should be worrying about at this stage, when you are trying to fix it? Have you got a possibility facing you of some tort lawyer saying, "hey, this is the new tobacco bill," if you will.

Ms. BOATMAN. Right.

Mr. HORN. Only this will get more results, a lot of them feel, than tobacco ever might have. So tell me about it.

Ms. BOATMAN. Certainly. About a year and a half ago, I began to get worried about tort law. We do always have quite a few people who are suing the city for all kinds of different things, the whole breadth of things. I do not think the year 2000 will probably be any different. The first thing that dawned on me was the possibility of blinking yellow lights across the city and traffic lights and accidents that might happen, and you cannot claim that it was a disaster we could not predict. So, yes. I have not heard anything officially from anybody. We have not had any lawsuits filed, we have not had any failures as of yet. But that is a concern, and that is one of the reasons that we decided to hire outside counsel to help us get ready.

Mr. HORN. Does State government have any problems in this area?

Mr. VETTER. We do not know of any specific ones, but our goal is to show due diligence in getting this problem solved. The legislature has introduced a couple of bills, which I do not know the standing of right now, regarding suits in relation to Y2K. But, you

know, our goal is to be finished or to certainly have uncovered everything that we possibly could and show our due diligence.

Mr. HORN. I wonder if you could get for us what some of the bills are like in the Illinois legislature and whether they are getting anywhere. I would like to put it at this point in the record, without objection.

Mr. VETTER. We could get that for you, sir.

[The information referred to follows:]

HB-3293 BIGGERT.

New Act
705 ILCS 505/8 from Ch. 37, par. 439.8
705 ILCS 505/22 from Ch. 37, par. 439.22
745 ILCS 10/2-214 new

Creates the Computer Error Immunity Act and amends the Court of Claims Act and the Local Governmental and Governmental Employees Tort Immunity Act. Grants immunity to State agencies, officers, and employees and to local public entities and public employees from any cause of action resulting from a date error generated by a government computer. Requires express grants of immunity in contracts entered into after the Act's effective date and voids conflicting provisions in those contracts. Denies the Court of Claims jurisdiction over causes of action for which immunity is granted under the Computer Error Immunity Act. Effective immediately.

NOTE(S) THAT MAY APPLY: Fiscal

98-02-17 H Filed With Clerk
H First reading Referred to Hse Rules Comm
99-01-12 H Session Sine Die

Mr. HORN. Before Congress is legislation proposed by the administration, the chairman of the full committee, Mr. Burton of Indiana, has introduced for consideration, which will go to the Judiciary Committee. It is basically sort of a Good Samaritan law in which firms can help other firms and not have the Antitrust Division of the Department of Justice suddenly wake up and try to stop that. In some of our field hearings, we have been very pleased to learn—we had this happen in Ohio—some of the energy people said, "hey, we are working with our competitors because we have got to work with each other on this." And that, of course, would be collusion to some antitrust lawyers, but the fact is that they need to work with their competitors and get the job done because all these are going to interconnect. So we were encouraged by the fact that it is happening, firm to firm, within a particular industrial group, though we would like to see it elsewhere.

Now whether that bill ever sees the light of day, it is hard to know, and it might well see the light of day with various paragraphs related to, shall we say, delaying or banning or whatever the word is, litigation in this area. I have been dubious about that approach at this point, because I would like to get as much action out of people as possible by letting them worry a little bit that if they do not do due diligence, as you have noted, that they will not be in good shape. And I think the typical stockholder, if they go to the annual meeting, ought to say, Mr. Chief Executive Officer, what is the status of this corporation in which I have invested my hopes for a decent retirement? Can you tell me something about it? And I would like to see that happen and a sense of urgency, because as we have said from day one, this is a management problem, and as Mr. Forbes said when he testified before us the other day, it is a leadership problem also. And it means the top management has to be involved, and it is not something you can solve strictly with very knowledgeable people on programming. We have got to give it leadership, goal setting, prioritization, that kind of thing.

So that is what we are aiming at here, and it is hard to say what we will do with 1 month to go in Congress. And it might well come up when it should, which would be in 1999, when you hope to be in the test period.

Let me ask you, on the embedded chips, to what degree are you able to deal with that? Have you talked to the various manufacturers? My understanding is the States have either a Web site or a sort of group that the health people in the country are putting together so that each hospital and each State agency does not have to reinvent the wheel—sharing what they found out on a particular type of equipment, from the manufacturer, and whether the manufacturer has a new chip to replace the old chip.

Are any of you involved in that at all?

Mr. VON LISKI. Mr. Chairman, we have a number of our agencies that are working on the embedded problems right now and have gone out and are working with the manufacturers to identify specific problems. One of the concerns, however, that we have with embedded chips is where they are going to show up. There are so many thousands of manufacturers of these chips, and even being able to identify where all of them might be is a major problem. The

other thing that we also are concerned about is the fact that you could have two devices that are side-by-side, same manufacturer, same model, that would potentially have different chips and could, in fact, have different results.

Mr. HORN. We have heard exactly that in a number of hearings and appreciate you mentioning that.

Mr. VON LISKI. It is an enormous challenge, and I certainly think that to the extent that we can address the problem at a large level by knowing that there is a definite problem with a particular device out there, certainly we are going to work very closely with the other agencies and other States to identify that information. But I think in many instances, depending upon the criticality of the device, perhaps the only way to do it is to test. And being able to find a way to actually test for Y2K compliance is really a challenge that all of us have.

Mr. HORN. Yes. Hospital emergency equipment in particular is a situation where they have to deal with it and are dealing with it. We had testimony from the Cleveland Institute and its hospitals, and they are certainly in the top 10 of anybody's list of major hospitals in America. They have an M.D. as their chief information officer, working the system, shall we say, to make sure that equipment is available and working. But they face the same complexity that you described there.

Traffic lights in the city of Chicago, some of those probably are pretty old and the manufacturer has probably gone into something else or retired to a Greek island.

Ms. BOATMAN. Right.

Mr. HORN. What has been your experience in tracking those chips down?

Ms. BOATMAN. What we have decided is that we need to go out and touch every one of them and what we are right now doing is marshaling the manpower to go out and do that. So at this point—and the city has had a replacement program going on with its traffic lights anyway—it looks like we are going to have to speed that one ahead faster than we had planned. But we are still gathering the inventory.

Mr. HORN. The Department of Defense, which Mr. Crane had mentioned, I heard was going to decentralize that responsibility to the base commanders, and I thought, that will be interesting, Col. Throckbottom gets a memo from the Secretary of Defense saying please do something about the embedded chips on your post. And are they supposed to be given a ladder and get up and sort of look around for them with a wrench? And what are they supposed to do when they find them? It is a major problem in that sense. They have millions of them over there and they are not quite sure where they are, and if they are still in production after the end of the cold war and the merging of various groups and the going into other functions.

So we do face a major problem.

Mr. Plate, what are we doing with embedded chips in this fine village?

Mr. PLATE. For that part, we are pretty much stuck in the due-diligence side, asking everybody else that has it what they have. Interestingly, occasionally we run across people who are not sure

what their own system will do, and it is a little unnerving when you are calling the person who makes it to ask what the effect will be, and they tell you, "I do not know." So clearly, there are some people out there who do not understand their own product because they never were asked that question before.

Mr. HORN. We have had testimony with the same experience you have, and that must be just terribly frustrating when you are going to the source and they do not know.

Mr. PLATE. Right. So, we are back to our routine that we are going to kind of cover ourselves a little bit by saying that everybody has promised us they are going to be OK. When they tell us they are OK, we are going to have to take them at their word for it, and wait and see what happens.

Mr. HORN. Mr. Willemssen, anything—we use you as utility outfielder and we are in the town of the Chicago Cubs, so I do not know how we are doing, but do you have anything else that we should be bringing up with this panel that we have not brought up with them?

Mr. WILLEMSSEN. I think, for the most part, the panelists have hit on the right areas, priority setting, contingency planning, independent verification and validation, concerns about the infrastructure. And I think it is important to recognize that a lot of what they need to be concerned about is outside of their direct control, and they need to be diligent in asking for information and data from those entities that have impacts on them outside of their control. And to the extent that they are not getting the data that they need, they need to be more aggressive, consider things like publicizing non-respondents and looking elsewhere for services.

And what we have seen in other arenas is, in some cases, there has been a switch. For example, major telecom carriers, being one example, where early on, there was not a lot of data provided from those major telecom carriers. That is beginning to move, and as one or two start providing data from a competitive standpoint, other providers feel they had better start providing information, too. So it is important to keep that in mind and keep the competitive pressure on those other entities.

Mr. HORN. That is good advice.

Any questions by my colleagues in rounding this out?

Mr. CRANE. No further questions, Mr. Chairman.

Mr. HORN. Mr. Davis, anything further?

Mr. DAVIS. No.

Mr. HORN. We really thank all of you from village to city to county to State. This has been a very interesting panel and we have learned a lot. So thank you very much for sharing that information. We hope to write a report that will go rather widely around the country, based on these field hearings, and we thank you for your insights. So we appreciate it.

And to answer Mr. Willemssen's question, if you are not getting satisfaction, you can always write your friendly Congressman, if it is the Federal Government. Your friendly Congressman, Mr. Crane, can do what I do, write the administrator a hot letter or pick up the phone and say, "what kind of dunces do you have over there?" and see what we can do. And most people are pretty cooperative

when it hits them and they say, "hey, we had better get on board this team, the train is leaving the station."

So thank you for coming.

We now have panel two. That is Mr. Dave Hall, embedded systems expert, the Cara Corp.; Mr. Craig Lang, the senior vice president, Technology Department for the Chicago Transit Authority; Mr. Alan Ho, the Y2K manager, Information Services, Commonwealth Edison Utility Co.; Mr. Galen Crow, the director, Information Systems Technology, Illinois State University and Dr. Wendy Wintersteen, the director, Agriculture and Natural Resources Extension, Iowa State University.

If you will make sure we all have everybody behind the right name tag, and if you will raise your right hands.

[Witnesses sworn.]

Mr. HORN. The clerk will note that all five witnesses have affirmed, and we will begin with you, Mr. Hall. You had just the sort of background here that deals with our last question, so you can probably answer a lot of our questions on the embedded chip business.

STATEMENTS OF DAVID C. HALL, SENIOR CONSULTANT, CARA CORP.; CRAIG LANG, SENIOR VICE PRESIDENT, TECHNOLOGY DEVELOPMENT, CHICAGO TRANSIT AUTHORITY; ALAN HO, Y2K MANAGER, INFORMATION SERVICES, COMMONWEALTH EDISON CO.; DR. GALEN CROW, DIRECTOR, INFORMATION SYSTEMS TECHNOLOGY, ILLINOIS STATE UNIVERSITY; AND DR. WENDY WINTERSTEEN, DIRECTOR, AGRICULTURE AND NATURAL RESOURCES EXTENSION, IOWA STATE UNIVERSITY

Mr. HALL. I will try, sir. Thank you, Mr. Chairman.

Mr. HORN. You might pull those microphones closer to you.

Mr. HALL. Is that better?

Mr. HORN. Yes, that is fine.

Mr. HALL. OK, sir.

Today, I am basically going to limit my testimony to a few statements that, in my opinion, describe the state of the infrastructure and embedded systems effort to date. These statements are as follows: Fewer than 10 percent of the enterprises in the world have begun serious embedded systems testing.

The test results that we have seen, thus far, are agreeing with the original estimates of the magnitude of the embedded systems problem, that anywhere from 1 to 15 percent of the microprocessor-based embedded systems and items of equipment exhibit some type of year 2000 impact; with a caveat that some of these impacts are very minor and some of them range all the way up to catastrophic.

These impacts are showing up on an individual basis; that is, by serial number, not by model number. Basically, that last statement means that every microprocessor-based embedded system and equipment item must be individually tested to be sure of its year 2000 status.

There is really insufficient time and trained resources to assess every microprocessor-based embedded system and equipment item in the United States, much less the world. So therefore, we must assume that not all year 2000 impacts will be found and fixed by

January 1, 2000, and should expect some disruptions and disturbances from year 2000 embedded systems and equipment impacts.

How many disruptions and disturbances and how serious they are, will depend entirely upon how much work is accomplished, both in remediation and contingency planning, before January 1, 2000.

Since we cannot find and fix all of the impacts, in my opinion, we should make a concerted effort to find and fix those that pose the most serious risks to public health, safety and the environment.

Thank you, sir.

[The prepared statement of Mr. Hall follows:]

Subcommittee on Government Management, Information, and Technology

Field Hearing on Year 2000 Efforts

September 3, 1998

Chicago, Illinois

Testimony of David C. Hall, Senior Consultant, CARA Corporation

Subject: Infrastructure and Embedded Systems Year 2000 Efforts

Today I will limit my testimony to a few statements that, in my opinion, describe the state of the Infrastructure and Embedded Systems efforts to date. The written testimony provides some additional information. The statements are as follows:

1. Fewer than 10% of the enterprises in the world have begun serious embedded systems and equipment testing.

2. The test results thus far agree with the original estimates of the magnitude of the embedded systems problem - that anywhere from 1% to 15% of the microprocessor-based embedded systems and items of equipment exhibit some type of Year 2000 impact. These impacts range from minor to catastrophic.

3. The impacts are showing up on an individual basis, that is, by serial number rather than by model number.

4. This means that every microprocessor-based embedded system and equipment item must be individually tested to be sure of its Year 2000 status.

5. There is insufficient time and trained resources to test every microprocessor-based embedded system and equipment item in the United States, much less every one in the world.

6. Therefore, we must assume that not all Year 2000 impacts will be found and fixed by January 1, 2000, and should expect disruptions and disturbances from Year 2000 embedded systems and equipment impacts.

7. How many disruptions and disturbances and how serious they are will depend entirely upon how much work is accomplished, both in remediation and contingency planning, before January 1, 2000.

Global Implications of the Year 2000 Embedded Systems Problem

By:
David C. Hall
Senior Consultant
Year 2000 Infrastructure and Embedded Systems Engineering
CARA Corporation
August 1998

The part of the Year 2000 Problem caused by embedded systems (anything containing a microprocessor or microcontroller) will be the most extensive and expensive part of the Year 2000 Problem. The world has spent the better part of five decades automating, networking, centralizing, and integrating our facilities, plants, public and private infrastructures, communications, financial systems, health systems, and just about everything else. With over 10 billion microprocessors sold worldwide in the last five years alone, we have a tremendous job of finding, testing and fixing to accomplish in less than two years. The bottom line to this problem is that wherever on or in the globe there is an electronic device, there may be Year 2000 problems and risk.

