

**DEFENSE ACQUISITION ISSUES RELATED TO
TACTICAL AVIATION AND ARMY PROGRAMS**

HEARING
BEFORE THE
SUBCOMMITTEE ON AIRLAND
OF THE
COMMITTEE ON ARMED SERVICES
UNITED STATES SENATE
ONE HUNDRED NINTH CONGRESS
FIRST SESSION

NOVEMBER 15, 2005

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DEFENSE ACQUISITION ISSUES RELATED TO TACTICAL AVIATION AND ARMY PROGRAMS

TUESDAY, NOVEMBER 15, 2005

U.S. SENATE,
SUBCOMMITTEE ON AIRLAND,
COMMITTEE ON ARMED SERVICES,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:30 p.m., in room SR-222, Russell Senate Office Building, Senator John McCain (chairman of the subcommittee) presiding.

Committee members present: Senators Warner, McCain, Chambliss, Lieberman, and Reed.

Committee staff member present: Catherine E. Sendak, special assistant.

Majority staff members present: William C. Greenwalt, professional staff member; Ambrose R. Hock, professional staff member; Thomas L. MacKenzie, professional staff member; Elaine A. McCusker, professional staff member; and Stanley R. O'Connor, Jr., professional staff member.

Minority staff members present: Richard D. DeBobes, democratic staff director; Daniel J. Cox, Jr., professional staff member; Creighton Greene, professional staff member; Peter K. Levine, minority counsel; and Arun A. Seraphin, professional staff member.

Staff assistants present: Micah H. Harris and Jill L. Simodejka.

Committee members' assistants present: Christopher J. Paul, assistant to Senator McCain; John A. Bonsell, assistant to Senator Inhofe; Clyde A. Taylor IV, assistant to Senator Chambliss; and Frederick M. Downey, assistant to Senator Lieberman.

OPENING STATEMENT OF SENATOR JOHN McCAIN, CHAIRMAN

Senator McCAIN. Good afternoon.

The Airland Subcommittee meets today to receive testimony on problems with and improvements to the defense procurement policy. For the Airland Subcommittee, this is the third hearing in a series of hearings we intend to call on the vital issue of defense acquisition reform.

I want to welcome Dr. John J. Hamre, President and CEO of the Center for Strategic and International Studies (CSIS), at one time, in a previous incarnation, a member of the staff of this committee; Frank J. Anderson, Jr., President of the Defense Acquisition University; Katherine V. Schinasi, Managing Director of Acquisition and Sourcing Management for the Government Accountability Office (GAO); Gene Porter, private research analyst for the Institute for Defense Analyses (IDA); and Gary Christle, Senior Project Di-

rector at the Center for Naval Analyses (CNA). We greatly appreciate all of you giving us your time for this important hearing.

As we meet today, the Senate has completed its debate of the National Defense Authorization Act for the Fiscal Year 2006. In that bill, we authorized \$441.6 billion for national defense, including \$421.1 billion for the Department of Defense (DOD) and \$12.2 billion for military construction and family housing. That is a \$19.5 billion increase over the amount authorized in fiscal year 2005. We also authorized a \$50 billion bridge supplemental, separate from the President's budget request. That is a lot of taxpayer money, and it is our responsibility to ensure that it is not wasted.

We have unsustainable defense spending. Current military operations in Afghanistan and Iraq consume a large share of DOD resources and are causing faster wear on certain weapons systems. Refurbishment or replacement sooner than planned is putting further pressure on DOD's investment accounts. We cannot sustain the number of weapons programs that are in the program of record.

The DOD's requirement process generates more demand for new programs than fiscal resources can support. The Service Chiefs and acquisition officials must understand this fact of life.

We will hear testimony today that the top five weapons systems, just 5 years ago, cost about \$291 billion combined. Today the top five weapons systems cost around \$550 billion. One of those top five weapons systems, the F/A-22, has seen unit costs increase almost 190 percent. Continuing on this unsustainable fiscal path will gradually erode our national security. We must look to enact sweeping acquisition reform legislation and create an atmosphere of greater oversight in the DOD and Congress, while also increasing the efficiency of the process.

Between 1975 and 2001, there have been 128 different studies that have chronicled deals of the procurement system. Our efforts here must not repeat the demise of the previous studies which ultimately led to limited positive change.

Congress and the executive branch cannot stand by idly without taking positive actions to ensure the process is as efficient as possible. The service and defense acquisition executives cannot allow weapons programs to enter production when the technology is not fully developed.

We will hear testimony from GAO that programs that started development with immature technologies experienced an average acquisition unit cost increase of nearly 21 percent over the first full estimate. Nunn-McCurdy program failures due to significant cost increases and system delays should have consequences for service acquisition executives, including program termination or a change in leadership.

I am concerned that congressional influence continues to adversely affect the procurement process. Rarely do Congress and acquisition officials take notice unless they reach the level of abuse, including criminal which occurred during the 3-year odyssey of the Boeing tanker leasing scandal in the Air Force. Unfortunately, defense priorities set by the armed services too often fall victim to special interests. Even the Services' extensive unfunded priority lists, totaling \$15-\$20 billion each year, fail to corral congressional earmarks outside the critical needs of the Services.

The Airland Subcommittee has the largest research, development, and acquisition (RD&A) budget of all the subcommittees in the Senate. In the Armed Services Committee, Senator Lieberman and I have worked together to fix a number of problems in the acquisition process in this year's defense authorization bill.

We are interested in hearing the views of our witnesses on the acquisition structure and what laws, regulations, and business practices governing defense acquisition policy are candidates for modification. We should demand individual accountability and complete transparency in the Services and DOD to ensure the prudent expenditure of taxpayers' dollars. We should increase progress toward joint acquisition including reinvigorating the process within the Joint Requirement Oversight Council (JROC) in developing a sound initial capabilities document. We should insist that the requirements of individual programs are attainable within the resource constraints of each Service's budget and that programs do not enter production without demonstrating mature technologies.

I look forward to the testimony of our witnesses.

Senator Lieberman.

Senator LIEBERMAN. Thank you, Mr. Chairman. Welcome to the witnesses.

Today's hearing is an important follow-up to the hearing we held in March on Air Force acquisition programs where we learned that the problems in the Air Force acquisition system go far beyond the mishandling of the tanker lease program and the conduct of Darlene Druyan. Today we are going to hear the recommendations of a distinguished panel of expert witnesses as to how we can begin to address these larger problems.

In our March hearing, I asked the Acting Secretary of the Air Force and the head of a DOD panel reviewing Air Force acquisition issues whether they believed that the Air Force had gone too far when it downsized its acquisition organization and took too much of the oversight out of the process. Both witnesses were emphatic in stating that the Air Force has gone too far. I quote from Secretary Dominguez: "I think we clearly did, Senator. A lot of the structure, the rigor, the discipline, the checks and balances did, in my view, come out of the Department, and it looks pretty clearly like we did go too far."

Ms. Flavin said, "Yes, sir, in my opinion we have. We have removed some of the checks and balances that I think are important. I recall in earlier days there used to be some fairly stringent boards we would have to go through for different kinds of major acquisition programs. You do not see those very often anymore and I think they served a very useful purpose. For a very long time we have not been hiring people. So there is, I believe, a dearth of experience up and down the acquisition workforce at this stage. Yes, sir." I wanted to stress that "yes, sir" that she said at the end of the quote, Mr. Chairman.

At today's hearing, former Deputy Secretary of Defense John Hamre will present the results of a study prepared by the CSIS which reveals a number of other significant problems in the DOD acquisition process. The CSIS study criticizes excessive bureaucracy in the process, including "a seemingly endless number of integrated product team (IPT) and sub-IPT meetings," and an increas-

ing “number of Office of the Secretary of Defense (OSD) level reviews, including milestone, pre-decision, integrated product team, working integrated product team, and overarching integrated product team reviews.”

According to the CSIS study, the preparation process for Defense Acquisition Board (DAB) milestone reviews now takes an average of 180 days, with up to eight major preparatory meetings, and Acquisition Category (ACAT) level one programs can expect to undergo at least one significant OSD level review per year with up to 14 reviews over an 11-year program schedule and this does not even include a series of separate reviews conducted by each of the military departments.