The Whole Issue

The Year 2000 Problem was originally seen as just an Information Technology (IT) problem, affecting only the old legacy mainframe software programs. However, over the past few years it has become known as a Business Problem, because it affects the reliability of all computer-based systems and equipment used, be they Information Technology systems, desktop computing systems, or facility environmental control systems. In each of these cases, the reliability of information is the most important consideration about Year 2000 problems. In human terms, bad information may cause us to make a wrong decision. In machine terms, bad information may cause a malfunction, a total shutdown, or produce the wrong result. The difference is that humans can often interpret bad information, through application of intelligence, and compensate. Machines cannot compensate; they will do exactly what they have been programmed to do.

As a country, community, or person, we are part of a global neighborhood that has come to depend upon many different types of computers to process data, manage information, communicate, and control all types of processes. Our modern society depends upon these computers for every facet of our social structure. They control and operate our facilities, plants, hospitals, finances, traffic lights, electrical power generation and transmission, water and sewage plants - everything we now depend upon, globally.

Fixing this problem has become a much larger problem because we have less than two years to correct 40+ years of putting "bad" logic in every type of computer in the world. The completion date we must meet cannot be slipped or changed. January 1, 2000, is fixed and it will arrive exactly as predicted. In addition, there are no rules and no standards that were followed by the people putting the bad logic in those billions of computers. Nothing was done to make it easy to find and fix the numerous problems. Each solution requires time and trained personnel, two ingredients we lack.

Effect on Embedded Systems

There are an estimated 40 billion microprocessor-related chips in service around the world. At the low end they are very simple, such as timers with a capability of counting seconds or minutes one by one until it receives a stop signal. At the high end, they are fully functional computers on a chip, which perform sophisticated tasks. To most of us, these things aren't "real computers". No keyboard, no monitor, nothing. The terminology people use for these things varies; embedded chips, non-compute-devices, and black boxes. From the early days of computing, these chips have been the provinces of the engineers, not the programmers. As we began the search for potential problems that will occur after, on or before January 1, 2000, a number of "non-compute" devices were immediately identified: fax machines that will print the wrong date at the top of the page, telephone switches that won't work, hospital equipment that will

source of income. The pressure to keep the systems running is great. The result is that the world has a huge number of aging embedded systems, based on languages, applications, and processors for which the necessary skills, personnel, and vendors are gone. Embedded systems are more difficult to inventory, because some of them are so old that the documentation has literally been lost or discarded. Systems dating from the early 1970s through the early 1980s are common. They are also much harder to get at, since many of them are located in the walls, under the floors, in harsh environments, etc. Doing triage planning is very complicated, because there is a risk that taking the systems through a mock Year 2000 change will cause the operation to fail, with huge cost penalties. Applying a fix is also a problem, again because of the huge potential to cause an unexpected failure.

So to fix the Year 2000 problems in embedded systems, you need people who understand embedded systems technology, the production processes you are working with, and the commercial impact of mistakes in a manufacturing environment. And you need people who can travel to many different places and work under harsh environments such as the seabed, in nuclear plants, etc. There are not enough such trained, capable people in the world to find out whether our systems and equipment really do have Year 2000 problems and then fix the ones that are found between now and 2000

Other areas where embedded systems can impact an enterprise is in the transportation systems and supplier/customer chain. In terms of the transportation systems, if the over-the-road carrier, airline or ship you depend upon to bring in supplies and carry away goods ceases operations for weeks or months, what would you do? Even if you have another carrier you could use, is he going to be available at a price you can afford? With the example of the U.S. United Parcel Service strike and the resulting problems of trying to get alternative means of transportation last year, I would submit that you would not easily or quickly be able to obtain such alternative means. Especially if everyone else is trying to do the same thing at the same time. Here again is the global aspect of the Year 2000 Problem. Everyone else will be trying to do the same thing at the same time around the globe.

In evaluating the results of embedded systems and equipment tests thus far, the major implication is that we cannot type test. This basically means that you must test each individual system and item of equipment in its operational environment to be assured of a correct result. We cannot test 10 of one model number and then assume that all ten thousand will react to Year 2000 in the same way. There has never been a standard or specification for how to build Year 2000 compliant components, so each manufacturer and vendor has been able to use "their" way or to ignore it altogether. At the component level, each system and item of equipment can be fundamentally different as far as reaction to Year 2000 is concerned. So to know what will happen when Year 2000 dates are input, one must test each item individually.

Year 2000 Embedded Systems "Best Practices"

The methods that have been developed to deal with this Problem over the past three years mirror those being used for Information Technology systems and programs:

1. Awareness
2. Inventory and evaluation
3. Remediation
4. Testing
5. Implementation
6. Monitoring

However, the persvasiveness of embedded systems makes this project extremely complex and management intensive. It is by far the most complex risk management project any enterprise has undertaken. The requirement to determine Year 2000 compliance by serial number for each system and item of equipment means that an enterprise must undertake and complete a more complete inventory than it has ever required. This inventory must contain all items and systems using electricity and be complete down to the chip set hardware and firmware versions. To fully evaluate each item and system, specific tests must be accomplished according to formal test procedures (some experts note that up to 30 tests per system may be

medium size companies that make up the bulk of jobs in any country are in trouble. The state and local governments who supply the bulk of public services to a majority of citizens are in trouble.

Will we be able to mitigate this coming crisis? In my opinion the answer is Yes, with the following caveat Companies, government agencies and the general public must become more aware of the potential problem and must assign more resources to addressing it. If everyone waits to start to work on this issue until "next year or next month", then we are allowing our problems to escalate. We are already at the point that not all problems will be able to be found and fixed before their failure dates. Contingency plans must be developed and put in place for the expected failures. To wait any longer before working on this problem multiplies the risk of large-scale disruptions of our basic global infrastructures, be they economic, public, or governmental.

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Mr. HORN. Thank you.

Mr. Lang, senior vice president, Technology Development, Chicago Transit Authority.

Mr. LANG. Good morning, Chairman Horn, Congressman Crane and Congressman Davis.

This morning, I will be giving a brief overview and status of actions taken by the Chicago Transit Authority to address the year 2000 compliance issues.

Mr. HORN. Bring the microphone a little closer to you there. Thanks.

Mr. LANG. As background, the Chicago Transit Authority is a municipal corporation established to provide transportation services to residents of Chicago and 38 surrounding suburbs. The authority operates over 1,900 buses and 1,300 rail cars and provides approximately 1.4 million rides per week day.

We first became aware of this issue, the 2000-compliance issue, as it related to our information technology systems in 1995. To determine if a year 2000 problem existed at the CTA, we conducted a small sampling study of our business systems. The sampling indicated that potential problems existed in software packages purchased from vendors, internally developed computer application software, computer operating systems, as well as personal computer work stations and equipment. In other words, our entire IT network.

At that point, we realized additional outside assistance was necessary to fully assess and define the entire scope of the problem. As a result, a request for proposal was issued in August 1995, focusing on CTA's mainframe computer systems. Following evaluation and contract award, the assessment phase started in June 1996.

The overall objective of the study was to establish a framework for the inventory analysis and create a strategic master plan to guide century-compliance projects across all designated application areas. The study also provided the basis for developing a request for proposal for the implementation phase, to renovate CTA application program code to process year 2000 situations correctly.

The study was completed in October 1996 and resulted in a strategic work plan that organized all applications into 19 upgrade unit groupings and provided budget-level estimates of time and cost for each area; identified 8,400 program components with over 4 million lines of code to be changed; designated programming language migration requirements; identified software tools for accomplishing the change and recommendations for equipment upgrades.

Immediately following receipt of the study, a request for proposal was issued for the implementation phase of the program. Proposals were analyzed and a contract awarded to SPR, Inc. of Oak Brook, IL, with work commencing in July 1997. The contract called for the firm to provide management and whatever programming staff was required to fully implement the strategic plan.

As of today, the status of the program is as follows: Overall, the project is approximately 63 percent complete; over 32,000 hours of work by vendor and CTA staff have been expended making code changes, testing and reinstalling corrected program components; all Unisys/Mapper systems are implemented or currently undergoing

final correction and testing; all CTA developed Amdahl mainframe systems are implemented or are undergoing final correction and testing; the remaining four major application systems are reaching compliancy through new version upgrades and are awaiting installation or migration to newer compliant hardware; the project is on time for completion in February 1999.

In addition to this major effort and through the leadership and direction of our president, Frank Kruesi and executive vice president, Jeff Morales, the authority has undertaken aggressive action to address the additional areas of desktop computing and embedded code in operating systems.

With regard to desktop computing, a $3.8 million program that will upgrade and/or replace all non-compliant personal computers, local area networks and servers over the next 17 months has been developed and approved. The plan calls for departments or activities that focus on service to our customers to be addressed in the first phase, with other departments to follow. In addition, all purchases of computer software and hardware include provisions for the developer or manufacturer to certify year 2000 compliance.

Embedded code in systems outside the IT area also require evaluation for risk. Date/time embedded code may be contained in business operating systems such as HVAC—as has been noted in previous testimony—in those other systems that use electronic control devices with processors that include embedded programmable chips or erasable-programmable chips or real-time clock chips. The difficulty in dealing with this aspect of the year 2000 issue is that the presence and use of time/date calculations may not be readily apparent to the organization's end user, and therefore difficult to identify.

In recognition and response to this issue, the authority is currently evaluating field systems through a sampling survey. As part of the sampling process, the CTA is working through the manufacturer of the system to determine year 2000 compliancy and required action for correction. Our strategy is to work through mission-critical systems first with an overall goal of making all systems compliant by the year 2000.

In summary, the Chicago Transit Authority recognizes and understands the impact of the year 2000 computer issue and has taken appropriate measures to correct the problem. When completed, the authority will have spent well over $10 million and 10,000 to 20,000 hours of in-house staff time on this program.

We are committed to addressing all known aspects of the year 2000 problem because it is our customers who will ultimately be affected and the CTA is dedicated to delivering quality, affordable transit services that link people, jobs and communities.

Thank you.

[The prepared statement of Mr. Lang follows:]

Statement by Craig M. Lang, Senior Vice President, Technology Development, Chicago Transit Authority to the Sub-Committee on Government Management Information & Technology

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* designated programming language migration requirements,
* identified software tools for accomplishing the change and recommendations for equipment upgrades,

Immediately following receipt of the study, a Request For Proposal was issued for the implementation phase of the program. Proposals were analyzed and a contract awarded to SPR, Inc. of Oak Brook, Illinois with work commencing in July of 1997. The contract called for the firm to provide management and whatever programming staff was required to fully implement the strategic plan.

As of today, the status of the program is as follows;

* overall the project is approximately 63% complete,
* over 32,000 hours of work by vendor and CTA staff have been expended making code changes, testing and re-installing corrected program components,
* all Unisys/Mapper systems are implemented or currently undergoing final correction and testing,
* all CTA developed Amdahl mainframe systems are implemented or are undergoing final correction and testing,
* the remaining four application systems are reaching compliancy through new version upgrades and are awaiting installation or migration to newer compliant hardware,
* the project is on time for completion in February 1999.

In addition to this major effort, and through the leadership and direction of our President, Frank Kruesi and Executive Vice President, Jeff Morales, the Authority has undertaken aggressive action to address the additional areas of desktop computing and embedded code in operating systems.

With regard to desktop computing, a $3.8 million dollar program that will upgrade and/or replace all non-compliant personal computers, local area networks and servers over the next 17 months has been developed and approved. The plan calls for departments or activities that focus on service to our customers to be addressed in the first phase with other departments following. In addition, all purchases of computer software and hardware include provisions for the developer or manufacturer to certify Year 2000 compliance.

Embedded code in systems outside the IT area also require examination and evaluation for risk. Date/time embedded code may be contained in business operating systems, such as HVAC systems, elevators, fax machines etc., that use electronic control devices with processors that include a programmable read only memory chip, an erasable-programmable read only memory chip or a real time clock chip. The difficulty in dealing with this aspect of the Year 2000 issue is that the presence and use of time/date calculations may not be readily apparent to the organization's end user.

In recognition and response to this issue, the Authority is currently evaluating field systems through a sampling survey. As part of the sampling process the CTA is working through the manufacturer of the system to determine Year 2000 compliancy and required action for correction. Our strategy is to work through mission critical systems first with an overall goal of making all systems compliant by the year 2000.

In summary, the Chicago Transit Authority recognizes and understands the impact of the Year 2000 computer issue and has taken appropriate measures to correct the problem. When completed, the Authority will have spent well over $10 million and ten to twenty thousand hours of in-house staff time on this program.

We are committed to addressing all known aspects of the Year 2000 problem because it is our customer that will ultimately be affected and the CTA is dedicated to delivering "quality, affordable transit services that link people, jobs, and communities".

Thank You.

Mr. HORN. Thank you, Mr. Lang, that is very helpful and we really have not had any transit authorities giving us advice in our various field hearings so far, so we appreciate that.

Mr. Alan Ho, the Y2K manager, Information Services, Commonwealth Edison Utility Co.

Mr. HO. Chairman Horn, Congressman Crane, Congressman Davis, it is an honor for me to appear before you today in these proceedings.

Mr. HORN. By the way, your statement is automatically in the record. Feel free to summarize rather than read it because we have all read it.

Mr. HO. OK. We at Unicom recognize that we are at the center of gravity of the year 2000 process. If we do not perform, the work performed by others will be for naught. This is an awesome responsibility and challenge, and I am here today to assure you that while this is an enormous and difficult challenge, we have been and will continue to do all that is necessary to ensure that our systems are Y2K ready.

I have provided a handout, as you have indicated, and have given an overview as well as the project scope and summary.

In overview, our Y2K team is aggressively managing the year 2000 compliance issue and the impact it may have on our computer applications. A comprehensive strategy is in place and implementation is well under way. Many systems are on schedule to be compliant by the end of the year. Mission critical systems will be year 2000 compliant by the second quarter of 1999. Throughout 1999, we will continue evaluating the risk of failures of our systems as well as those of our suppliers and customers, in order to prepare contingency plans. As a corporation, we expect to be fully year 2000 compliant by the fourth quarter of 1999.

Unicom's overall project structure involves the core Y2K team performing a centralized role of leadership, communication and project management. Three elements are integral to the success of the project on an enterprise-wide basis. They are: business continuity, project management and risk management. A diagram of that project structure is provided in the handout.

Overall, we are 30 percent complete as of August 10, 1998. Details of the project's status are provided also in our handout.

The total cost of the project is estimated to be $60 million for the corporation.

Senior management tracks progress of the year 2000 project on a frequent and persistent basis. The Board of Directors review progress on a quarterly basis. An executive Y2K steering committee has been established to provide senior executives with the opportunity to approve policy and review corporate progress on a monthly basis. An overview of the reporting frequency is provided in the handout.