So putting together the testimony we heard in March with these findings of the CSIS report, it seems to me that we may actually have the worst of both worlds when it comes to oversight. On the one hand, we have a multiplicity, some might say an excess, of reviews taking up far too much program time. On the other hand, we do not have enough Government employees with the technical capability to conduct those reviews. So we have too often effectively taken the real teeth out of them. The result, I fear, is a formula for failure and we are paying for it. The taxpayers are paying for an overly bureaucratic process that produces little value added.

That must change. Mr. Chairman, I look forward to working with you to see that it does. Thank you very much.

Senator MCCAIN. Thank you very much.

Welcome back, Dr. Hamre.

Dr. HAMRE. Thank you. Would you like me to begin?

Senator MCCAIN. Yes.

**STATEMENT OF DR. JOHN J. HAMRE, PRESIDENT AND CEO,
CENTER FOR STRATEGIC AND INTERNATIONAL STUDIES**

Dr. HAMRE. First, Chairman McCain, Senator Lieberman, and Senator Reed, I am really very grateful to have a chance to come back home. I spent a lot of years in this room and took a fair amount of whooping from you all, but it was a great honor and I still cherish it as the biggest part of my career. Thank you.

Mr. Chairman, I will be very brief because we have a lot of us that you want to hear from today.

I start with the basic premise that organizations do well those things the boss checks. As a basic principle, I think that is right. The problem with our acquisition system is that it is very hard to really check anymore. The process is bifurcated in so many different directions. There are so many fault lines that run up and down the way the Department buys things that there is virtually no direct accountability.

So I would suggest to you this requires structural change, not just process change. It requires structural change to get true accountability back squarely where the Department can observe and check what is going on.

I think Goldwater-Nichols in 1986 really unintentionally created a major fault line that runs up and down the Department by segmenting and separating off the acquisition process from the rest of the processes in the Department. We need to remove that structural impediment. We need to get clean accountability so that you

can see very clearly who is responsible and you can hold them accountable for it.

Second, the Department has struggled for 50 years. It has been struggling with an ambiguous structural arrangement over who is accountable for what part of the overall process. The building is too big and too complicated to be run in a seamless and integrated way. So the way we run things in the Department is to actually counterpoise conflicting interests, fit them together, and put them in front of the Secretary so the Secretary can decide.

One of the most important things that Goldwater-Nichols did in 1986 was to create very strong advocacy of demand for better quality of military capability, and it did that by elevating the role of the Chairman of the Joint Chiefs and the unified combatant commanders. That was a very good thing, but we did not create clean accountability in other aspects of the Department.

Goldwater-Nichols, by default, turned the Service Chiefs into the senior supply officers, supplying good forces for the future, competent people, good training, and in theory, equipment, except it took them out of the chain of command for the acquisition process. So it does not make sense to take them out of the chain of command.

More importantly, it created an ambiguous environment where we put the chief requirements process—the JROC is really populated by people that are supply officers in this case, and that is the Service Chiefs or their vices. We believe that that ought to be cleanly demarked so that you have the requirements process being populated by people that are in the requirements business and then you counterpoise that in the ultimate process of making decisions and bringing them to the Secretary by putting them opposite the people that are supplying things. That is the Service Chiefs that have the responsibility for budgeting for everything in the Department, not just people and facilities. They need to have responsibility for acquisition as well.

Those are the primary thrusts of our recommendations, sir. I think for purposes of speeding us through our opening statements, I will end here.

I would like to make one final observation. You asked about the health of the industrial base. I am very glad that you are asking this question. I think the industrial base is fragile and in trouble. We made a decision 80 years ago in this country that we were going to build the most modern equipment, in this case, airplanes, in the private sector not in arsenals. I personally think that was the most important decision we made in the 20th century. It helped us win the Cold War.

But we now have a very fragile industrial base and we are running that industrial base with the same mentality that we did in 1986 when we had 20 prime contractors, many new starts, lots of opportunities for competition, and tremendous capacity to pit contractors against each other for competitive purposes. We just do not have that now. We have to adopt a new approach to how we are going to manage this industrial base and I do not think we have that together yet. So I encourage you very strongly to make a priority of this as the work of this subcommittee continues.

Thank you, sir. I am delighted to have a chance to be with you.

[The prepared statement of Dr. Hamre follows:]

PREPARED STATEMENT BY DR. JOHN J. HAMRE

Mr. Chairman and distinguished members of the committee, I am honored to be invited to appear before this subcommittee on this critical issue. On a very personal note, I was once a member of the professional staff of the Armed Services Committee, and I was assigned to the Tactical Warfare Subcommittee, which at that time was chaired by the late Senator Barry Goldwater. The Tactical Warfare Subcommittee was the ancestor to the Airland Subcommittee. As such, it is a distinct honor to be back home.

Mr. Chairman, let me commend you for holding this hearing. Frankly, the acquisition system for the Department of Defense is in deep trouble, I believe. It isn't because of ill will or inattention. I believe we are in trouble because the acquisition system we currently have is a product of a world that has passed from the scene. We need an acquisition system that is designed for today, not for the world that existed 25 years ago. Let me explain.

GOLDWATER NICHOLS ACQUISITION REFORM IN CONTEXT

I was a member of the staff of this committee when we developed the legislation that ultimately became the landmark Goldwater-Nichols Act. The acquisition reform legislation was developed at that time on a parallel track. At the time, we had a special subcommittee chaired by Senator Dan Quayle and ranking member Carl Levin. They developed the detailed legislative proposals that were incorporated as the acquisition reform provisions of the bill.

We need to remember the context of the day. This legislation was developed during fiscal years 1985 and 1986. Those were days of high production rates from a large industrial base. In fiscal year 1985, we authorized over 900 aircraft, 50 intercontinental ballistic missiles, 23 naval ships, 2,000 tanks and armored personnel carriers, over 5,000 guided missiles and 72,000 unguided rockets. At the time, we had over 20 major prime contractors.

There was also controversy in the acquisition world. The Department was sharply criticized for sloppy acquisition procedures, most often characterized as \$600 toilet seats and \$427 hammers. I can recall quite clearly that there were two major controversies at the time: how do we avoid procurement scandals, and how do we keep ineffective weapon systems from entering high rate production?

This was the world that gave birth to the current acquisition system. But I believe this world has passed from the scene. Today, we have a very small number of prime contractors capable of undertaking large, complex programs, and very little actual competition for major systems. We have few new starts in our acquisition system, and relatively low production rates. We are buying little and starting new things infrequently. Yet we have an acquisition system that was built on the assumption of large production complexes, high rates of production, frequent new starts, and multiple competitors.

We designed an acquisition system that was appropriate for 1985, not 2005. The second problem we created in 1986 was to elevate above all other considerations the necessity of avoiding mistakes. The Department was severely criticized for buying \$600 toilet seats. (That was a false controversy, but the truth was not important at the time. The drama was all that mattered.) Congress demanded that those mistakes not be repeated. So rectifying the mechanical process of buying things was made the supreme objective of the reform process.

1986 REFORMS VALUED "GUNSMITHING" OVER "MARKSMANSHIP"

Congress reflected this by creating a new position, the Under Secretary for Acquisition. Congress demanded emphasis on the mechanics of buying things. One of the unintended consequences of this legislation was the devaluing of the previous position of the Director of Defense Research and Engineering (DDR&E). The DDR&E had been the third most important position in the civilian hierarchy of the Pentagon—behind the Secretary and Deputy Secretary, featuring such prominent scientist-policymakers as Harold Brown and Bill Perry. The position highlighted the strategic importance of technology and it ensured there was a strong institutional champion.

But the 1986 acquisition reforms diminished that role and instead elevated the role of mechanical acquisition. I draw the contrast between "marksmanship" and "gunsmithing." The old DDR&E position was the senior marksman of the acquisition process—what should we be buying? After the acquisition reforms of 1985, the emphasis was shifted to the mechanics of acquisition gunsmithing—how are we buy-

ing things? The men who have been confirmed to be our acquisition undersecretaries did not see themselves in this role. But the priorities embedded in Goldwater-Nichols forced them to play it. Today, the acquisition system in the Department of Defense is a bewildering complex of procedures and processes. Clarity of action is now missing.

LACK OF INSTITUTIONAL ACCOUNTABILITY

Mr. Chairman, the final major problem I perceive with the current acquisition system in the Department is the fractured accountability that was created by the original reform legislation. I fully understand the imperative at the time to create greater professionalism in the acquisition process. But functionally, the legislation created a fault line in the Department. The acquisition system was carved out to be a segmented process, insulated from the procedures that establish requirements and develop budget priorities. This fault line in the Department is the primary contributor to the lack of institutional accountability in our system. Yes, the acquisition community is accountable for acquisition procedures, but the Department as a whole does not have systematic accountability of action that links requirements with budgets with acquisition.

SOLVING THE PROBLEMS

I believe that the primary problems are institutional, and that they require an institutional change. Congress is not responsible for executive operations within institutions. You are responsible for overseeing, but not conducting those operations. You are responsible for setting the institution right. To this end, I recommend the following.

CREATING A CLEAR ADVOCACY FOR "SUPPLY" AND "DEMAND"

First, remove the institutional fault line created by Goldwater-Nichols. Goldwater-Nichols made a major change in the structure of the Department—a very good change in my view. It created two distinct power centers in the Department. The voices of "demand" for better military capabilities were strengthened by elevating the power and prestige of the Chairman of the Joint Chiefs and by strengthening the regional combatant commanders. The Service Chiefs were made the chief advocates of "supply" of military capability. In essence, Goldwater-Nichols created a healthy balance between supply and demand.

But there are important ambiguities in the current system. One of the major "demand" procedures—determining the joint requirements of future combat forces—is still controlled by the chief "supply" officers. The Service Vice Chiefs comprise the Joint Requirements Oversight Council. We believe that this needs to be changed and that the JROC needs to be populated by "demand" oriented institutions. We advocate giving representation on the JROC to the combatant commanders.

Let me emphasize that the requirements determination process is not ended in the JROC. It simply represents one of the inputs that are ultimately sent to the Secretary of Defense for his decision. Fusion of supply and demand occurs only at the Office of the Secretary of Defense, and that is as it should be.

RETURN THE SERVICE CHIEFS TO THE ACQUISITION CHAIN OF COMMAND

Second, we need to return the military Service Chiefs to the chain of command for acquisition. Goldwater-Nichols made the Service Chiefs the primary advocates for the "supply" function of military capability. They are responsible for determining the manning levels of their respective Services and the priority given to recruiting and training. They manage the long-term shaping of the Service by determining requirements for new weapons and personnel. But they are excluded from the acquisition process. This is an institutional fault line that needs to be removed.

Let me say that the Service Chiefs do participate in the acquisition process, but they do so indirectly through budgeting and requirements determination. As such, the current system creates a deep fault line. Service Chiefs need to be held accountable for the whole supply function and need the authority to carry it out.

CLEAN UP THE RESPONSIBILITIES FOR ACQUISITION BETWEEN OSD AND THE MILITARY DEPARTMENTS

Third, Goldwater-Nichols created two large acquisition bureaucracies in the Department—one at the military department level and one at the OSD level. We need to rationalize this. OSD should not be running things, but overseeing procedures and decisions. I believe the staff supporting the under secretary for acquisition is far too large for this responsibility. The large staff reinforces the "gunsmithing" as-

pect of the job. A much smaller staff would necessarily emphasize “marksmanship.” Cutting the OSD staff substantially would contribute mightily to clarifying the roles and missions of the respective acquisition bureaucracies.

For those who want a more detailed analysis, I recommend our recent Beyond Goldwater-Nichols Phase 2 report, which is available on the CSIS website at www.csis.org.

MANAGING THE DEFENSE INDUSTRIAL BASE

Finally, Mr. Chairman, permit me to offer a few observations concerning the defense industrial base. America made a crucial decision over 80 years back that it would not build military aircraft in government arsenals, but instead would buy the most advanced technologies of the time from the private sector. I believe that was one of the most important and successful decisions of the past century. It insured that we would win the Cold War, because we would counter the massive quantitative advantages of the Warsaw Pact with a qualitatively superior military based on advanced technology.

The private sector defense industrial base is the essential partner to the Defense Department, just as critical to our security as are our Armed Forces. We cannot fight and win wars without our private sector partners. But we do not honor their important role by good management on the part of the Government. We do not really know how to manage the defense industrial base today. We continue to use the mindset and the rules and regulations of the mid-1980s. Back then, we had ample suppliers, many opportunities for competition, high production rates, and the opportunity to discipline the entire system by turning to an alternative supplier. None of this is relevant today, particularly in the platform-oriented sectors.

Today’s defense industry is an increasingly smaller part of the economy, and fragile. We have few companies capable of taking on large, complex programs, and cannot live without any one of them. We continue to regulate the platform sectors of this industry as though it were large and robust. I believe managing this part of the industrial base is much more analogous to the way governments need to regulate public utilities.

I worry that the Department of Defense is losing its capacity to manage this industrial base. We cannot just turn over the supply function to the private sector. We must manage essential Government interests within the Government. But I believe we are losing the technical capacity to do that. We have been experimenting with alternative concepts—such as lead system integrators—for some time. I am not sure that we have a solid framework for these alternative management approaches.

I believe the Armed Services Committee should devote considerable attention to this subject during the coming year. I would recommend that you create a special subcommittee, or ask one of the existing subcommittees to take a dedicated look at the health of the defense industrial base.

We have been studying the industrial base for some time at CSIS. My colleagues Pierre Chao and David Scruggs have considerable knowledge of and data concerning the defense industry. We stand ready to help the Committee at any time and in any way.

CONCLUSION

Mr. Chairman, distinguished members of the subcommittee, I am gratified that you are holding this hearing. This is precisely what Congress should be doing concerning oversight of the Defense Department. Your primary role—setting right the institutional structure for the Department—is the foundation of reform. I am prepared to support you in any way as you undertake this crucial task.

Senator MCCAIN. Has your organization not done some recent studies on this issue?

Dr. HAMRE. We have, sir, and we would be glad to provide that to you and to the committee.

[The information referred to follows:]



**Structure and Dynamics of the
Defense Industry**

Data and Observations from the CSIS project
“Strengthening the Core: Creating a Defense-Industrial Relationship for the 21st Century”

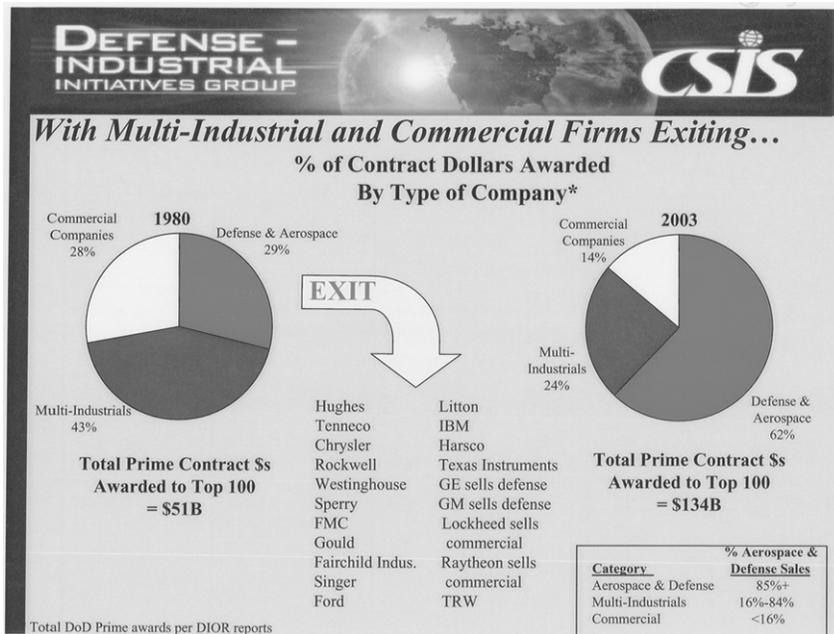
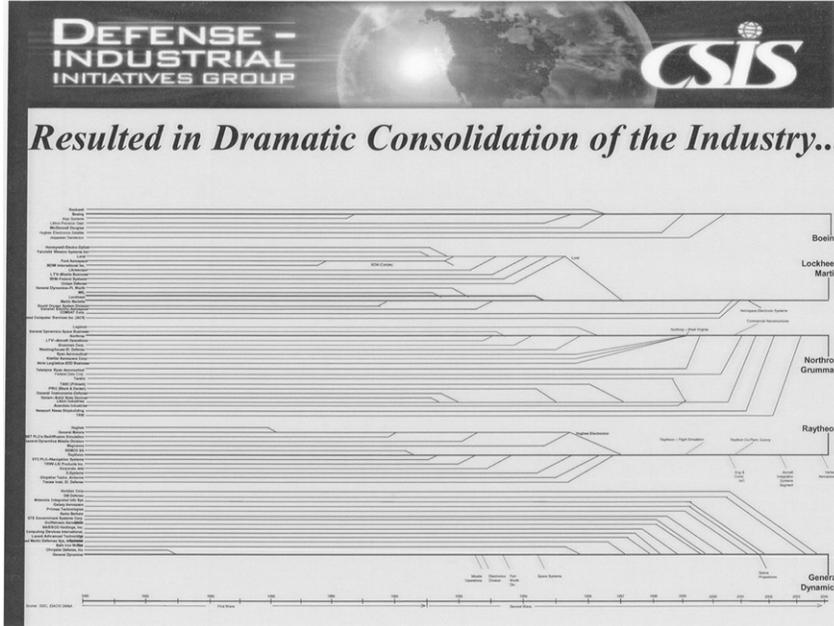
**Response to Questions for the Record from
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Committee on Armed Services, U.S. Senate
November 15, 2005 Hearing on
“Problems with and Improvements to
Defense Procurement Policy”**