In terms of industry efforts, Unicom is working with various industry groups, including the North American Electric Reliability Council, Electric Power Research Institute, Edison Electric Institute, to coordinate electric utility year 2000 efforts. At the local level, Unicom is working with the Illinois Energy Association to share information. Additionally, our nuclear generation group is working with the Nuclear Energy Institute, Nuclear Utility Soft-

ware Management Group, Westinghouse Owners Group and Boiling Water Reactors Owners Groups.

In terms of lessons learned, based on my experience managing the year 2000 project so far, I have provided some lessons learned in the handout and will be glad to discuss those lessons learned.

In summary, I have provided what I believe is an accurate and current report of the State of the year 2000 project at Unicom. And as you requested, reviewed activities that we have undertaken to solve and resolve the year 2000 issues in our organization, as well as the challenges we face as an electric utility, and the solutions we implement to address them. Finally, I submitted the more valuable lessons learned as we progressed through our project. I hope our contribution here assists the Congress of the United States increase the body of knowledge about Y2K issues so that it can be shared with other organizations across all industries and perhaps provide companies who are behind or have yet to start, with a road map to success.

Thank you.

[The prepared statement of Mr. Ho follows:]

Testimony of Alan Ho
Unicom Manager of Y2k
before the
Subcommittee on Government Management, Information and Technology
House Task Force on the Year 2000
Congress of the United States

September 3, 1998

Mr. Chairman and Members of the Committee:

It is an honor for me to appear before you today in these proceedings. My name is Alan Ho and I am the Manager of the Y2k Project for Unicom, including ComEd. My address is 227 W. Monroe, 11th floor, Chicago, IL. 60606. Unicom is engaged in the production, transmission, distribution and sale of electricity to wholesale and retail customers. With nearly 17,000 employees, Unicom provides service to more than 3.4 million customers across northern Illinois, or 70 percent of the State's population.

You have asked me to present information regarding Unicom's preparation of its computer systems for the upcoming century date change. I will also address the specific challenges we face as an electric utility, solutions that we implemented to address them and lessons learned as our project has progressed.

Overview

Our Y2k Team is aggressively managing the Year 2000 compliance issue and the impact it may have on our computer applications. A comprehensive strategy is in place and implementation is well underway. Many systems are on schedule to be compliant by the end of this year. Mission critical systems will be Year 2000 compliant by the 2nd quarter of 1999. Throughout 1999 we will continue evaluating risks of failure of our systems as well as those of our suppliers and customers, in order to prepare contingency plans.

Unicom's overall project structure involves the core Y2k Team performing a centralized role of leadership, communication and process management. Three key elements are integral to the success of the project on an enterprise-wide basis and are the foundation for all project-driven activities: business continuity, project management and risk management (see exhibit 1 for a diagram of project structure).

Project Scope

Our scope of work is unique due to the recent completion of several strategic replacement projects - our customer information, financial and payroll systems have been replaced with new technologies that are fully Year 2000 compliant. These new systems also add functionality that is critical to meeting the needs of our customers in the restructured electricity marketplace.

Our Year 2000 plan focuses on all facets of our business that enable us to deliver reliable electric service to our customers. The project encompasses the computer systems that provide core business functions such as our customer information, financial, procurement, supply and personnel systems as well as components of metering, transmission, distribution and generation support. This also includes the embedded systems, instrumentation and control systems used in our facilities and plants. We track progress on software applications and embedded systems separately (see exhibit 2 for breakdown of effort for software and embedded compliance).

A two-tiered approach has been implemented to address the compliance issues for the Corporation. The first tier is comprised of the Core Business Applications and Systems and the second is Business Unit Supported Applications and Systems. Each tier will generally follow a project plan that is separated into the following stages: inventory, analysis, renovation, testing, deployment and contingency planning.

We began addressing the year 2000 issue in July of 1996 by compiling the Corporate inventory of Core Business Applications and Systems. This segment of the project also includes vendor packages, non-mainframe applications, external interfaces, mainframe operational software and hardware and corporate telecommunications. By December of 1996, a large portion of the inventory was complete which enabled us to conduct an analysis as well as develop a master conversion schedule. The complete analysis of our critical systems will be finalized by the conclusion of the 3rd quarter this year. Our master schedule outlines the renovation work to be completed in the final phase, conversion and testing, which is well underway for the Core Business Applications and Systems. A rigorous testing program has been implemented to ensure that converted systems and applications process dates from this century and beyond. We anticipate the Core Business Applications and Systems to be 100% compliant by the 2nd quarter of 1999.

The second tier, Business Unit Supported Applications and Systems, began in March of 1997. A Y2k Coordinator was assigned to each of our 17 business segments and is responsible for the compliance of all applications supported by their Business Unit (see exhibit 3 for a list of all the Business Units). Their number one priority is to ensure that all applications and systems continue to meet business requirements as we approach 2000 and beyond. Currently, the Business Units are in various stages of completion and all are expected to be 100% compliant by the 4th quarter of 1999.

The total number of employees involved in the Core Business Applications and Systems and Business Unit Supported Applications and Systems initiatives is approximately 150 and that number will peak at 275 before the project is fully complete.

Additionally, Unicom will have contingency plans to address scenarios that challenge our generation, transmission and distribution systems. By taking a proactive approach to contingency planning, we feel confident that we will be able to respond appropriately should we experience a year 2000 related problem on any of our systems.

Supporting Initiatives

We determined there are several aspects of our project that must receive significant attention in order to successfully complete it in the time frames we have targeted and, more importantly, to enable us to continue satisfying our customer's energy requirements into the next millennium.

The significant areas of focus for Unicom's Year 2000 Project include:

- ***Communications*** – Consistent and timely internal and external communications are critical for company awareness and progress updates, supply chain readiness, customer inquiries, media relations and software and hardware vendor compliance. A company-wide communications program has been in place since March of 1997 to respond to our residential and business customer inquires with regard to this issue. In addition, we have also participated in conferences hosted by EPRI, EEI and IEA. To date, we have shared information with over 400 business and residential customers. In addition, next week we will be hosting a Y2k Media Briefing as well as a Y2k Customer Forum for our large business customers on Y2k.
- ***Supply Chain*** – Verification of our suppliers' internal programs is necessary to ensure we do not experience an interruption of product or service. This process includes Y2k certification of products and services, risk analysis, product review and testing and contingency planning. This also includes Year 2000-warranty language in new contracts and licenses. Some of the problems we have found in mission

critical systems are a result of information provided to us by suppliers. We understand that there are potential inter-compatibility problems with components suppliers reported as being compliant. Contingency planning is also part of our supply chain initiative in order to prevent or minimize any interruption caused by a product or service provider.

- ***Contingency Planning*** – This is viewed in the framework of emergency management system preparation, scenario development and, ultimately, risk management (see exhibit 4 for a diagram illustrating contingency planning development). Planning is underway to prepare for two types of problems: 1) for the possibility that our Y2k remediation may not be successful and 2) the remediation of others may not be successful (i.e. suppliers, surrounding utilities and other interfacing institutions such as regulatory or financial institutions).

  There are four phases of development in our contingency planning process: Initiation, Business Impact Analysis, Contingency Planning and Testing. First, in terms of Initiation, we have already engaged executive support to oversee the process and key Business Unit personnel to develop a high-level contingency strategy. Two of our senior level executives are charged with the responsibility of providing oversight to this process. Second, Business Impact Analysis is also underway as Business Unit personnel in the areas of nuclear and fossil generating as well as transmission and distribution have already begun to discuss the impact of mission-critical system failures on our core business process. Discussions have revolved around specific failure scenarios and how they can be mitigated. Third, the actual Contingency Plans are still under development. Once developed and approved by our senior executives, we will determine the conditions necessary to activate the Contingency Plans and the appropriate personnel who will be responsible for them in each business process. Finally, Testing will ensure that we have prepared properly should we experience a Year 2000 failure of our own or from others. By executing various test scenarios we will be able to adequately update our disaster recovery plans and procedures.
- ***Independent Verification and Validation*** – An outside auditor has been engaged, and already begun, to provide a comprehensive analysis and evaluation of core application and business unit supported efforts in the following areas: project management practices, legal preparedness, supply chain readiness, regulatory requirements, documentation standards, technical practices, risks to operational continuity, overall system change management process, information technology infrastructure readiness and capacity planning and information technologies provided to others.
- ***Clean Management*** - These activities should ensure that Unicom does not acquire noncomplaint components. Year 2000 contract language is a necessary step in preventing this but, on its own, is not enough to prevent this from occurring. As a result, we are in the process of establishing pre- and post acquisition review for items we classify as "at risk" and incorporating these measures in procurement procedures and checklists. Moreover, training has started to ensure that maintenance activities on software applications and embedded systems will continue to meet our Y2k certification requirements.
- ***Document Management*** – Policy, procedures and standards are necessary for efficient document storage and retrieval. This includes managing correspondence from customers, vendors and our supply chain. In addition, documentation is maintained for regulatory and legal responsibilities, certification and remediation as well as testing.

Project Status

We estimate that the implementation of Year 2000 compliant software and systems is approximately 30% compliant for the Corporation as of August 10,1998 and that our efforts will be over 50% complete by the end of 1998. All Unicom systems and software are expected to be year 2000 compliant by the end of 1999.

Detailed project status figures for the various phases of the project as of August 10, 1998 are as follows:

	Software Applications	**Embedded Systems**
	(percentage complete)	*(percentage complete*
INVENTORY	93	70
ANALYSIS	51	15
RENOVATION	37	4
TEST	23	2
DEPLOYMENT	22	2

Significant milestones we anticipate to be complete by the end of 1998 include:

- Core Business Applications and Systems 100% compliant
- Facilities management (i.e. HVAC, elevators, etc.) applications & systems 100% compliant
- Unicom Energy Services 100% compliant
- Unicom Thermal Technologies 100% compliant
- Customer Operations 100% compliant

Project Budget

The total cost of remediating or upgrading software that is not being replaced in accordance with business plans is estimated to be $20 million for the Corporation and the total cost of upgrading or remediating embedded technology systems is estimated to be approximately $20-40 million. Such costs are expensed as incurred.

Project Leadership

Senior Management tracks progress of the Year 2000 Project on a frequent and consistent basis. The Board of Directors review progress on a quarterly basis. An Executive Year 2000 Steering Committee was established to provide Senior Executives with an opportunity to approve policy and review Corporate progress on a monthly basis. In addition, a progress report is submitted to the Senior Executives, including our CEO, on a weekly basis to highlight progress for the more significant components of the project. Finally, project leadership meets with representatives of the core Y2k Team and Y2k Coordinators in the Business Units on a monthly, bi-weekly or weekly basis (see exhibit 5 for an overview of reporting frequency).

Industry Efforts

Unicom is working with various industry groups including the North American Electric Reliability Council (NERC), Electric Power Research Institute (EPRI) and Edison Electric Institute (EEI) to coordinate electric utility Year 2000 efforts with the Clinton Administration's Year 2000 Conversion Council, the Department of Energy (DOE) and Congress. The DOE has requested from NERC a status report and coordination plan by September 1998 and a full status report by July 1999 as to the measures that are being taken to prepare electric power supply and delivery systems for transition into the Year 2000. At the local level, Unicom is working with the Illinois Energy Association (IEA) to share information and coordinate Illinois Commerce Commission (ICC) requests for information. Additionally, our Nuclear Generation Group is working with the Nuclear Energy Institute (NEI), Nuclear Utility Software Management Group (NUSMG),

Westinghouse Owners Group (WOG) and Boiling Water Reactors Owners Group (BWROG) to meet Nuclear Regulatory Commission Requirements (NRC) requirements for Y2k.

Lessons Learned

A project with the impact and magnitude of Y2k presents a monumental challenge for Unicom... the Nation... the world. There never has been a project quite like it and, most likely, there will never be another to outshine its prominence on a global scale. That being the case, hindsight can produce many ways we all could have "done it better." Based on my experience managing Unicom's year 2000 initiative, I can tell you about several lessons learned for anyone involved in a Year 2000 project.

1. Senior executive oversight is critical to the success of the project. They should be involved from the very beginning to ensure the Year 2000 Project receives proper attention throughout the Corporation and the necessary resources are assigned to it early on in the process. For example, Senior Executives can eliminate the conflicting priorities that exist for internal Company expertise.
2. Mission critical systems should be identified and emphasized. These systems should be the first to receive full attention and scrutiny.
3. Be prepared to add additional applications or systems to your original inventory. Chances are minimal that you will find all your noncompliant systems in the first sweep. The cost to achieve compliance will, most likely, increase from your original estimate. Adding items to your inventory, the escalating costs of qualified staff and the additional noncompliant code you find as you dig into applications will continue to drive the costs of the project upward. Allocate & "front load" project plans where possible. Attempt to allow margin to compensate for uncertainty and provide for discovery.
4. Large companies with multiple business segments need to communicate regularly in cross-team information sharing sessions. Time, amount of effort and work can be saved with frequent information sharing sessions. Additionally, significant efforts should be made to readily give and receive information with other businesses in your industry. Time and cost savings can be a benefit to both parties.
5. An Independent 3rd Party Review should be viewed as a positive measure of your project. It will provide you with the confidence you have accounted for everything or illustrate deficiencies in your process.
6. A centralized repository of documents should be created at the beginning of the project and maintained throughout. This should help manage risk and support consistent and effective communication with customers, suppliers and regulators.

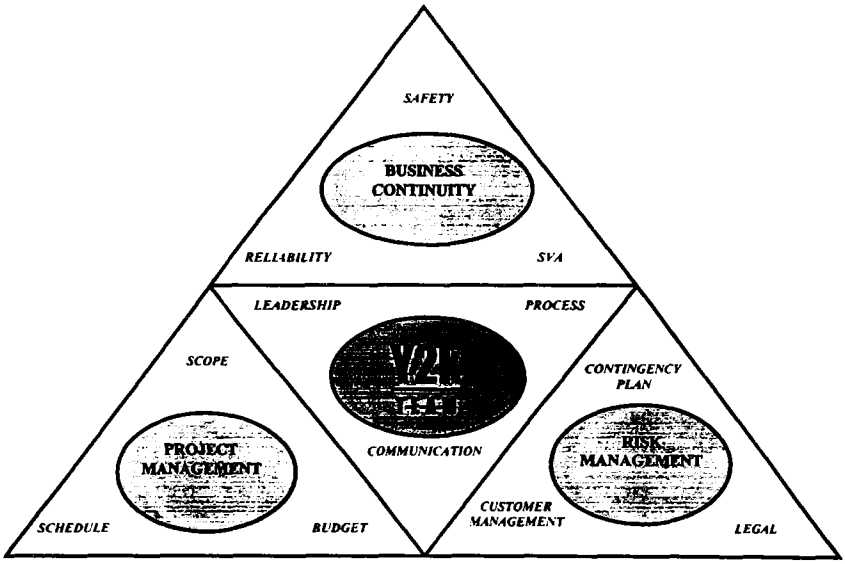
Summary

I have provided what I believe is a detailed, accurate and current report on the state of the Year 2000 Project at Unicom. As you have requested, I reviewed activities that we have undertaken to resolve year 2000 issues in our organization as well challenges faced by the electric utility industry and solutions we implemented to address them. Finally, I submitted the more valuable lessons learned we gained as we progressed through the project. I hope our contribution assists the Congress of the United States increase the body of knowledge regarding Year 2000 issues so that it can be shared with other organizations across all industries and, perhaps, provide companies who are behind or yet to start, with a roadmap to success.