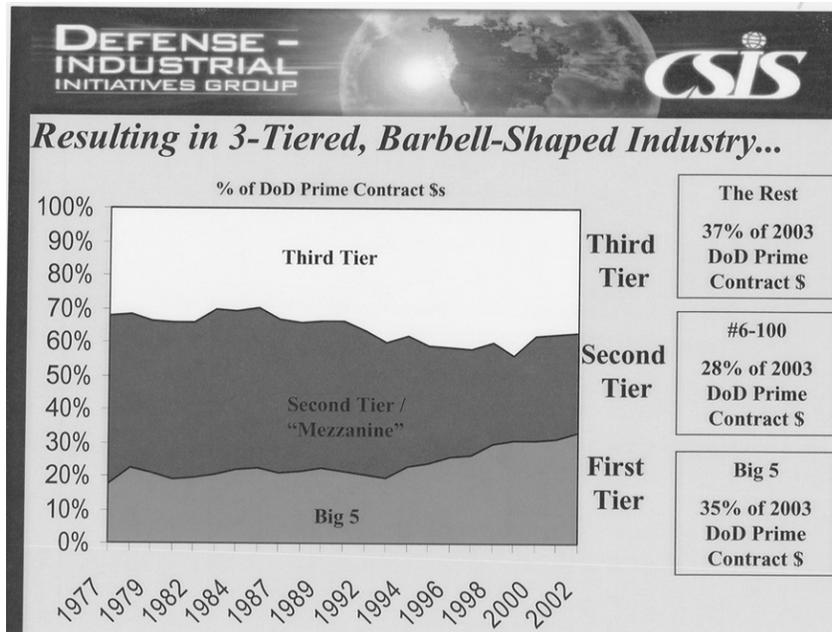
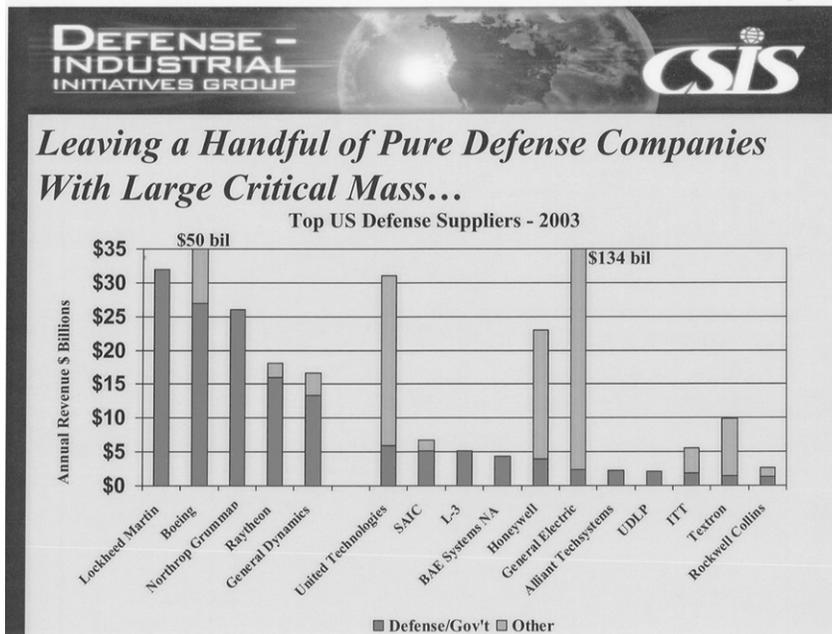
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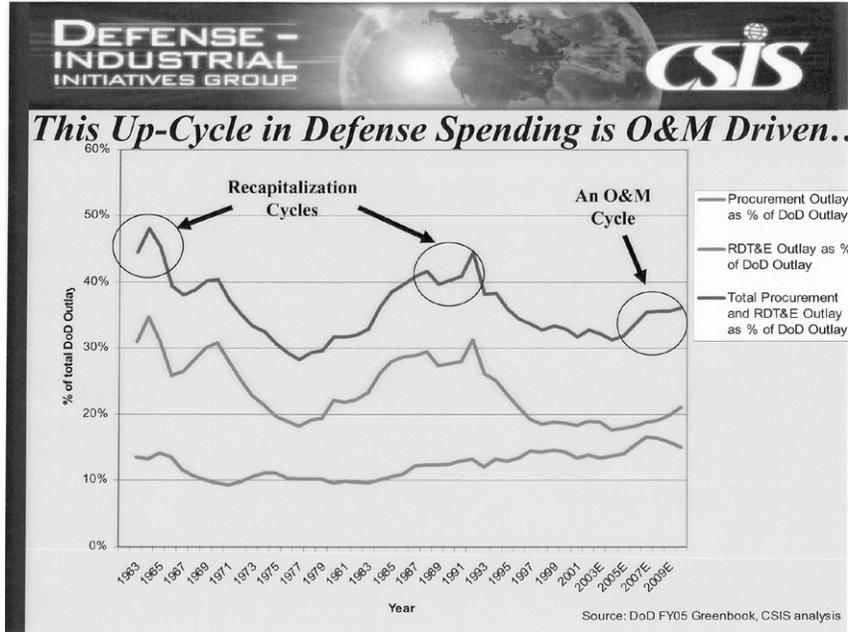


1990s Perfect Storm of Cyclical and Structural Changes...

Cyclical Changes		IMPACT
Budgets	Pressure from deficits, call for post-Cold War peace dividend, Procurement Holiday, cut programs/stretch out	} Horizontal mergers Exit from industry Increased risk
Structural Changes		
End of Cold War	Rapidly changing unpredictable security environment, changing military requirements, fewer new program starts	
Technological Change	IT revolution spilling over into defense, increased acceleration of technology cycles	} Vertical mergers Disconnect
Globalization	Of the economy, technology and labor	} Export markets Int'l competition
New Philosophy of Business	Demise of the conglomerate, “stick to your knitting”, defense run as business	} Exit from industry







DEFENSE - INDUSTRIAL INITIATIVES GROUP **CSIS**

And is Budget That is Buying Fewer “Things”...

	<u>1985</u>	<u>2005</u>
Defense Budget Outlays (Constant 2005 \$)	\$421 Bn	\$450 Bn*
Military Personnel:		
Active	2,152,000	1,386,000
Reserves	1,078,000	863,000
Troop Strength Europe	300,000	111,000
Major Military Installations	221	120
O&M Percentage of Tot. DoD	29%	38%
Proposed Procurement:		
Fixed-Wing Aircraft	585	188
Combat Vehicles	2,031	190
Ships/Submarines	24	8
Tactical Missiles	32,714	5,702

Source: DoD, Defense & Foreign Affairs Handbook, Janes, AIA * With anticipated \$25B Iraq War Supplemental

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Which Has Limited Ability to Start New Platform Programs (Fewer Programs Supports Fewer Competitors)...