Alan Ho, Unicom Manager of Y2k
September 3, 1998

Exhibit 1

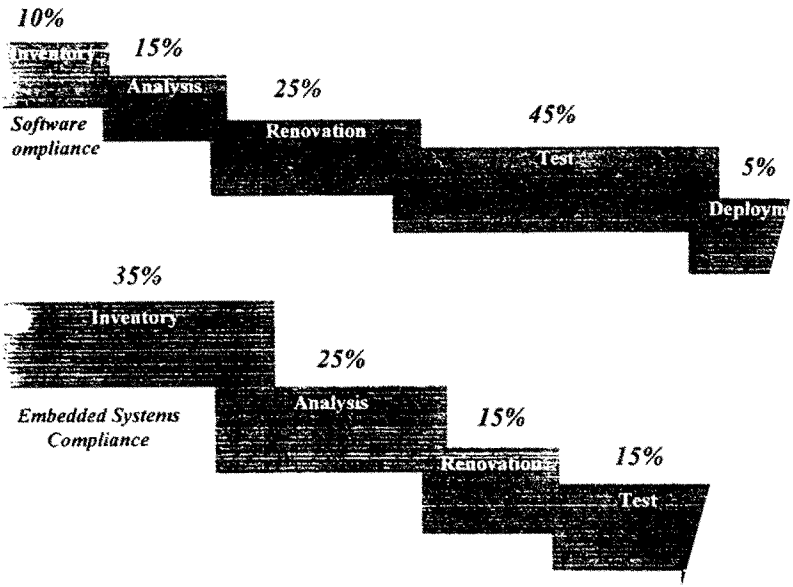
Unicom Project Structure



Alan Ho, Unicom Manager of Y2k
September 3, 1998

Exhibit 2

Software & Embedded Compliance Effort



Alan Ho, Unicom Manager of Y2k
September 3, 1998

Mr. HORN. Well, we thank you, Mr. Ho. You might have to help us a little bit on exhibit 2 because we would like to reproduce all of these statements in our hearing record, and maybe you could sort of give us a way to show that. The Government Printing Office does an amazing wonderful job, but sometimes it is not up on the latest technology that many private firms have in their own printing. So we could use your help on that, and your lessons learned are very useful, on page 5, and we appreciate that.

Our next presenter is Dr. Galen Crow, the director of Information Systems Technology at Illinois State University. Dr. Crow.

Dr. CROW. Thank you, Chairman Horn and Congressman Crane, Congressman Davis.

I have a lot of involvement in respect to the Y2K issues, not only from a university perspective, from Illinois State in particular, but I also think from higher education. I am coming at this from several different aspects.

I was pleased to hear this morning, for example, as a taxpayer—and I am sure other taxpayers in the room are pleased to hear—from the GAO that this was the sort of problem that the Government could not possibly spend enough money in time. I think other taxpayers will be happy to hear that. I also must say that as an educator, you have probably noticed, I prepared a 50-minute lecture exactly for the committee, and I will try to summarize that as closely to 5 minutes as I can. [Laughter.]

But I would also like to say that I am a former technology practitioner. In the late 1970's, I was a programmer, programming exactly these systems that you have spoken about, and I am here to say that I, too, have sinned. Many of the systems that I worked on and many of those systems that are still in existence now have my name on them, I believe, in one way or another, will not work in the year 2000. So I intimately understand this problem and I have my fingers on some of this problem. And in fact, everybody that I know at that time contributed to this problem, and I suppose many people that I have known in recent years have contributed and many are still contributing to this problem. And I think that is part of the scary part of all this.

Mr. HORN. I was going to say with all those confessions, you have got tort lawyers lining up out in the hall for a class action suit against you few that dreamed up this idea. [Laughter.]

If you know who dreamed up the idea, I would be curious, just when did it first start and where, in the two-digit year versus the four-digit year.

Dr. CROW. That is part of the 50-minute lecture and it would maybe go into 20 minutes of it, but suffice it to say that——

Mr. HORN. How about 10 seconds?

Dr. CROW [continuing]. At the time, we thought that either the systems would not be around or we would not be around, and at least in the latter case, that was correct.

So I will try to concentrate my remarks to really the second page of my outline, which has to do with issues that relate to higher education and how we differ from maybe other sorts of industry and government agencies, and also how Illinois State has uniquely, I think, addressed this issue. And I will try to direct my remarks that way.

First, in terms of higher education, of course, all the general issues of the Y2K problem relate to institutions of higher education, but we have some particular problems with higher education, and one of those is the way we are organized. We have sort of a loosely coupled system, set of relationships in the university in terms of our control structures. We also operate in many ways under a shared governance model, which makes it difficult for us to respond in other ways but through committees. We also have kind of an odd combination of—in large institutions of higher education—centralized versus decentralized technical operations and those decentralized operations are many times beyond the control or even influence of the centralized operations. So that offers some advantages and disadvantages in the way we respond to this problem.

We also have—the way that our resources are structured, as many others, difficulty in recruiting and training tech staff; however, we fall somewhere at the bottom of the feeding chain of technology staff and so our staff is often raided, and many times we rely on graduate students and students to handle a lot of our critical technical operations, and that is not a very good way to operate. We also have an inability to raise prices to cover Y2K costs, we cannot raise tuition, and we cannot make the students pay more for this problem, so it is very difficult for us.

Other factors that are kind of unique to us, I think, is our dependence on technology is increasing. Interestingly enough, we will have a small student population on January 1, 2000, and most universities have a shutdown period around that time, and so I think that makes us a little bit unique and might actually help our situation. Most of our operations will be shutdown at that time.

The other thing I think is interesting is that the mission critical business of most universities, even though we are relying more on technology and the delivery of technology across electronic means, we still remember how to do it the old way and, for the most part, particularly residential universities, we can still deliver a lecture in a classroom with students on a whiteboard or a blackboard, and if all of our systems shut down, we can probably do a lot of that the old way. And I think many of our registration systems and so forth will be capable of handing this problem.

Now, another thing that I think we have at universities is an obligation to the public to be providers of solutions here, both in the area of teaching, research and service; and I think that we need to be providing proper education for both our computing students and also for students in general, that this is the sort of problem that has resulted from short-term thinking to a very complex and interdependent problem. We can use this as a very good specific example for our computing students, but also for students in general, that let us not get into these messes in the future, let us think more long term and strategically as opposed to solving a short term concern.

Also, I think that we provide a place for society to be the incubator of innovative solutions to problems like this. I also think we have an obligation to educate the public about the Y2K problem because this will affect all areas of society and our Nation, not just education or a specific industry.

Another area that I think we need to think about is to reorganize ourselves to help the rapid preparation of the technology work force. It is relatively difficult for us to prepare a work force for technology. One of the reasons is we are slow to respond with the curriculum and, based on the various regulations and modes of operation that we have, we cannot expand rapidly to fill that pool. In the traditional way we operated, it would take 4 to 5 years to deliver a person from the time they walked in the door to the end anyway. In most cases, we are already operating in those programs at full capacity. But we do have the ability to reorganize our talent and our resources and our expertise in ways that can do this rapidly. And I have provided in my packet an outline of a project that we are working on at Illinois State that I think does that in a very innovative way, and we have spent a lot of time working on that. It has been very successful and could be emulated elsewhere.

Specifically, the Illinois State University—I guess this is part of the confession stage still—I would say right now, Illinois State has a particular problem, I would say we are probably in middle of the road of institutions in general that I have spoken to. We have had an unsuccessful search for an information technology vice president over the last several years, so we are a little bit at risk without having a central authority for this problem on campus.

However, our decentralized units and our main administrative units have been working on this independently for several years, and they will be pretty well compliant, we believe. We have also been promoting awareness on campus to the university community and the decentralized units. We have prepared inventories through our advisory committee structure, and we have responded as best we can to Y2K inquiries.

But the thing that I think we have done that is very, very unique is this sort of innovative response to the technology worker shortage. We have created a 12- to 14-week program. We have gone into partnership with several major corporations with this program. And by the way, this program actually trains mainframe COBOL programmers, although we think we can deal with several other areas of the problem. So we are taking people off the street that we believe are over-educated, they have degrees in other areas for the most part, and we have a very complex way to measure their aptitude and a very structured way to interview these people, and in 12 to 14 weeks through the partnerships, we are placing computer technology employees into the same jobs as our 4-year computing graduates, and we have a very large, very well respected computing program at Illinois State. We have been operating for 2 years and the program has been growing rapidly. The success rate of selecting and placing trainees is above 90 percent. There is no cost to the State for this program, it is completely funded by corporate dollars, and we are very proud of it, as you might imagine. In fact, not only is it of no cost, but there are residuals from this program that we use for other mission-related critical operations at the university.

I guess in summary, I would say that I believe institutions of higher education have an obligation to mobilize and educate the public about this problem. We have an obligation to help future students of all disciplines understand the implications of short-

term thinking, and I would say that we have an obligation to provide unique solutions such as the training program that I mentioned, to deal with these difficult societal problems.

Thank you.

[The prepared statement of Dr. Crow follows:]

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U.S. Congress House of Representatives
Committee on Government Reform and Oversight
House Task Force on the Year 2000 Computer problem

Testimony Outline
Of
Dr. Galen B. Crow
Executive Director of Extended University
Chair of Information Technology Advisory Committee
Illinois State University

Introduction

- My Involvement and Perspective
  - Technology practitioner
  - Computing educator
  - University administrator
  - Tech Center Director

- Source of the Year 2000 (Y2K) Problem

- Scope of the Y2K Problem

The Y2K Problem in General

- Aspects of Y2K that affect all industries
  - Supply chain
  - Internal systems
  - Customer chain
  - Technological dependence
  - Overall interconnectedness
  - Tech Worker Shortage

- Solution Process
  - Awareness
  - Inventory
  - Planning and design
  - Construction
  - Testing
  - Implementation
  - Future avoidance (of similar dilemmas)

- Phases of our Collective Concern
  - Awareness and problem solution
  - Legal liability
  - Contingency planning

- Y2K Opportunities

(Crow Y2K Testimony Outline – pg.2)

How Y2K Relates to Institutions of Higher Education

- All of the General Y2K Issues (above)

- Organizational Structure
  - Loosely-coupled system
  - Shared governance model
  - Combination of centralized/decentralized tech operation mode

- Resources
  - Difficulty in recruiting and retraining tech staff
  - Inability to raise "prices" to cover Y2K costs

- Other Factors
  - Ever-increasing dependence on technology for delivery of our "products"
  - Likely to have small student populations on 1/1/2000
  - Majority of "mission-critical" business still can be delivered the "old way"

- Providers of Solutions
  - Teaching, Research, Service
  - Proper education of computing and general students regarding this or related problems
  - Incubator of innovative ways to deal with Y2K problem
  - Educate public about the Y2K problem
  - Rapid preparation of tech workforce

Illinois State University Preparation for Y2K

- No central Y2K systematic process or authority yet identified

- Decentralized units working independently for several years on problem

- Awareness presentations made to the University community

- Inventories prepared through advisory committee

- Ad hoc responses to external Y2K inquiries

- Innovative response to information technology worker shortage
  - 12-14 week training program for under-employed non-computer degree holders
  - Trainee graduates placed in similar employment as four-year computing graduates
  - Trainees pre-employed while in training
  - Success rate at selecting and placing trainees above 90%
  - No cost to the State

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GALEN B. CROW
(9/98)

Dr. Galen B. Crow is the Executive Director for Illinois State University's newly formed Extended University. The Extended University is charged with developing and facilitating nontraditional educational offerings and services that are congruent with 21st century demands and meet regional needs. Dr. Crow was formerly director of the Center for Information Systems Technology (InfoTech) and an Associate Professor of Applied Computer Science at Illinois State.

Dr. Crow is the Chairperson of Illinois State's Information Technology Advisory Committee (ITAC). ITAC defines and advises the University on high-level information technology issues and decisions. He recently represented Illinois State on Lt. Governor Kustra's Higher Education Technology Task Force. Dr. Crow also represents Illinois State University as a member of the Technology Task Force of the Bloomington-Normal Education Alliance, and often serves as an advisor on technological issues to local school districts. In addition Dr. Crow is a founding member of the Heartland Software Process Improvement Network (in association with the Software Engineering Institute as Carnegie-Mellon University), Illinois State's representative to the Bloomington-Normal TeleCommunity Task Force, a member of the Twin City Association for Information Technology Professionals, and a member of Illinois State's Laboratory School's Citizen Advisory Committee.

Dr. Crow holds a Ph.D. in Educational Administration from Illinois State University and the Certificate of Data Processing from the Institute for Certification of Computer Professionals. He is a co-author of a major systems development text, and is the developer/author of a nationally marketed student Computer Aided Software Engineering software package/lab manual. Dr. Crow teaches in the area of computer project management and systems development, and has published numerous articles and given many national and regional presentations and workshops, most recently on the subject of the issue and impact of Year 2000 computer problem.

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Foundation Computing Technology Program

Problem to be Addressed: Shortage of Information Technology Workers
The nation is facing a severe information technology (IT) worker shortage. There are currently upwards of 400,000 IT jobs unfilled in the United States alone; and the shortage is growing. IT professionals rank among the fastest growing occupations in the nation and state. The current IT labor shortage is causing disruptions in business operations, frantic competition for IT employees, and anomalies in corporate salary structures. Traditional institutions of higher education, even if operating at full capacity, will not be able to fill this shortage in a timely manner. Although the IT labor shortage crosses all areas of expertise, the shortage is particularly acute in the specific areas of mainframe application programming, World Wide Web and Intranet development, and network and computer technical support.

Barriers to IT Workforce Preparation
At the same time that the nation faces a severe shortage of information technology workers, there remain a large number of highly-educated and talented individuals who are under-employed and under-utilized in their current occupations, including recent graduates who have found limited career opportunities. Many of these workers have earned four-year degrees in disciplines that do not have as robust or promising career potentials as the IT profession. While not all of these workers will have the inclination or aptitude for IT employment, a very high percentage are likely to be interested and capable. However, the barriers these workers face in re-educating themselves for IT careers are formidable. For most, the best alternative is to return to a traditional institution of higher education to attempt either a second undergraduate degree in computing or to work on a graduate degree. If the person wishes to remain employed while attending a university, completing a traditional second degree or graduate program may take anywhere from 2-6 years. This length of time may be shortened somewhat (although not much due to typical sequencing of technical courses) by forgoing employment while going back to school, but obviously this would present a financial hardship to persons who in all likelihood already have family and household responsibilities. In either case, the cost of the education itself would be significant and the time to receive the needed education would be lengthy relative to the immediate shortage of IT workers. Also, in traditional programs it may take several years for a person to learn that they do not have either the aptitude or disposition for an IT career. In addition, most university IT programs are expensive to deliver, highly competitive, and are already filled to capacity. Also, due to the difficulty and complexity of adjusting university curricula to rapidly emerging technologies, some such programs are not well matched to industry needs.

Requirements to Help Solve IT Worker Shortage
What is needed to help solve the IT labor shortage is to somehow match the underemployed labor pool with the available IT jobs through programs that quickly and efficiently provide the necessary IT skills development. Specifically needed are programs that:

- Provide high quality IT education and training.
- Are sensitive to industry needs in high-demand IT fields.
- Carefully select candidates for the IT profession based upon personal characteristics, including measurable aptitude.
- Prepare candidates for the workforce in a relatively short amount of time.
- Reduce the financial burden and time commitment to candidates.

Current Response by Illinois State University: Foundation Computing Technology Program
As a response to the IT labor shortage, specifically mainframe application programming, the Extended University and the Center for Information Systems Technology (InfoTech) at Illinois State University have entered into a partnership with several business entities to create a certificate program in "Foundation Computing Technology." The program places holders of degrees from disciplines other than computing into an intensive, full-time, 12-week training program. The participants are paid while in training and, upon completion, are placed in full-time IT positions equivalent to those of four-year computing degree graduates. This program receives no state funding and generates residual revenues that are used to augment other University mission-related programs. The Foundation Computing Technology program has been in operation for 18 months, is tremendously popular, and is maintaining a higher than 90% success rate at selecting and producing participants who are capable of performing as IT professionals.

This program produced 43 IT professionals in FY98. Between June and December,1998 an additional 90-95 IT professionals will have been trained and employed for three different corporate clients. In comparison a large traditional computing degree program with over 600 majors will graduate between 100-120 students per year. Each of these traditional graduates will have taken upwards of four years to complete their education at considerable cost to them and to the taxpayers of Illinois. The four-year graduate is likely to have a wider range of technological experience, whereas the certificate recipient is likely to have more depth in the targeted subject area.

The instruction for the Foundation certificate program is delivered in workshop format in electronic classrooms with computer projection and with each participant at a state-of-the-art computer workstation. The instruction involves a great deal of instructor and computer interaction, and is tailored specifically to the needs of corporate partners. The training is developed and delivered by computing faculty, administrative staff, and several full-time technology trainers.

Although training is the largest single component, other services are performed by the Extended University in the context of delivering this program. These include:

- client/industry needs assessment
- requirements analysis
- marketing
- aptitude testing
- participant screening and selection
- program and curricular design
- material development
- site design and preparation
- performance evaluation
- individual support and consultation

The Foundation Computing Technology program is a model that can be improved upon and expanded to accommodate different areas of IT specialties as well as helping more Illinois citizens make the transition from underemployment to high-tech career.

ILLINOIS STATE
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The Extended University

A Technical Training Certification Program In Foundation Computing

Who We Are...

The Extended University is that part of Illinois State University whose role is to service the regional community and beyond with nontraditional educational offerings and services that are congruent with 21st century demands.

Our Mission...Opportunity and Employment

The information systems industry is currently experiencing a drastic shortage of qualified personnel. Through the formation of partnerships with industry, we have the mission of offering qualified individuals the opportunity to enter into one of the fastest growing professions in the world with the least risk while at the same time, assisting corporations with their staffing needs.

The Foundation Computing Program...

This program is designed to train individuals who do not have formal training in computer programming. In addition it provides instruction in the use of traditional editors (e.g., ISPF), compilers, and JCL in an MVS environment. It also prepares participants for the system development cycle used by the particular company partner. Yet another portion of this program allows participants the chance to do maintenance programming in a sheltered environment using actual production code.

Included in the training schedule are a series of mastery tests that provide feedback on a participant's grasp of the material, both from an applied as well as conceptual standpoint.

The content of the program is based upon a needs assessment conducted jointly by the partners. Modifications to traditional material are made to adjust the instruction to an audience that is new to computing.

Lead instructors from The Extended University teach the material in a classroom setting, and *associate instructors* (ISU faculty) assist in the hands-on problem solving sessions. This method allows us to train large groups at a time and still maintains a low learner-to-teacher ratio.

Instructors are drawn from the ranks of ISU's faculty, an experienced team who has been teaching foundation computing topics for the past 20 years.

Selected candidates are invited to participate in the training program as conditional employees of the corporate partner who offers a very competitive salary and benefits package during the training. Trainees who successfully complete the program become full time employees who are assigned to information systems positions at the company.

Mr. HORN. Thank you.

We now have our last presenter on this panel, Dr. Wendy Wintersteen, director of Agricultural Natural Resources Extension, Iowa State University.

Dr. WINTERSTEEN. Thank you very much, Chairman Horn and Congressman Crane and Congressman Davis. I really do appreciate the opportunity to be here to testify before you today.

I have to admit that I am trained as an entomologist, and when I first heard about the year 2000 bug, I thought it was something I would be able to help with. Unfortunately, it is not like a corn borer for corn or a green clove worm in soybeans.

Mr. HORN. I might say there is either an apocryphal gag going around or it is true. When our embassies checked some countries and asked, "What are you going to do with the millennium bug?" They said, "Oh, we are just going to spray a lot harder." [Laughter.]

Dr. WINTERSTEEN. Agriculture truly is faced with a very serious problem and probably the biggest problem is the fact that we have a tremendous amount of lack of awareness and understanding about what the potential impacts will be.

Currently, American agriculture is the most competitive system in the world, and that is because we have an integrated production, processing and distribution system. But one weak link in that chain will truly have disastrous consequences. Unfortunately, we do not have the systematic research needed to really understand what some of these consequences may be. I can give you some examples.

In Iowa, we have 14 million hogs in confined environmentally maintained houses. In Minnesota, they have 44 million turkeys in the same type of situation. And come January 1, 2000, if we either have computer problems or we have power outages, we will be faced with a very serious concern. And producers should be prepared for backup systems. And when we talk to our engineers and we talk to producers, about half of them would have the systems available for backup. The important fact to understand here is that when we lose ventilation systems in these houses, we can have animals die in 6 hours. So it is a very serious situation.

We also have concerns about how we use computers and related control systems for feed preparation of livestock, as well as maintaining records about fertilizer, seed and chemicals and other inputs related to agriculture. In addition, the massive amount of grain we store in the United States is also very much controlled by systems that are vulnerable to this problem.

We are also very concerned about the potential impact on the daily marketing of commodities and the maintaining of records of these transactions and the associated financial transfers. The possibility exists of significant disruptions in the marketing channel and related business transactions and day-to-day recordkeeping.

At Iowa State University, we are working with the Iowa Manufacturing Technology Center in cooperation with State agencies and the U.S. Department of Commerce's NIST program that is a Manufacturing Extension Partnership, to begin a readiness program for our small manufacturers as well as our farm producers and our agribusinesses. Our program includes awareness, risk assessment,

intervention and remediation. The first step is really to help the farm producer, or a local elevator operator to understand their own system and the potential flaws that exist there. But more importantly, how they interface with the infrastructure is where we really start to see the real concerns and really start to have difficulty in understanding what we can do to help the situation.

Again, most of our producers, most of our local elevator operators are not aware of the problem. Many of them are very small firms and do not have the ability or the capacity to even begin the process. Recently, I was talking to a producer, in fact it was Monday, when I found out I would be testifying, and I asked him what did he think about the year 2000 problem. And he said he had about 100 priorities and this would be 101 on his list.

So clearly, we have a real job in making this an awareness effort for producers and small agribusinesses in our State, and we need to help them understand the risks, find the remediation, find a plan, so we can avoid very costly disruptions to our food processing, distribution system.

Thank you.

[The prepared statement of Dr. Wintersteen follows:]

Testimony for the House Task Force on the Year 2000 Computer Problem
by
Wendy Wintersteen
Iowa State University Extension
September 3, 1998

America's over 200 billion-dollar agricultural industry has 485 days to prepare for the year 2,000 (Y2K) problem. Y2K presents numerous challenges for an industry that provides a constant flow of agricultural commodities to consumers and end users in bulk, processed and perishable forms across America and to markets around the globe. This problem must be addressed at the highest levels to ensure a continual stream of safe and available food products, to meet the needs of agribusiness and producers and to maintain and expand our global markets. The success of American agriculture in meeting the Y2K problem will also have significant impacts on our rural communities, already lagging behind their urban counterparts economically.

American agriculture is the most integrated production, processing and distribution system in the world and this makes us globally competitive but also vulnerable if there is only one weak link in this chain. Systematic research results are not available for assessing potential costs or problems. For this reason, I will focus on examples of current concerns. Of fundamental concern to poultry and livestock producers on Dec. 31, 1999 will be the need to provide proper temperatures and ventilation for tens of millions of animals confined to environmentally controlled buildings that are reliant upon computer chips, as well as uninterrupted power supplies from electrical utilities and propane suppliers. For example, in Minnesota, 44 million turkeys live in environmentally controlled facilities and in Iowa, 14 million hogs live in similar facilities. Power interruptions on a cold winter's day could lead to severe problems and animal loss, particularly for poultry and livestock producers. Most producers should be preparing emergency back-up systems. A similar concern exists for processors, warehouses and marketers of food products, particularly perishable foods that require controlled temperatures for preserving quality and safety.

While some researchers have estimated farm personal computer usage at 47%, the Y2K challenge is the greatest for agricultural infrastructure. Computers and related control systems handle most aspects of feed preparation for livestock, as well as maintain records of agricultural inputs like fertilizers, seed, and chemicals. Grain in storage is sensitive to conditions controlled by systems that are vulnerable to the Y2K problem.

Similarly computers and electronic communications systems are of fundamental importance in the daily marketing of commodities and in maintaining records of transaction and making associated financial transfers. The possibility exists of significant disruptions in the marketing channel, related business transactions and day to day record keeping of farm operators.

Iowa State University Extension and the Iowa Manufacturing Technology Center in cooperation with state agencies and the U.S. Department of Commerce NIST Manufacturing Extension Partnership have begun a Y2K readiness program for manufacturers, agricultural producers and agribusinesses. Extension's Y2K program focuses on awareness, risk assessment and intervention or remediation. The first step is a Y2K readiness assessment of the farm operation or business and its upstream and downstream links. Next, Extension's program suggests practical options and timetables for intervention or remediation. Standard tests that can help agricultural producers and businesses do some of their own preparations are included as a part of the training and education program.

Unfortunately, most farm producers and many agribusinesses in Iowa, and around the Nation, have not considered or are unaware of the numerous ways that Y2K may adversely affect their business operations or ability to meet the needs of their clientele. Many of these are small firms that are not equipped to deal with the Y2K problem without help of some kind. All firms, regardless of size should have the opportunity to effectively prepare for the Y2K event. Unless major educational efforts are made in the coming year, the agricultural sector will not be properly prepared for the challenge of Y2K. As one farm producer told me, "Out of my top 100 concerns right now, this is dead last." Obviously, we need to make Y2K preparation a top priority for producers for producers and agribusinesses to avoid costly disruptions and risks to the food supply and unnecessary financial losses.

Attachment: Iowa Y2K Outreach Schedule

Iowa Y2k Outreach

Awareness Briefings

State wide conferences	No Charge
Small groups	Expenses
	Call the Iowa Mfg. Tech. Center at 515-965-7125

Training of Awareness Presenters

When :	September 30, 1998	8:00 Am – 4:00 PM
Where :	Scheman Building, Room 204	Iowa Center Ames IA
Cost :	$ 150.00	Call Iowa Mfg. Tech. Center 515-965-7125

Work Shop Series

Work Shop I **Risk Assessment & Project Planning Techniques**

When : October 21, 1998 1:00 PM – 4:00 PM
November 11, 1998 1:00 PM – 4:00 PM

Work Shop II **Remediation of Desktop Hardware and Software**

When : November 18, 1998 1:00 PM – 4:00 PM
January ??, 1999 To Be Announced

Work Shop III **Remediation of Embedded Processors**

When : January ??, 1999 To Be Announced

Work Shop IV **Other** Topics To be Announced (e.g. testing, server remediation, etc.)

ALL WORK SHOPS

Where : At every Community College – ICN Facility
Cost : $ 50.00 per work shop --- materials included
How : Call your Community College (space limited)

Additional workshop dates will be scheduled and announced for 1999 depending on interest.
At least one workshop each month in 1999 is anticipated.

For More Information

Contact your nearest Community College, any County Extension Office (see back page), or;

Phone	**515 965-7125**	**MTC Web page**	**www.iowamt.org**
Fax	**515 965-7050**	**Extension Web**	**http://dbs.exnet.iastate.edu/calendar/**
E-mail	**y2k@exnet.iastate.edu**	**Hot Line**	*to be announced in the near future*

Presented by Iowa State University Extension in Partnership with all of Iowa's Community Colleges, the Iowa Department of Economic Development, the Iowa Department of Management, the Iowa Association of Business and Industry and the United States Department of Commerce NIST Manufacturing Extension Partnership

Mr. HORN. Well, we thank you. That is a very important point you have made. We have not had anybody from the agricultural sector before, and you are just the person to talk about it. Agricultural extension in America can do a lot because your whole business, which has led from 50 percent of the people on the farm to 2 percent or less, is communication—the latest methods, how you improve something. So, to interrupt on this one question—are you aware of the agricultural extension community helping on this throughout the country?

Dr. WINTERSTEEN. No, we are in the process of negotiations with USDA to see if we can be part of the effort to bring our other land-grant partners in every State on board and to understand that there are some very good materials available ready to go if we can put, again, that very effective delivery system of communication out to producers and agribusinesses.