	New Program Starts	No. Suppliers End of Period
1980-1989	7	7
1990-1999	3	5
2000-2003	2	2

	New Program Starts	No. Suppliers End of Period
1980-1989	6	7
1990-1999	3	3
2000-2003	0	2

	New Program Starts	No. Suppliers End of Period
1980-1989	6	6
1990-1999	5	3
2000-2003	3	2

	New Program Starts	No. Suppliers End of Period
1980-1989	7	9
1990-1999	8	6
2000-2003	4	3

Source: DoD, Janes Defense, FAS, Global Security, DMA Database

DEFENSE - INDUSTRIAL INITIATIVES GROUP  **CSIS**

However, Where There are Increasing Numbers of Programs We See Increasing Numbers of Suppliers

- Budget dollars enhance the health of *companies*, its the number of new programs that drives the health of the *industry*

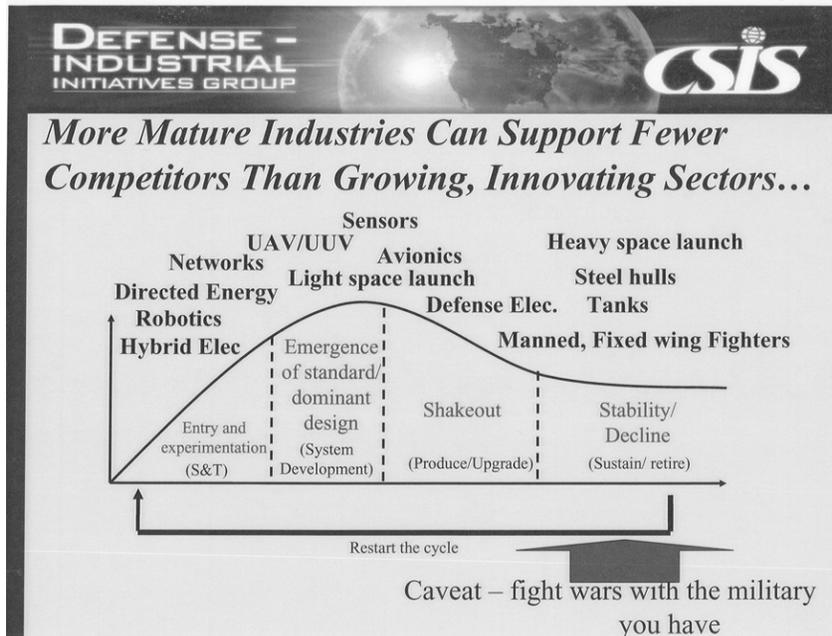
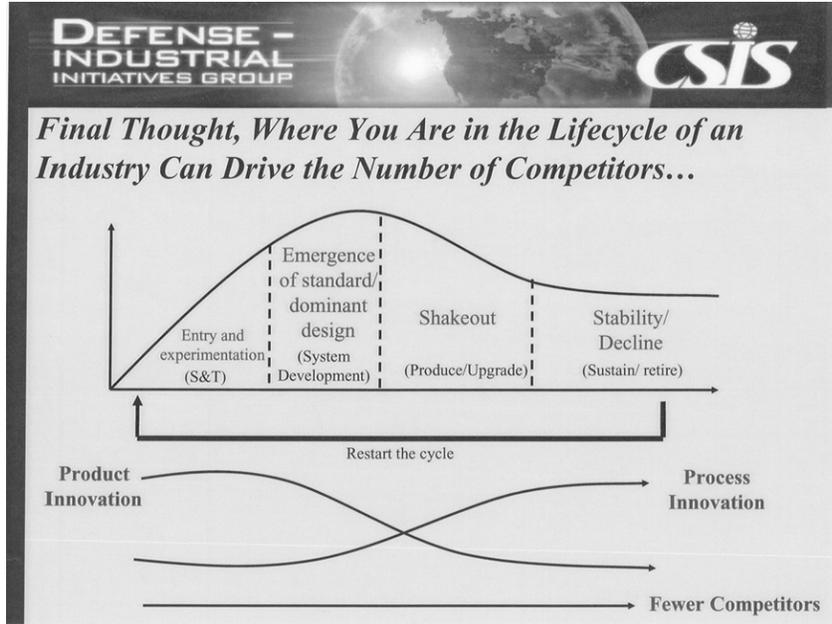
	New Program Starts	No. Suppliers End of Period
1980-1989	8	7
1990-1999	9	9
2000-2003	4	8

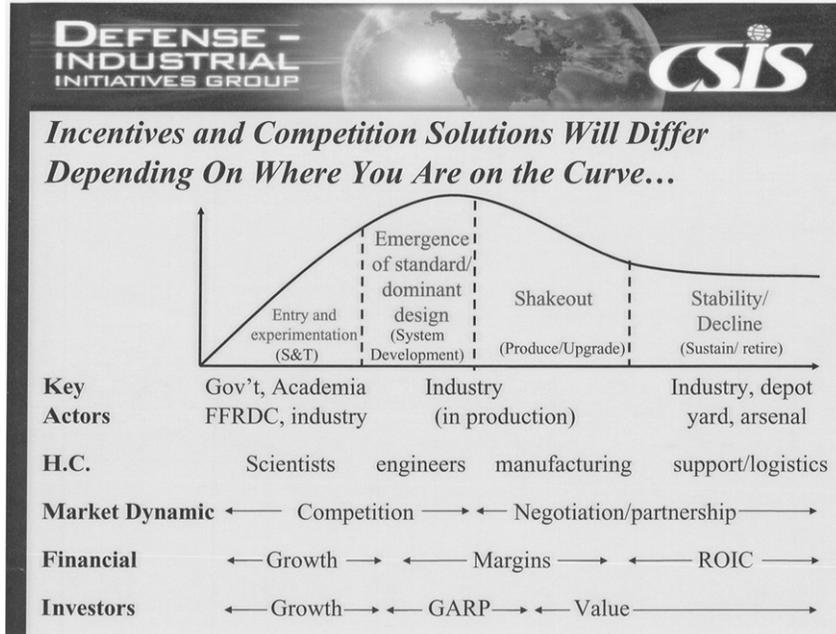
	New Program Starts	No. Suppliers End of Period
1980-1989	8	8
1990-1999	14	21
2000-2003	9	29

	New Program Starts	No. Suppliers End of Period
1980-1989	2	3
1990-1999	7	5
2000-2003	3	6

	New Program Starts	No. Suppliers End of Period
1980-1989	6	3
1990-1999	8	4
2000-2003	4	5

Source: DoD, Janes Defense, FAS, Global Security, DMA Database, Teal Group





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Dr. HAMRE. We have been looking at the health of this industrial base, especially the second and third tiers of this industrial base.

My colleague, Pierre Chow, and David Scruggs are here today. If you have any specific questions on that, I would ask them to come up and sit in my place because they are more expert on it than am I. But we certainly will be glad to help you.

Senator MCCAIN. Thank you.

Ms. Schinasi.

STATEMENT OF KATHERINE V. SCHINASI, MANAGING DIRECTOR, ACQUISITION AND SOURCING MANAGEMENT, GOVERNMENT ACCOUNTABILITY OFFICE

Ms. SCHINASI. Thank you, Mr. Chairman, Senator Lieberman, and members of the subcommittee. I appreciate the opportunity to be here before you today.

Dr. Hamre has spoken to you as an insider. I am going to take a little different tack and talk to you as an outsider. I am going to end up in a different place and that is that I do not think accountability is possible to assign in today's environment. But I would like to take a few minutes to get there, if you do not mind. I ask that my full statement be submitted for the record.

Senator MCCAIN. Without objection.

Ms. SCHINASI. I am going to talk about how we define an efficient and effective acquisition process. I am going to talk a little bit about why that process has not been able to take hold in the Department, and I am going to end with some conditions that we think need to change to make that happen.

First, how do we define an efficient and effective acquisition process? Such a process is focused on delivering a new product or capability in a timely manner and driven by knowledge-based decisions. In this context, technology development has been completed in the tech base. Before new product development is begun, a requirements process that is constrained by resources and guided by solid systems engineering results in an executable business case, that is, leaders know that requirements can be met by available time, money, technology, and management capacity. Once a program is started, managers demand knowledge and make decisions as to whether or not to move forward against an agreed upon set of metrics that ensure predictable outcomes. Effective controls help decisionmakers gauge progress in meeting cost, schedule, and performance goals. They ensure that managers conduct activities and provide evidence of relevant product development knowledge, and they allow comparisons to be made across programs of the relative return for investments.