Mr. HORN. Well, I would ask staff to prepare a letter for us to send to Mr. Glickman. He has been very supportive of this whole year 2000 situation. They have some major facilities in New Orleans, payroll for numerous Federal agencies and so forth, and I am sure he would care about this. We will try to get into that. And if you could send me your proposal, we would be glad to endorse it, because it is very important.

Dr. WINTERSTEEN. I appreciate that.

Mr. HORN. Ten minutes to the gentleman in whose district we are presently learning things.

Mr. CRANE. Well, thank you again, Mr. Chairman.

And just to followup on that, agriculture, of course, is one of the biggest components of our State production and getting that message transmitted within the agriculture community is positively vital. And so, Mr. Chairman, I just want to congratulate you on getting that message distributed.

Let me quickly ask Mr. Hall, we have heard testimony about the health industry and it appears to be at great risk in fixing the Y2K problem. This has been attributed to a variety of factors including limited budgets and lateness in addressing the issue. One of the concerns I have, though, is do you agree with this assessment and what do you think people who depend on devices such as pacemakers should do?

Mr. HALL. Well, I do agree with the assessment, I think the health care industry has been very late getting started.

One thing to say, though, is that what we have found is that pacemakers—anything that goes in the human body, as far as I can determine—will not fail, will not have an effect. It is the monitoring systems that tell the doctor what is going on that may have a problem. But there are some systems that are life-sustaining that have run into problems.

Basically the only thing that is going to help anybody do anything is to get started on testing them. That is the bottom line. If you do not test each individual system and work it as a crisis problem because you do not have that much time any more, then you are just going to be playing games—and you do not know whether the system will work or not, or the piece of equipment will work or not, or that it will give you errors. Systems that fail do not bother me as much as those that give me errors, especially minor er-

rors, because how often do we do what a computer tells us to do because the computer told us to do it, not because we really understand what we are doing, or have time to understand what we are doing.

So my bottom line is that it needs to be tested either by the vendor or by the health care provider or whoever, and then you can know whether or not you are going to have a problem. You just need to know.

Mr. CRANE. Mr. Lang, have you developed a contingency plan in the event the CTA does not make the deadline and your systems go down?

Mr. LANG. Actually, based on our activities, we anticipate that we will be able to accomplish all of those particular activities. In the transit industry, we always make contingency plans for almost every form of operation, so that would be our normal course of business in terms of just making every day contingency plans. We have emergency response plans to a number of different scenarios in addition to this one.

Mr. CRANE. God willing, we will not need them, but just checking.

Mr. Ho, is any energy delivered by ComEd generated at plants in other States or in foreign countries such as Canada? And does this present a unique Y2K challenge?

Mr. HO. To my knowledge, no. The energy that is provided to our customers is provided to us—either generated on our own or provided through the surrounding utilities on our grid.

Mr. CRANE. And Mr. Crow, I am impressed with your training program to respond to the IT worker-shortage problem. How can we get more institutions interested in providing this type of training?

Dr. CROW. Well, I suppose we could do that by providing the awareness that it is possible. There are a number of barriers to making this work. Part of it has to do with getting the right people into the program, so there is an input side of this problem. And to do that, you need to actually take people that are pretty good people, pretty educated people and have an aptitude. And they are probably in jobs or occupations in which they think of themselves as under-employed. So you have to provide them with an employment opportunity going into it, and you have to select them very carefully. So there is a process both of selecting the people, and then there is a process of doing the training itself. And on the training side of it, part of the problem that we face is that we are limited at a university by our existing resources, both facilities and the expertise of our people.

So it has been very slow for us to build up. Even though we have corporate sponsors, we have to provide space for this activity to go on, so that sort of thing is a problem for us. Then we have to employ full-time trainers and these are the sort of people that, of course, are in high demand, and their salaries are out of whack with the universities in typical. So we have to negotiate arrangements in the university so that we can pay people an appropriate salary to keep them around and so forth.

Mr. CRANE. Well, I thank all of you for your participation and hope that we can continue to expand this information that you have provided us here on the subcommittee.

I want to thank especially our chairman, Mr. Horn, for letting me participate inasmuch as I do not serve on that subcommittee, but I have major concerns, as we all should have. And I want to congratulate him and Congressman Davis for being here to participate. Unfortunately, I had a prior commitment to speak at a luncheon in another part of my district, the neighboring village of Arlington Heights, and so I have got to run. But again, I thank you for the opportunity, Mr. Chairman, and thank you, Tom, both of you for being here and helping to convey this message, and I hope we get some media coverage too that focuses on the points that all of you have stressed here today.

And with that, I yield back the balance of my time.

Mr. HORN. Well, I thank the gentleman. We appreciate being in your district, and your people should know that you are one of the most diligent Members of Congress in doing their work. There is an old saying, there are show horses and there are work horses, Mr. Crane is a work horse and those are the people the rest of us admire. So thanks for coming.

Mr. CRANE. Thank you.

Mr. HORN. Mr. Davis, 10 minutes—another work horse.

Mr. DAVIS. Thank you. I thank my friend for welcoming us today, too.

I have got a question for each of you, let me start with Dr. Crow though. I have got a university in my district that has tried to orient toward technology, George Mason. One of the biggest problems we have is finding the people to teach the courses. Recruiting people who are knowledgeable and can teach frankly is difficult, given the salary structure, when they can go out, if they have that kind of knowledge level, in the private sector and make a lot more money. Are you having those kind of issues, having to face them?

Dr. CROW. Well, we have been crafting training programs for about 8 years to go out into specialized markets, and in fact several of our partners are here today, people from the State of Illinois, we have been providing training for the State of Illinois for a number of years now. One of the things that we have done is we have crafted a structure at the university where we have allowed our faculty to earn additional moneys in order to create and provide these sorts of training programs. So that has helped us retrain and recruit faculty who we might not otherwise get, based on our salary structures. In the last couple of years, we have grown, with these new programs, so large that we have had to retain full-time people, full-time faculty, and we have been allowed the flexibility at the university to pay them salaries that are probably higher than the norm, let us say, in order to be involved in these training programs. And so that is a problem within the salary structures.

Now the twin side of it, we have been successful in our training programs doing that, but I have to say at the university itself, it has been difficult for us to keep qualified technical staff employed. One of the ways that we have helped with that too, I think, is that we have allowed that technical staff to participate in our training program. So, for example, they might use their vacation days to be

trainers in our program and receive additional payments through that method. So again, that augments their salaries and they are more likely to stay with the university, and we have a number of individuals also from the tech staffs that we, I guess you could say, employ outside of their typical university employment.

Mr. DAVIS. I appreciate hearing that, and I do not want to just pursue questions with you, but that raises a host of other issues that I just want to, while I have you here, ask you about. COBOL is not considered the future of the IT industry. If you get trained into that area, you have got, you know, a limited applicability. It probably serves as a good—I am an old Fortran guy who knows none of the new languages, but it serves as some kind of base to go on and learn in C+ or Java or whatever else you teach, it gives you at least some familiarity with it.

But recruiting people to come in and train, how long does it take to train, for example, somebody who knows nothing about this but has the aptitude to be proficient enough in COBOL, for example, to come in and be useful in the Y2K-compliance area?

Dr. CROW. We have a 2-year track record, 12 weeks and the word we get back, the evaluations from the hiring companies is that these people perform as well and many times better than the 4-year graduates. And to be fair to the 4-year graduates, they have a wider breadth of experience and will be able to move into many other things quickly.

Mr. DAVIS. No, that answers it, because I think sometimes in Federal procurement sometimes, we are still locked in on educational requirements as opposed to training requirements, which are much more important for some of these technical areas. And I think that is what you were saying here, that it is not the degree that matters sometimes, it is the technical expertise. And you are telling me that in 12 weeks you can get somebody who is competent, which not everybody is in this. You have to have some aptitude to do this, but you can get them up and running.

Dr. CROW. That is correct, and we are finding that in the general population, there is a significant percentage of the population that is capable of doing this and being trained in 12 to 14 weeks, depending—we customize a little bit to the installation.

Mr. DAVIS. You know, in my congressional district alone, we have over 20,000 jobs in this area, not just COBOL, but in the whole IT area, that we cannot fill right now and those jobs end up, if we cannot fill them within this country, going offshore. That has caused some Members of Congress to advocate extending H1B visas for technical people in the levels that we have for that, doubling that, to bring technical people from abroad and bring them in. But what you are saying is interesting because it says that we have the competency here, we just need the training. And if more universities and communities and businesses would work in partnership to be proactive, we have the existing labor base here, given a fairly short period of time to be trained. Is that a fair comment?

Dr. CROW. I think that is correct. It is not an easy task, but we can do it, yes.

Mr. DAVIS. I mean not all the jobs are COBOL, some are much more technically proficient, and I am not arguing against the H1B program, but the Y2K is one area where they talked about bringing

people in, and this seems to be an area where we may be able to meet this domestically if we act quickly.

Are we having trouble getting enough people who are qualified to go after this kind of training? For example, in my State of Virginia, we have more psychology majors graduating from universities by a significant margin than we do graduates that are literate in computer programming and the skills that go with that. And sometimes it goes down to the guidance counselor level and others in just letting kids know these opportunities are available for them. And given the salary differentials, you would think more people would be wanting to go into this.

Dr. CROW. Yes, and part of the problem is institutions of higher learning are very slow to meet market needs and the numbers of people going into computing nationwide are relatively flat at universities; however, to be fair, I think that the capacity for us to deal with those people is probably full. We are operating at full capacity, so it is not likely we are going to be able to produce more through 4-year programs.

Mr. DAVIS. And that is limited, to some extent, by the number of chairs you have and people you are able to recruit to stay in academia?

Dr. CROW. That is correct, and we are very slow to respond to, well, there is a huge need in this area so we increase those programs, we are very slow to do that. And we have a difficulty in employing the tech faculty, as you might expect.

Mr. DAVIS. And let me ask this for all of you who deal with this. This is a long-term problem though, is it not? It is not just COBOL, I mean this whole information technology area, this is a long-term program where we are going to need more qualified people, it seems to me. Y2K is a niche of it and a very important niche over the next year or two, but after that, the need to find experts in this area, is going to continue to grow. And if we do not look to the universities and, in particular, the public universities to solve it, we end up losing jobs offshore, we end up having private groups, we have Computer Learning Center and some other areas moving up and stepping up to the plate and trying to fill it. But it just seems there is an expanded role and Illinois State seems to be stepping up to that and a few other universities around.

Dr. Wintersteen, do you have any comments on that?

Dr. WINTERSTEEN. I certainly agree that there continues to be a huge demand, and I think that Dr. Crow's comments about the lack of a university being able to respond oftentimes is a problem. In Iowa, we really try to work very effectively with our community colleges, and I think they have to be part of the response in this area.

Mr. DAVIS. Just a note, we had a situation—I am chairman of the Subcommittee on the District of Columbia. Dr. Horn serves on that, as well. In trying to get the University of the District of Columbia to step up and offer more courses in this area, and the President took to the faculty and, of course, they resoundingly rejected it because that means that some of their jobs, some of the current disciplines that are offered would be diminished and their jobs would be gone. Many of those jobs are dead-ends in terms of employment. So, it is very difficult to get that and it takes leader-

ship, and I am just glad to see you all stepping up to the plate on that.

Let me just ask Mr. Ho a little bit about the legal liability issue. You have not—I know you are not a legal expert, but as you look at this from a private sector perspective, you have to be worried about things not working on time, about people needing to get a critical service that they contract with you to get, not receiving it and the resultant tort liability that can result. Now States are addressing this. The Federal Government has not addressed this yet, I do not know that we will, and you would not do it now because then you would lose any incentive. But that has got to be one of the driving forces in the private sector, is the fear that if you do not deliver these services in an efficient manner, that people can get hurt and liability could result. Any comment?

Mr. HO. Indeed, there must be business continuity, not only of our own business, but certainly our customers, both large commercial and industrial as well as our residential. And that goes right to the point of public safety, whether it is experiments and things going on in agriculture or in pharmaceutical companies to residential customers that have, you know, critical medical devices in their home. So, it is a very important thing for us.

Having said that, the legal issue, a few months ago, we had the practice of issuing mutual non-disclosure agreements with our major customers so we could share information. And so at that time, we were sharing information with companies. Now, we are a little bit more relaxed because so much more of our information is required to be disclosed, certainly with the SEC requiring project status, in a very detailed format, EEI and NERC reporting up to the DOE requiring information. So much of this information that I have provided here and even in further detail is communicated.

Mr. DAVIS. I have actually talked to some IT service deliverers who are reluctant to get into this business except to fix systems that they had already put up, because if they touch it, they are afraid in any kind of lawsuit, they are going to get thrown into it downstream. I do not know if any of you have seen that, and I ask you if any of you—you can just raise your hand and you can comment. Have you seen that?

Mr. HO. Yes, we have seen that. We have also seen companies—we have as part of our program plan to have independent verification and validation of our work, again to provide an additional degree of confidence that we will be ready. And the parties we solicited were not all anxious to dive into that scope of work.

Mr. DAVIS. It sounds like the Chicago Transit Authority is taking reasonable steps and is trying to be proactive and move ahead, but you do not have sovereign immunity in the State of Illinois, do you?

Mr. LANG. No, we are a separate municipal organization, separate from the city of Chicago.

Mr. HORN. Move a little closer to that microphone, please.

Mr. DAVIS. If the systems did not work, for example, if something broke down and someone were injured as a result of the transit system not working as a result of the Y2K or embedded chip or some issue, and you could, of course, be sued and perhaps get it before a sympathetic jury, you know, who knows what could happen under those circumstances? You, of course, are anticipating

what is likely to happen, the train could stop. What are the likely ramifications of failure for your authority if you are not compliant? Let me put it another way, if you have an embedded chip or something is wrong with an elevator, it could do several things. It could go down to the first floor in the lobby and wait, a lot of them are just programmed to do that. It could stop between floors, or it could crash. What are the likely ramifications for your trains running if there is a problem and the system does not work?

Mr. LANG. Well, actually, if Mr. Ho and Unicom provide the electricity, our trains will run.

Mr. DAVIS. OK.

Mr. LANG. Our trains though are designed to fail safe, that means if power is cutoff, they will automatically slow down and stop. So from that perspective, if you look at just our normal design structure for our vehicles, the safety issues, which makes us feel comfortable that if there is an issue at that point in time, the natural design of the vehicle will prevent some sort of problem from happening.

Mr. DAVIS. So the worse that could happen is the trains do not run, basically or they slow down and let people off?

Mr. LANG. They will slow down and stop.