Why does this not work in the Department? Well, incentives in the Department encourage the initiation of large acquisition programs as the way to attract budgetary resources. Getting approval for a new program requires the promise of product solutions with performance characteristics that go well beyond current capabilities. Such characteristics depend on technologies as yet unproven and the budgeting process provides only a limited wedge of funding in the Future Years Defense Plans (FYDP). So cost estimates you make need to fit into that wedge.

Once started, the competition for funding is harsh and continual. Each program suffers from and creates for others significant fund-

ing instability. Bad news almost certainly jeopardizes a program's funding. So no news becomes the preferred alternative.

At the same time, there are few, if any, controls in DOD's acquisition policy to ensure that managers have the right knowledge for each of their individual investment decisions. Responsibility is broadly shared and accountability is very difficult to assign, if at all.

So what needs to be done? Clearly, any solutions that we develop need to link to underlying incentives. The "how to buy" challenge in individual programs must depend on knowledge, metrics, and controls, but those cannot be developed nor made to stick without more disciplined tradeoffs in the "what to buy."

Despite the enormous investments that DOD has made—and those have nearly doubled in the last decade—and is committed to making in just its current programs, there is still not enough money. You referenced in your opening statement, Senator McCain, the doubling of the top five programs over the last 5 years.

We believe it may be time to focus on the demand side of the equation. If we can curb demand to a rational investment strategy in which the Department's leadership translates military requirements into a balanced, affordable portfolio of programs and makes satisfying that demand more predictable by developing and approving only programs that can be successfully executed, we can align responsibility and accountability to get a better return for the warfighter and the taxpayer.

Much of this change can occur within the current organizational and policy structures. Where there is a will to change, there is a way to change. What we need to focus on is that each good decision, that is, a decision aligned with priorities and informed by knowledge, can be a step in changing the culture.

Thank you, and I look forward to your questions.

[The prepared statement of Ms. Schinasi follows:]

PREPARED STATEMENT BY KATHERINE V. SCHINASI

Mr. Chairman and members of the subcommittee: I am pleased to be here today to discuss why and how to get a better return from the Department of Defense's (DOD) weapon system investments. U.S. weapons are the best in the world, but the programs to acquire them frequently take significantly longer and cost more money than promised and often deliver fewer quantities and other capabilities than planned. It is not unusual for estimates of time and money to be off by 20 to 50 percent. When costs and schedules increase, quantities are cut, and the value for the warfighter—as well as the value of the investment dollar—is reduced.

DOD's planned investment in research, development, and procurement of major weapon systems is approximately \$1.3 trillion for its current portfolio, with over \$800 billion of that investment yet to be made. The planned annual investment is expected to rise from around \$149 billion in fiscal year 2005 to \$178 billion in fiscal year 2011. Marquee programs include the Army's Future Combat Systems; the Missile Defense Agency's suite of land, sea, air, and space systems; the Navy's advanced ships, such as the DD(X) Destroyer; the Air Force's Transformational Satellite Communications System; and the Joint Strike Fighter. Programs like these—and the Global Information Grid that is designed to interconnect them—are likely to dominate the budget and doctrinal debate well into the next decade. Not only do these programs represent huge technological leaps over their predecessors, DOD is proposing to deliver them faster.

The persistent nature of acquisition problems has perhaps made decisionmakers complacent about cost growth, schedule delays, and quantity reductions in weapon system programs. But fiscal realities, coupled with the larger scale of acquisitions, will not allow budgets to accommodate the typical margins of error. Thus, we must either make tough decisions now to increase the chances for programs to be execut-

able within fiscal realities or brace ourselves for more draconian decisions later driven by those fiscal realities. The means to make the thoughtful decisions are known.

My statement today highlights the risks of conducting business as usual and identifies some of the solutions we have found in successful acquisition programs and organizations.

THE CASE FOR CHANGE

The way DOD develops and produces its major weapons systems has had disappointing outcomes. There is a vast difference between DOD's budgeting plans and the reality of the cost of its systems. Performance, if it is defined as the capability that actually reaches the warfighter, often falls short, as cost increases result in fewer quantities of produced systems and schedule slips. Performance, if it is defined as an acceptable return on investment, has not lived up to promises.

Table 1 illustrates seven programs with a significant reduction in buying power; we have reported similar outcomes in many more programs. For example, the Air Force initially planned to buy 648 F/A-22 Raptor tactical aircraft at a program acquisition unit cost of about \$125 million (fiscal year 2006 dollars). Technology and design components matured late in the development of the aircraft, which contributed to cost growth and schedule delays. Now, the Air Force plans to buy 181 aircraft at a program acquisition unit cost of about \$361 million, an almost 189 percent increase.

TABLE 1: EXAMPLES OF DOD PROGRAMS WITH REDUCED BUYING POWER

Program	Initial investment (In billions of dollars)	Initial quantity	Lastest investment (In billions of dollars)	Latest quantity	Percent of unit cost increase
Joint Strike Fighter	\$189.8	2,866 aircraft	\$206.3	2,458 aircraft	26.8
Future Combat Systems	82.6	15 systems	127.5	15 systems	54.4
F/A-22 Raptor	81.1	648 aircraft	65.4	181 aircraft	188.7
Virginia Class Submarine	53.7	30 submarines	80.4	30 submarines	49.7
Evolved Expendable Launch Vehicle	15.4	181 vehicles	28.0	138 vehicles	137.8
Space Based Infrared System High	4.1	5 satellites	10.6	5 satellites	160.2
Expeditionary Fighting Vehicle	8.1	1,025 vehicles	11.1	1,025 vehicles	35.9

Source: DOD (data); GAO (analysis and presentation).

Furthermore, the conventional acquisition process is not agile enough for today's demands. Congress has expressed concern that urgent warfighting requirements are not being met in the most expeditious manner and has put in place several authorities for rapid acquisition to work around the process. The U.S. Joint Forces Command's Limited Acquisition Authority and the Secretary of Defense's Rapid Acquisition Authority seek the ability to get warfighting capability to the field faster. According to U.S. Joint Forces Command officials, it is only through Limited Acquisition Authority that the command has the authority to satisfy the unanticipated, unbudgeted, urgent mission needs of other combatant commands. With a formal process that requires as many as 5, 10, or 15 years to get from program start to production, such experiments are needed to meet the warfighters' needs.

Today we are at a crossroad. Our nation is on an unsustainable fiscal path. Long-term budget simulations by GAO, the Congressional Budget Office, and others show that, over the long term, we face a large and growing structural deficit due primarily to known demographic trends and rising health care costs. Continuing on this unsustainable fiscal path will gradually erode, if not suddenly damage, our economy, our standard of living, and ultimately our national security. Federal discretionary spending, along with other Federal policies and programs, will face serious budget pressures in the coming years stemming from new budgetary demands and demographic trends. Defense spending falls within the discretionary spending accounts. Further, current military operations, such as those in Afghanistan and Iraq, consume a large share of DOD resources and are causing faster wear on existing weapons. Refurbishment or replacement sooner than planned is putting further pressure on DOD's investment accounts.

At the same time DOD is facing these problems, programs are commanding larger budgets. DOD is undertaking new efforts that are expected to be the most expensive and complex ever and on which DOD is heavily relying to fundamentally transform military operations. It is giving contractors increased program management responsibilities to develop requirements, design products, and select major system and sub-system contractors. Table 2 shows that just 5 years ago, the top five weapon sys-

tems cost about \$291 billion combined; today, the top five weapon systems cost about \$550 billion.

TABLE 2: TOTAL COST OF DOD'S TOP FIVE PROGRAMS IN FISCAL YEARS 2001 AND 2006
[In billions of dollars]

2001		2006	
Program	Cost	Program	Cost
F/A-22 Raptor aircraft	65.0	Joint Strike Fighter	206.3
DDG-51 class destroyer ship	64.4	Future Combat Systems	127.5
Virginia class submarine	62.1	Virginia class submarine	80.4
C-17 Globemaster airlift aircraft	51.1	DDG-51 class destroyer ship	70.4
F/A-18E/F Super Hornet fighter aircraft	48.2	F/A-22 Raptor aircraft	65.4
Total	290.8	Total	550.0

Source: DOD (data); GAO (analysis and presentation).

If these megasystems are managed with traditional margins of error, the financial consequences can be dire, especially in light of a constrained discretionary budget.

Success for acquisitions means making sound decisions to ensure that program investments are getting promised returns. In the commercial world, successful companies have no choice but to adopt processes and cultures that emphasize basing decisions on knowledge, reducing risks prior to undertaking new efforts, producing realistic cost and schedule estimates, and building-in quality in order to deliver products to customers at the right price, the right time, and the right cost. At first blush, it would seem DOD's definition of success would be very similar: deliver capability to the warfighter at the right price, the right time, and the right cost. However, this is not happening within DOD. In an important sense, success has come to mean starting and continuing programs even when cost, schedule, and quantities must be sacrificed.

DOD knows what to do to improve acquisitions but finds it difficult to apply the controls or assign the accountability necessary for successful outcomes. To understand why these problems persist, we must look not just at the product development process but at the underlying requirements and budgeting processes to define problems and find solutions.

A KNOWLEDGE-BASED PROCESS CAN LEAD TO BETTER OUTCOMES

Over the last several years, we have undertaken a body of work that examines weapon acquisition issues from a perspective that draws upon lessons learned from best product development practices. Leading commercial firms expect that their program managers will deliver high-quality products on time and within budget. Doing otherwise could result in the customer walking away. Thus, those firms have created an environment and adopted practices that put their program managers in a good position to succeed in meeting these expectations. Collectively, these practices comprise a process that is anchored in knowledge. It is a process in which technology development and product development are treated differently and managed separately. The process of developing technology culminates in discovery—the gathering of knowledge—and must, by its nature, allow room for unexpected results and delays. Leading firms do not ask their product managers to develop technology. Successful programs give responsibility for maturing technologies to a science and technology organizations, rather than the program or product development managers. The process of developing a product culminates in delivery, and, therefore, gives great weight to design and production. The firms demand—and receive—specific knowledge about a new product before production begins. A program does not go forward unless a strong business case on which the program was originally justified continues to hold true.

Successful product developers ensure a high level of knowledge is achieved at key junctures in development. We characterize these junctures as knowledge points. These knowledge points and associated indicators are defined as follows:

- Knowledge point 1: Resources and needs match. This point occurs when a sound business case is made for the product—that is, a match is made between the customer's requirements and the product developer's available resources in terms of knowledge, time, money, and capacity. Achieving a high level of technology maturity at the start of system development is an important indicator of whether this match has been made. This means that

the technologies needed to meet essential product requirements have been demonstrated to work in their intended environment.

- Knowledge point 2: Product design is stable. This point occurs when a program determines that a product's design is stable—that is, it will meet customer requirements, as well as cost, schedule, and reliability targets. A best practice is to achieve design stability at the system-level critical design review, usually held midway through development. Completion of at least 90 percent of engineering drawings at the system design review provides tangible evidence that the design is stable.

- Knowledge point 3: Production processes are mature. This point is achieved when it has been demonstrated that the company can manufacture the product within cost, schedule, and quality targets. A best practice is to ensure that all key manufacturing processes are in statistical control—that is, they are repeatable, sustainable, and capable of consistently producing parts within the product's quality tolerances and standards—at the start of production.

A result of this knowledge-based process is evolutionary product development, an incremental approach that enables developers to rely more on available resources rather than making promises about unproven technologies. Predictability is a key to success as successful product developers know that invention cannot be scheduled and its cost is difficult to estimate. They do not bring technology into new product development unless that technology has been demonstrated to meet the user's requirements. Allowing technology development to spill over into product development puts an extra burden on decisionmakers and provides a weak foundation for making product development estimates. While the user may not initially receive the ultimate capability under this approach, the initial product is available sooner and at a lower, more predictable cost.

There is a synergy in this process, as the attainment of each successive knowledge point builds on the preceding one. Metrics gauge when the requisite level of knowledge has been attained. Controls are used to attain a high level of knowledge before making additional significant investments. Controls are considered effective if they are backed by measurable criteria and if decisionmakers are required to consider them before deciding to advance a program to the next level. Effective controls help decisionmakers gauge progress in meeting cost, schedule, and performance goals and ensure that managers will (1) conduct activities to capture relevant product development knowledge, (2) provide evidence that knowledge was captured, and (3) hold decision reviews to determine that appropriate knowledge was captured to move to the next phase. The result is a product development process that holds decisionmakers accountable and delivers excellent results in a predictable manner.

A hallmark of an executable program is shorter development cycle times, which allow more systems to enter production more quickly. DOD itself suggests that product development should be limited to about 5 years. Time constraints, such as this, are important because they serve to limit the initial product's requirements. Limiting product development cycle times to 5 years or less would allow for more frequent assimilation of new technologies into weapon systems, speeding new technology to the warfighter and holding program managers accountable, as well as make more frequent and predictable work in production, where contractors and the industrial base can profit by being efficient.

DESPITE POLICY, DOD IS NOT EMPLOYING A KNOWLEDGE-BASED PROCESS

DOD's policy adopts the knowledge-based, evolutionary approach used by leading commercial companies that enables developers to rely more on available resources rather than making promises about unproven technologies. The policy provides a framework for developers to ask themselves at key decision points whether they have the knowledge they need to move to the next phase of acquisition. For example, DOD Directive 5000.1 states that program managers "shall provide knowledge about key aspects of a system at key points in the acquisition process," such as demonstrating "technologies in a relevant environment . . . prior to program initiation." This knowledge-based framework can help managers gain the confidence they need to make significant and sound investment decisions for major weapon systems. In placing greater emphasis on evolutionary product development, the policy sets up a more manageable environment for achieving knowledge.

However, the longstanding problem of programs beginning development with immature technologies is continuing to be seen on even the newest programs. Several programs approved to begin product development within only the last few years began with most of their technologies immature and have already experienced significant development cost increases. In the case of the Army's Future Combat Sys-

tems, nearly 2 years after program launch and with \$4.6 billion invested, only 1 out of more than 50 critical technologies is considered mature and the research and development cost estimate has grown by 48 percent.

In March 2005, we reported that very few programs—15 percent of the programs we assessed—began development having demonstrated high levels of technology maturity. Acquisition unit costs for programs leveraging mature technologies increased by less than 1 percent, whereas programs that started development with immature technologies experienced an average acquisition unit cost increase of nearly 21 percent over the first full estimate.

ESTABLISHING A SOUND BUSINESS CASE DEPENDS ON DISCIPLINED REQUIREMENTS AND FUNDING PROCESS

The decision to start a new program is the most highly leveraged point in the product development process. Establishing a sound business case for individual programs depends on disciplined requirements and funding processes. Our work has shown that DOD's requirements process generates more demand for new programs than fiscal resources can support. DOD compounds the problem by approving so many highly complex and interdependent programs. Moreover, once a program is approved, requirements can be added along the way that increases costs and risks.

Once too many programs are approved to start, the budgeting process exacerbates problems. Because programs are funded annually and department wide, cross-portfolio priorities have not been established, competition for funding continues over time, forcing programs to view success as the ability to secure the next funding increment rather than delivering capabilities when and as promised. As a result, there is pressure to suppress bad news about programs, which could endanger funding and support, as well as to skip testing because of its high cost. Concurrently, when faced with budget constraints, senior officials tend to make across-the-board cuts to all programs rather than make the hard decisions as to which ones to keep and which ones to cancel or cut back. In many cases, the system delivers less performance than promised when initial investment decisions were made.

So, the condition we encounter time after time describes a predictable outcome. The acquisition environment encourages launching product developments that embody more technical unknowns and less knowledge about the performance and production risks they entail. A new weapon system is encouraged to possess performance features that significantly distinguish it from other systems and promises the best capability. A new program will not be approved unless its costs fall within forecasts of available funds and, therefore, looks affordable. Because cost and schedule estimates are comparatively soft at the time, successfully competing for funds encourages the program's estimates to be squeezed into the funds available. Consequently, DOD program managers have incentives to promote performance features and design characteristics that rely on immature technologies and decisionmakers lack the knowledge they need to make good decisions.