Mr. DAVIS. That is the worse that happens, and they do not startup as far as——

Mr. LANG. Obviously for all of our facilities, we face any other risk that anyone else who owns a commercial building would face with the elevators, escalators, heating and ventilating systems that were mentioned earlier.

Mr. DAVIS. OK. On the embedded system issue, I guess, who knows, there are so many different embedded chips out there that program so many different types of actions, whether it is on trains, on toasters, microwaves or whatever. For some of them, the limitation is that the product just would not function correctly, but some of them, particularly the timing, it seems to me, could have some severe ramifications.

Mr. HALL. Yes, sir. The thing that everybody is finding is that everything is really individual. I have had people tell me that they have had some weird glitches, and then I have had people say, "I do not have any problems." The thing that bothers me is—and basically it is one of the reasons why we will never have a silver bullet for this, because how many of you know a programmer or an engineer who knew a better way to do it and did it their way? OK? That is the reason we will never have a silver bullet because everybody did it their own way.

Mr. DAVIS. Exactly.

Mr. HALL. And it is just knowing what is going to happen. I mean, you know, for example, you have redundant systems in some cases, where you have one or two or three systems, the first one fails, the second one is supposed to go on; that does not work for year 2000 because here you are looking at a single design failure, not a single point failure.

Mr. DAVIS. It is also one of the problems in training people, you can know COBOL, but a lot of these systems are not COBOL or they are some hybrid that some expert who knew more than the system inventor, and you get into it and it is far more complicated.

Mr. HALL. And in our case, in the engineering side of embedded systems, you are talking assembler where you actually have to talk to the machine in machine language, and that is nothing anybody wants to do, really. I mean basically we are having embedded system specialists who do not want to work with year 2000 basically because an embedded system has about a 3-month generation cycle, so if you work with the year 2000 for 18 months or a year, you are four or five or six generations past and your career is dead. So, they do not even want to do it. So you have less incentive in the embedded systems side to work with year 2000 than you have in the COBOL or the mainframe side.

Mr. DAVIS. And in fixing it, if you touch it, is there the problem that, "Gee, I might be held liable if something goes wrong and the thing is not fixed along the way or at least get included in a lawsuit?"

Mr. HALL. Yes, sir. My expectation in this testing that is going to come up in the next year is that we are going to create a lot of boat anchors.

Mr. HORN. A lot of what?

Mr. HALL. Boat anchors, basically systems that are dead, and you cannot fix them.

Mr. HORN. I see.

Mr. HALL. Because you have to be very, very careful how you test these systems, or you will freeze them up and they just——

Mr. DAVIS. Well, with that encouraging news, I guess I will yield back my time.

Mr. HORN. That is a very interesting dialog, that is why I have let it go on as long as it has, because it is right on the difficult points that we really have not faced up to in most of these plans and most of what has already been done.

One of the things that interests me, and perhaps you, Mr. Hall, know about it, are you familiar with the Sion Group, S-i-o-n G-r-o-u-p?

Mr. HALL. Yes, sir, a little bit.

Mr. HORN. We had Jerry Smith, the president of that group, former Purdue staff member, testify before us in Indianapolis yesterday, and it was rather interesting. They have shared, the Purdue group that he represented, with all of the big 10 universities their approach to this, and it is a lot simpler than everybody else's approach. And I guess I am just wondering why more people are not taking advantage of what they have already shown they can do in terms of the rate at which they can fix up the lines of code and this kind of thing. And I know there are a number of firms that do that and some do it speedier than others, with 24-hour turnaround and that kind of thing, I know there is a North Carolina firm like that. What are we missing here in sharing who has these various ideas so corporations, non-profits who are also corporations, 501(c)(3) could use these ideas and pool them, utilities and all the rest that are sitting here today?

Mr. HALL. I think it is basically just media attention, if anything else. I mean how do you normally get an idea or a piece of information out to the general public or the general numbers of companies? They see it in industry publications, they see it in the Congressional Record, if you will, they see it in newspapers, and so far, the

amount of denial or the amount of "this is not news, therefore I am not going to print it" has been amazing to me.

Mr. HORN. Well, what he is arguing is that too many of the major consulting firms want to charge a very high price for what is obvious that you can do at a very low price under his system that they developed at Purdue.

Mr. HALL. It depends on whether you can use his system or not. Again, what you are talking about is niche, the niche that they are into, if you have got a system you can use their stuff on, then fine. That would be great. But in maybe 60 to 70 or maybe even 80 percent, I am not sure, since I am not a mainframe-type person, who would not work in the particular interface or the particular program or the particular hardware that you have got. So you may be stuck, like in embedded systems, in certain cases like refineries, you can get things done. But traffic lights, we do not have quite as many people to work traffic light systems as we do have refinery systems. You do not have quite as many people who understand the ins and outs of HVAC systems as you do the more lucrative, if you will. So it is more of a niche. Year 2000 is a lot more individual than any other thing we have ever had, and most people do not want to hear that because basically it means they have got to accept responsibility for their systems and get it done.

Mr. HORN. Well, as was brought out in the exchange between Representative Davis and you, a lot of people in the early days and as these programs have evolved, have added things to meet particular needs that are not used anywhere else, it is just unique to that programmer and that system and some demand that was made on it, and they satisfied it by either bridges or whatever.

Mr. HALL. Yes, sir, and that is very true also in embedded systems. How many power plants or how many petrochemical plants have grown and had new systems added to old systems and new systems added to that, and it is very, very difficult to find out how to fix them.

Mr. HORN. I think universities are often a good example of that patchwork, you have got a lot of eager beavers around there that are sort of playing with the system to see if they can get more out of it. Our problem with the Pentagon, the Department of Defense, civilian side primarily, is that they cannot even find the instructions now in some cases. They know that when they put it in here, it comes out there and the job is still done, but to try and track back that language and that program, a lot of it has disappeared, either in people's heads or whatever, I mean you would think the basic order, just like you would hope in running the university's accounting processes, that somebody would have systematic records day by day of what program we are using here, just as we have all learned to use a disk at the end of the day so that when there is a power outage, we have not lost everything, we just put that data base back into the system.

Mr. HALL. I think the major problem is with all the downsizing that has occurred in the last 10–15 years, the people who have been easiest to downsize are the maintenance people and the people who keep records, because we have not needed anything with this level of detail before.

Mr. HORN. Yes. By the way, Mr. Willemssen, I should not have let you escape me. Please come back to the table. He is the permanent resident panelist.

I want to ask Dr. Wintersteen, is my memory correct that Iowa State University was one of the first two inventors of the modern computer?

Dr. WINTERSTEEN. We say we are the first.

Mr. HORN. You are the first, and the other is the University of Pennsylvania, is it not?

Dr. WINTERSTEEN. I think so. [Laughter.]

Mr. HORN. But I must say, you see, both universities failed to get the right patents.

Dr. WINTERSTEEN. Right.

Mr. HORN. Otherwise, you would have Mr. Gates' salary as your endowment for Iowa State and the legislature would not have to appropriate for you any more, you could just live off of $40 billion. Yes, when I saw you, I thought hey, there is where the computer age began, not while you were born, maybe while I was born, but it is a rather interesting story there. And you think you were first.

Dr. WINTERSTEEN. Yes, we were.

Mr. HORN. Good, OK. Has that helped then? Given your people there in computing, have they still kept up in the School of Engineering on that?

Dr. WINTERSTEEN. They have kept up tremendously. We have an excellent computer science department in our College of Engineering, excellent. For several years now we have had a Y2K committee at the university and clearly there is a very high expectation that we will be compliant.

Mr. HORN. Good. Now are there any comments anybody would like to make on the exchange here that we have had recently with Mr. Hall. Anything else to say on the subject, Mr. Ho?

Mr. HO. We are finding—I would say that the embedded systems certainly for ComEd do pose a significant challenge for us. Certainly finding it all, as Mr. Hall indicated, and then fixing it, is an enormous challenge, but we do expect our power plants on the generation, transmission and distribution side to be ready for the year 2000 by the fourth quarter of 1999.

Mr. HORN. Now maybe this has been brought up and I have missed it, but one of the situations within the power industry is the interconnectability of power from other systems coming into your system to meet particular needs; in other words, the grid. To what extent are you dependent upon out-of-state power generation or out-of-country power generation? In the case of Canada, what do we know about that, and what do we know about the interconnection and the programming of the two systems?

Mr. HO. The interconnection and the grid stability is a key issue that has been discussed in Washington, DC. Last month, we attended an industry forum to begin some contingency plans and working together to ensure that the right result happens during the conversion period. So at the Federal level, we have been working with NERC, EEI——

Mr. HORN. That is the Nuclear Regulatory Commission?

Mr. HO. No, that is the North American Electric Reliability Council.

Mr. HORN. OK, who has created that?

Mr. HO. That is an industry group that covers grid stability and reliability issues for Canada, the United States and Mexico.

Mr. HORN. Is that an industry group that essentially is under the Edison Institute?

Mr. HO. It is working in conjunction with the Edison Electric Institute, yes.

Mr. HORN. So it is not a Federal committee?

Mr. HO. No, it is not a Federal——

Mr. HORN. It is the people down there on the firing lines.

Mr. HO. That is right. They have been requested by the Department of Energy to formally respond to the question of electric reliability in North America, and we are supporting and working in that forum.

Mr. HORN. Give me the full name of that again.

Mr. HO. North American Electric Reliability Council.

Mr. HORN. Electric Reliability Council, OK. I had not heard of that until yesterday, and I did not really pursue it that much because we were running a little behind time. I think—I know Mr. Koskinen, the Assistant to the President to coordinate the year 2000 effort for him, has wanted to work with the utilities because that is the worry we all have, that something will happen on that grid that will be profoundly more damaging to our economy than anything that a lot of other firms that are not in the energy business. That might be an inconvenience, but this would be disaster time, just given the global economy of which we are a part.

Mr. HO. Right. On a local level, we are working with another industry group called the Illinois Energy Association, and that is a collection of Illinois utilities that agreed to share information regarding Y2K. And so we are coordinated both at the Federal and at the State level.

Mr. HORN. Yes. Well, we heard good reports in Ohio on the cooperation of rival firms, if you will. We had felt the industry was ducking us in Louisiana and Texas, and I think one of the problems we face in this situation is there are too many general counsels of firms that advise the chief executive officer to not say anything because what you say might be used against you. And I think that is sort of a stupid policy, but that is the way some cautious general counsels are. You just have to tame them and tell them, hey, I am running the show, not you and we are going to tell the truth from the beginning, and if we make a mistake, we will admit we made a mistake.

Mr. Hall.

Mr. HALL. One of the things that I find very good is that among the electric utilities there is actually some nationwide work being done on it. Another problem that I find, though, is getting not much awareness. Every municipality I have worked with said that their wastewater treatment and wastewater flow is the most critical item, bar none, even electricity. And I have yet to see anybody from a national level or even a State level start looking or trying to get everybody together to determine whether the water and the wastewater flow and the other things can come together. I think there are over 70,000 water districts in the United States, and they are all autonomous, and they are not hooked together with a grid,

so they do not have to worry about anybody else. But it affects us very much. And that is the one other area, other than agriculture which I am glad to see somebody is working on, that concerned me.

Mr. HORN. Well, you have a correct concern. The first time it came to the attention of this subcommittee was in Ohio where that very question was raised, and you are absolutely correct. When you think of the pileup of garbage, disease, sanitation that cannot be pursued effectively and so forth, you are right on a major topic, which would really bring another disaster like a plague of the First World War where thousands died. And that would be something if we could not move that garbage out and process it in the usual way. Those plants are just like other modern plants, they have a lot of embedded chips, they have a lot of automatic processing, and the question is: What is your contingency plan, just dig big trenches and haul it away and dump it? That is what we used to do on the farm. That is now considered not too environmental, we put everything else in there, too. But the EPA has not gone after the farmers completely yet—a few of them—on runoff in the rainwater, which is a major problem. When manure and all gets into the dropping water and it goes out into the underground water system, we have major problems. And people do recognize it and the EPA is into that one. But what happened 50–60 years ago is a little hard to figure out, although they are also into those super sites that have not faced up to reality yet either.

Mr. Willemssen, do you have any thoughts at this point?

Mr. WILLEMSSEN. The first item I was going to raise, Mr. Hall just raised, because we had not talked about water yet. I had not heard that come up. And I think that is probably the most important infrastructure item that if we were here 12 or 15 months ago, not much attention was being paid to it. And now there is increasing evidence of a great number of embedded chips in water and wastewater systems that must be dealt with quickly. And so I want to just re-emphasize the importance of that area.

Another point that was made on the embedded chips that I wanted to reiterate was the need to set priorities because there are too many. They cannot all be addressed, and so organizations need to look at their most important business areas; if it is delivering power, providing telecommunications or whatever, they have got to look at the embedded chips that support those particular areas.

And then last, one thing I would like to again emphasize is the need for all the organizations here and others to continue promoting awareness with the public, which is an important issue. But to the extent that you can provide data on exactly where you stand on this particular issue so that we can raise the level of concern, in part, now with the public, as opposed to having more of a panic situation in a year to 15 months. I would personally much prefer that, and I think we can raise the level of this issue, to the extent that we can promote more awareness and provide data on exactly where we stand. Because as I have mentioned to you, Mr. Chairman, before, we do not know where we stand as a country right now on water, power, telecommunications and some other key economic sectors. This is a recommendation we have previously made to Mr. Koskinen and we have not yet seen the kind of results in that area that we need to see.

Mr. HORN. Has the General Accounting Office volunteered to do this study, or do you need a letter out of a few of us?

Mr. WILLEMSSEN. We are embarking on several efforts in the water, power and telecommunications area right now to try to gain this information—because we did not see it coming out of the administration, we felt it incumbent upon us to go out and gather the information and find out where we stand.

Mr. HORN. Yes. Back in 1969, Senator Humphrey and I were on a TV show where we advocated emergency preparedness and early networking where a question like that would go up a Federal hierarchy in a planning group in the Office of the President, so they could coordinate that with relevant Federal departments, and we still do not have that, because everybody is afraid of an overly centralized Federal Government or something. But when you find this, the President should not be the last person to know. And I have numerous examples of where the President is often the last person to know because the bureaucracy does not want to tell him anything—just give him the good news.

And I think what you are onto there with that study is tremendously important, and we will give it a full airing when it comes out.

With Commonwealth Edison, this might have been brought up, but you mentioned that you expect the core business systems to be 100 percent compliant by the second quarter of 1999, in other words, by June 30, 1999. Do you intend to conduct end-to-end testing after that, is that the thinking?

Mr. HO. No, the testing will be performed prior to that.

Mr. HORN. OK, so the testing would be complete by that part.

Mr. HO. Yes.

Mr. HORN. Will there be enough time to conduct the testing in an operational sense and make any revisions? I cited yesterday in the hearing, the FAA had a radar problem. They brought the equipment into the laboratory and thought they had corrected it, got it back in the tower. It was absolute chaos because it did not have all the interrelationships that you really have in the tower. You think it works again, but if you have got hundreds of variables roaming around, that can prevent it from working again. So I was just curious on what we are meaning by a test. And you are saying that would be an operational test.

Mr. HO. Yes, we will be performing tests as part of our process before we check it off as complete and ready for the year 2000. Additionally, we will also be drilling as part of our overall program on contingency plans and refining that as we go along throughout 1999.

Mr. HORN. Now, hospitals, of course, and some other firms have alternative supplies in the sense that they can switch on if the power is there, or batteries are there, or whatever, their own energy source to work some of their equipment. But that is not going to last too long probably. You could say gasoline driven, diesel driven and so forth, and eventually it runs out. So what is Edison doing to get some of its major customers to think about a contingency plan in relation to this?

Mr. HO. We are doing a couple of things. Next week, we are holding our first what we call our key customer Y2K forum and expect

approximately 250 of our key customers to attend this session to hear about our process, our methodology as well as our progress relative to the year 2000. There I do expect questions and interchange on contingency planning. The reason we decided to conduct such a session, I have been in contact with several of our customers on a one-on-one basis, Y2K team to Y2K team, to understand mutually where each team is at. So, we have been discussing this over the last several months, and we expect to get into more detail on the impacts and the expectations customers have of us, particularly with regard to contingency planning.

Mr. HORN. As I remember, about 20 percent, maybe more, of the energy generated in Illinois is nuclear based. Is it more than that?

Mr. HO. We generate electricity for about 70 percent of the population of Illinois, and about half of our generation is nuclear.

Mr. HORN. So it is 50 percent of yours. How about the other firms in the State, what would they be?

Mr. HO. I do not know the exact statistics there. We have one other nuclear station here in the State of Illinois besides Commonwealth Edison.

Mr. HORN. What has been the role of the Nuclear Regulatory Commission during this period on Y2K? Has it been down looking at your facilities, is it worried about this? What do you hear from the Commission?

Mr. HO. The NRC has issued a generic letter requiring us and each of the nuclear utilities to provide a project plan to achieve compliance. That plan was submitted early last month and in it we described what our process, our methodology and what our schedule for compliance would be. They are starting this month with an audit of 12 nuclear stations, one of our stations will be audited early next year. So they have got our plans, as they do from all the nuclear utilities and have started the detailed work of looking at where everyone is.

Mr. HORN. Give me an idea of what they expect in a plan that will alleviate some of the losses in the generation of nuclear power, what changes other than your daily operational approach to how you operate your particular nuclear facilities?

Mr. HO. What they are looking for in the plan is a requirement that, first, the systems that get inventoried, analyzed and renovated are truly ready, are truly compliant. If they are not, we need to state that some other manual action may be required to be ready, and so those statements and the activities required for that are laid out in the plan.

Mr. HORN. Are they doing the testing to see that the plan works, or are you doing it? Are they setting the same ground rules for every plant in the country, or is it unique to particular plants?

Mr. HO. The testing will be performed by the individual utilities. The actual audit that will be performed is entirely on the part of the NRC, and they just recently came out with their list of plants that will be audited and the schedule. There are approximately two nuclear stations that will be audited per month.

Mr. HORN. Mr. Willemssen, do you have any comments on that?

Mr. WILLEMSSEN. Related to that particular point, I believe Mr. Ho mentioned this earlier, is the importance of independent verification and validation activities within the firm itself, and it is re-

assuring to hear—and I believe Mr. Ho said this earlier—that his firm is going to be undertaking some of those activities. I think that is especially crucial in the energy and power area and again, to the extent that those kind of reports are publicly disclosed to at least regulatory organizations, I think we can have a better understanding of exactly where we stand with this crucial infrastructure area.

Mr. HORN. Very good. I would just say one last word to the Iowa State and Illinois State, you might take a look at this Sion situation where Purdue types invented it and feel that they are getting the job done a lot more effectively and efficiently than a lot of highly paid consultants who simply want to, you know, take advantage of the emergency. So you might want to look at that just as a higher education institution where there are never a lot of dollars around, to say the least.

Let me thank all of you for coming and if there are any last words any of you have, we would be glad to have it for the record. If you think of it on the way home, write us a note and without objection, we will put those letters in the record at the end of this.

And the last thing I would ask is if there is anyone in the audience who would like to raise a question they do not think was raised? We would be glad to take a few of those points. Come on up and take a microphone and raise the consideration you have not heard. And identify yourself.

The panel is excused now. Thank you.

STATEMENT OF TONY POYNOR

Mr. POYNOR. My name is Tony Poynor, I am just a concerned citizen from Elgin, IL. I heard about this just this morning.

One of the concerns I had is there are some other dates out there that I do not know if they have been addressed, I have not heard it here today at least, September 9, 1999, is one of the stop dates for computer programs. Also, February 29 because it is a leap year, year 2000.

Mr. HORN. Right.

Mr. POYNOR. Is that going to have an effect on some of these embedded chips, or are we going to see the first bug starting September 9, 1999, or is that something that is a non-issue?

Mr. HORN. We have had that raised in a few hearings. Mr. Willemssen, you might want to comment on it.

Mr. WILLEMSSEN. There will definitely be date-related impacts that we will feel before January 1, 2000. One of those dates not only is September 9, 1999, which is often used by programmers as an end of file date. You will also see, especially within State governments, impacts on April 1, some on July 1, when they start their new fiscal years. The Federal Government will start its fiscal year October 1, so we will start having impacts much before that. In the private sector, you often have out-year planning scenarios 1 year in the future.

One of the reasons that the banking and financial sectors are considered furthest ahead is with their out-year loans, they had many Y2K induced failures several years ago. So there are a lot of dates other than just January 1, 2000 that are going to hit; September 9, 1999 being one of them.

Mr. HORN. Mr. Hall, do you have any comment on this?

Mr. HALL. Yes, you are going to find smaller amounts of failures. There are basically three dates where you will get multiple simultaneous failure potential—January 1, February 29 and December 31, 2000 because those are the embedded systems dates that will be worrisome.

I do not know if you will find a lot of September 9, 1999 embedded systems problems, there may be a few. As a matter of fact, there are projected to be a few on January 1, 1999. So there are a lot of dates, and in all the tests that you have to run on those things, you have to look at a bunch of different dates, not just one.

Mr. HORN. Very good. Yes, ma'am, why do you not come up, identify yourself.

STATEMENT OF JOAN LEVIN

Ms. LEVIN. Hi. My name is Joan Levin, and I am just a member of the general public, and my question is for Mr. Willemssen. You talked about public awareness for the public. And I hope that the media will cover this. But here I am from the public and now that I am aware, what would you suggest that I, who is not affiliated with any kind of large institution or anything else, what would you suggest that I as a member of the general public do, now that I am aware?

Mr. WILLEMSSEN. There are a few different areas that you should focus on. First, for your home, if you have a PC or other computing equipment, you should check with the manufacturer of the hardware to see what kind of certification it will provide on that hardware, including the BIOS. You should check the operating system.

Ms. LEVIN. I am really more concerned about my survival, about my water supply.

Mr. WILLEMSSEN. OK, let me go to that next then. I think it is important, after you are in the awareness stage, that you continue to ask questions of your community, of your local government, and continue to push for data on exactly where they stand. For example, one area that was touched on by Mr. Hall late, after it had not been disclosed by anyone else, is the water system. I would ask questions. I do not know how the regulatory bodies here do water and wastewater, but I would ask whoever is in charge, first, do you have a Y2K coordinator for your water and wastewater. If the answer is no, I would be very concerned, and I would ask why not, because that is an area that is of much more importance than we originally thought.

And I would continue to think of it from a community perspective, to get your neighbors and community involved in trying to understand this. We jokingly referred to this in yesterday's hearing as often a conversation killer. Whenever anybody brings up Y2K, a lot of folks just do not want to talk about it. But as I mentioned yesterday, I believe that will change during next calendar year as we begin to have more well-publicized failures that are Y2K induced. I think this is going to start changing, and people are going to be more concerned.

But as I mentioned earlier, I wish the concern was higher at this point, so we do not get into a panic situation late in 1999.

One other area I would mention is that it is important to keep financial information that you have, that you have hard copies of that. I would strongly suggest that for all citizens, that you not just rely on electronic storage for those documents.

Mr. HORN. Another thing you can do is, the average citizen, and I would wish all citizens would do something along this line, write a letter to your newspaper, be it a weekly, throwaway or the daily. You have hundreds of talk radio shows, many of them spreading misinformation or no information, or saying it is not a problem, and all sorts of crazy things that some of them do to get ratings. Phone them up, tell them you think there is a problem, you have read a little bit about it, heard a little bit about it. The media are just now coming into having stories on this situation. There are a few once in awhile when we have a hearing, but generally there is not much they are doing, although some newspapers like the Los Angeles Times, that is in my area, or the New York Times, have major sections devoted to computing because that is what we are supposed to be thinking about in the 21st century, and especially when your 8 year old or your 12 year old comes home and says, "Mom and dad, look what I learned today, when are you getting me my PC?" instead of whatever else they wanted.

So I would think that is a useful thing to do and then editors respond to their readership. And if there is a need—and there is a need—to do just the things you asked about and just the things that we are suggesting. It is very important. So I thank you for raising the question.

Take one last question—oh, two last questions, then. Fine, gentlemen, come on up. Identify yourself. We learn things this way.

STATEMENT OF ALISTAIR STEWART

Mr. STEWART. Mr. Horn, my name is Alistair Stewart, I am the year 2000 program manager for Baxter Healthcare.

Mr. HORN. I did not hear the last, at what?

Mr. STEWART. I am the year 2000 program manager for Baxter Healthcare. I just wanted to respond to a comment you made regarding the sharing of information in the health care industry.

I am sure you are aware that there has been activity in this area recently and one comment you made that there did not appear to be a lot of information sharing that had been going on. And I just wanted to let you know and members of the audience know that right now there is a voluntary agreement in the process of being reached in which a third-party non-profit organization will be acting as a clearing house. The name of that organization is RX–2000, and that will act as a clearing house to share information amongst everybody in the health care industry. So, for example, as a manufacturer, we will be able to share compliance status of our products and have that readily available to hospitals.

Mr. HORN. Do you know where that will be based, will that be in Cleveland?

Mr. STEWART. It is being based out of Minneapolis.

Mr. HORN. Minneapolis.

Mr. STEWART. They have a very active Web site.

Mr. HORN. Yes, we learned about it in Cleveland, and I did not know if it would be there or where it is, but I think it is a great idea.

If other groups would cooperate like that, maybe that would lead to still further things that have nothing to do with the year 2000, but just keeping equipment updated as to what is happening to it.

OK, there was another gentleman, and that will be it.

STATEMENT OF FRANK WHITMER

Mr. WHITMER. My name is Frank Whitmer, I am an anesthesiologist in Rockford. I am coordinating our group's attention to the year 2000. I am trying to coordinate for our corporate group as well as coordinate with the various hospitals in Rockford, and I have been trying to coordinate with the local city government.

I would like to thank Congressman Horn and everyone on his subcommittee for the attention they have been paying to this issue. I especially would like to thank Mr. Willemssen because of the role the GAO, and especially Mr. Willemssen, has provided with this.

I would also like to thank everyone for getting this information on the Internet, which is how I have been able to follow it.

I would like to criticize Senator Bennett and his committee for not also making their information much more readily available, instead of just seeming to try to filter things.

Having said that, I am glad that I found out about this conference, but there was a significant problem with local awareness. The reason why I found out about this was because of your counsel coming to Representative Manzullo's meeting yesterday in Rockford. I am very disheartened by the fact that even though Mayor Daley and Governor Edgar were invited, they are not here, and they are the leaders, political leaders for Illinois and especially our largest city.

I do not know what sources were available for people to find out about this meeting. Obviously, there are much fewer people here than were at Representative Manzullo's meeting, and considering the significant role that you have been playing, I find that very, very disheartening.

I am very glad Mr. Ho is here from Commonwealth Edison because many of us, especially at the meeting yesterday, were very concerned about what will be happening with the electric utilities. Certainly as a physician, I am very much concerned with what will be happening with our water and wastewater treatment because it will not take very long in order for there to be major problems. I am very glad that people are paying attention to those issues.

But again, one question that came to my mind is, we have our two major elected leaders in Illinois invited to this conference, and I was very disheartened by the testimony provided by the representative of the city of Chicago as well as the representatives of the State of Illinois. I was much more encouraged by the testimony of other people, in terms of their awareness of the problem, but it seems to me that Mayor Daley and Governor Edgar and their representatives do not get it. I am not trying to be overly critical, but I would fire those people.

I am very much interested in getting more answers from Mr. Ho, and I hope that Unicom and Commonwealth Edison will be much

more forthcoming. As you have pointed out, the lawyers have taken over, and that is only going to complicate the issue even more. And what is a physician, what is a hospital, what are involved citizens supposed to do when the only information they get is, "We are diligently working on this issue and have faith in us." Of course, I am appalled at Clinton's response, but that is another issue.

Thank you very much.

Mr. HORN. Thank you, and I will now thank the people that prepared this hearing. Our staff is headed by J. Russell George, the staff director and chief counsel, over in the corner there; Matthew Ebert, our staff administrator is here; most of the detail work for this hearing was done by Megen Davis, who sits to my left and created an excellent series of questions. She is on detail to us from the General Accounting Office. Mason Alinger, a staff assistant has also been intimately involved in the whole series of hearings along with Mr. Ebert. And Bill Warren, our court reporter, has been on small planes that we have been on in the last few days as well as small country roads trying to get from one place or another in three States, and we appreciate your persistence.

We thank also Congressman Crane's district office that was immensely helpful in setting up this meeting and that is Erik Elk, the district aide and Michelle Scorza, Megan Muldoon, the press secretary, and for the Village of Palatine, we have Rita Mullins, whom you all met, as the mayor and we thank her for taking the time to greet the subcommittee, and two administrative aides who have been very helpful, Sam Thackus and Lisa Ewasse. We thank all of the people that have helped on this and we thank the General Accounting Office for not letting you have to be there for 3 days and following us around the country, and we appreciate your input, Joel. So thank you very much.

With that, this hearing is adjourned.

[Whereupon, the subcommittee was adjourned at 1:04 p.m.]

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