THE PATH TO BETTER DECISIONS

A path can be laid out to make decisions that will lead to better program choices and better outcomes. Much of this is known and has been recommended by one study or another. GAO itself has issued hundreds of reports. The key recommendations we have made have been focused on the product development process:

- constraining individual program requirements by working within available resources and by leveraging systems engineering;
- establishing clear business cases for each individual investment;
- enabling science and technology organizations to shoulder the technology burden;
- ensuring that the workforce is capable of managing requirements trades, source selection, and knowledge-based acquisition strategies; and
- establishing and enforcing controls to ensure that appropriate knowledge is captured and used at critical junctures before moving programs forward and investing more money.

As I have outlined above, however, setting the right conditions for successful acquisitions outcomes goes beyond product development. We are currently examining how to bring discipline to the Department's requirements and budgetary process and the role played by the program manager.

As we conduct this work, we will be asking

- who is currently accountable for acquisition decisions;
- who should be held accountable;

- how much deviation from the original business case is allowed before the entire program investment is reconsidered; and
- what is the penalty when investments do not result in meeting promised warfighter needs?

We can make hard, but thoughtful, decisions now or postpone them, allowing budgetary realities to force draconian decisions later.

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

CONTACTS AND STAFF ACKNOWLEDGMENTS

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Senator MCCAIN. Thank you very much.
Mr. Porter.

STATEMENT OF GENE H. PORTER, RESEARCH ANALYST, INSTITUTE FOR DEFENSE ANALYSES

Mr. PORTER. Thank you, Mr. Chairman. I would like to thank you and the subcommittee for holding these hearings. I think they perform a very valuable public service not just to allow you to collect information for your work, but to elevate in the public view these important defense management issues.

I will summarize my statement and emphasize that my statement is mine alone, not that of the IDA's, although I will draw on several studies from the IDA as I talk, including the cost growth study that was prepared last year. The committee is very familiar with the Institute's work on the Future Combat System (FCS) program.

I am addressing long-term management of defense acquisition modernization programs, not the emergency purchase of equipment for forces in combat and not for contracting for services and not new financial management systems for the Department, as important as those acquisition issues are.

In some contrast to my colleague and friend, Dr. John Hamre, I remain a strong supporter of Goldwater-Nichols and the Packard Commission's establishment of a defense acquisition executive. The problem is, as I see it, those procedures have not been fully implemented, and indeed, the ones that have been implemented in policy and procedures have not been followed often enough. I think this subcommittee and the full committee have had that discussion. I read statements by Senator Levin that talked about the Department not following its own procedures.

I characterize the Packard Commission recommendations as "back to basics." That was a phrase used by the late Don Yockey, who was Under Secretary of Defense (Acquisition and Technology) in the first Bush administration and was a strong proponent of centralized standardization of defense acquisition processes.

The first of five major problem areas that I will just highlight briefly is the chronic issue of better integration of requirements into the acquisition process. In my judgment, the "requirements" concept per se might be retired like Mickey Mantle's jersey. It is something that served its purpose and we moved on. It has a lot of baggage with it. I think most practitioners here would agree that "requirements" cannot be considered properly in isolation. Cost and

performance and affordability need to be considered jointly. That was said well back in 1971 when Alain C. Enthoven and K. Wayne Smith published "How Much is Enough? Shaping the Defense Program, 1961–1969." The foreword to this recently published book was written by the two best practitioners that are currently serving that I know, that is Under Secretary Chu and Under Secretary Krieg. They recast this from "how much is enough?" to "how much risk should we take?" You cannot really address that without looking at the cost and the effectiveness at the same time, not in isolation.

The joint staffs, the JROC process, and the Joint Capability Integration and Development System (JCIDS) process are very useful to inform and advise the Secretary and Under Secretary what they think are needed, but those are not resource-constrained processes. It is up to the Secretary and his designee, the Under Secretary, to make the hard decisions on cost-performance trades.

The defense acquisition executive needs good analyses of alternatives when he makes those decisions. When he is coming up to a DAB decision on what should be the next helicopter or the next deep strike weapons system, he needs a good, objective, independent analysis of alternatives to provide insights into those cost effectiveness issues. I am pleased to notice that the chairman of this subcommittee has recently put in an amendment, I believe, to this year's authorization bill to elevate the importance of analyses of alternatives in the defense management process. I think that is worthwhile.

The need for cost performance trades does not stop at milestone B—entering into full-scale development. The program managers need continued flexibility to do cost performance trades if they are going to hold down cost growth on weapons systems. That generally happened in the F-35 Joint Strike Fighter (JSF), in part, in my judgment, due to the force of personalities. That kind of flexibility needs to be institutionalized across the Department.

The second topic is Packard's "fly before buy" process. Several of us will talk about this. Ken Krieg now calls this "try before buy." I would say "do it right the first time." Well, it is rocket science. This is the way all good system engineering organizations plan and execute their programs. They do not move on until they have reduced the technical risk in each of the important areas. This whole process is embedded in DOD policies and procedures but is not followed often enough.

There are two key elements of DOD's "fly before buy": independent operational testing, which is working quite well; and then there are the technology readiness assessments, which are not working nearly as well. This committee might want to think about sponsoring the extension of the reporting requirements of section 804 of the authorization bill beyond their expiration in 2006 and perhaps strengthen and expand those reporting recommendations. My statement has some specific ideas there.

Fielding new systems is now less urgent, in my judgment, than it was during the Cold War. We can now take the time to do it right at great advantage to both the warfighters that get good equipment that works and is supportable and for the taxpayers

who do not have to spend on developing and redeveloping programs more than once.

The third major point is funding stability. Stability of funding of acquisition programs, or instability of that funding, is the bane of both Government program managers and of industry. It is a chronic complaint. DOD's funding streams are unstable and the committee members are well aware of this problem.

There is one aspect of one potential solution to which I would invite your attention that is not talked about very much, and I would say that my colleague here, who was once Comptroller of the Department of Defense, may want to comment on this later. That is, if we could stabilize the planned funding of operation and maintenance (O&M) funds in the outyears, if we could just do that right and not have a constant transfer every year from acquisition to O&M because we applied the same diligence to our O&M program planning that we do to our acquisition program planning, that alone would reduce instabilities in acquisition programs considerably.

The other potential ways to reduce that instability are well known to the committee: willingness to make vertical cuts instead of salami slicing programs to deal with changing budget top lines; the establishment of management reserves of some type, at least in the outyears, if not in the budget year, to allow the Department, program executive officers (PEOs), and acquisition executives to have some flexibility.

More emphasis on independent cost estimating: The Department has been doing better, particularly on independent estimates of production costs, at least according to the data that IDA has looked at up until 3 or 4 years ago. It is not clear to me that that is going nearly as well at the service level where the majority of the acquisition money is not actually spent on major acquisitions.

Finally, milestone budgeting: The Packard Commission recommended milestone budgeting, which says we appropriate at milestone B or milestone two the money that we all agree is likely needed to do full-scale development. That is sort of the way we built lead ships in the Navy. You appropriate the money for the lead ship and the Navy goes off and does the detailed design work and builds the lead ship. We do not seem to do that anymore, but milestone budgeting might be a way, during the development phase, to reduce the instabilities.

Fourth—and the chairman mentioned this—we need a better approach to joint acquisition. I differentiate between joint acquisition of weapons systems and joint acquisition of capabilities, capabilities-based planning and so on, which is the whole Department of Defense.

Talking particularly narrowly about joint acquisition, joint acquisition serves two masters. One is commonality, which is economies of scale, getting a common airplane, common truck, common sedan that everybody can use at much lower expense than having each Service buy their own. My colleague, Dr. Hamre, has done yeoman's service for the taxpayer over the last 10 to 20 years on defense agencies that are doing efficient common support, albeit after great birthing pains and trouble getting all that started, but I think there is wide agreement, even within the GAO, that those

agencies that procure common support are much less expensive to the Department as a whole than they would have been had we left them separate.

The prerequisites for joint acquisition are joint concepts of operation and joint funding. Joint concepts of operation translates roughly to agreed requirements on what we are going to buy. They did that for the JSF. It seems to be going reasonably well. They tried to do that for the F-111 20-30 years ago. They could not agree on joint requirements and we did not get a joint program out of it.

Finally, joint command and control is at the heart of joint warfighting and is something that Dr. Hamre's organization really foot-stomped in its first Beyond Goldwater-Nichols report. It said that we have been trying to do this with cooperative things and executive agents for decades and it has not worked, and that the Department of Defense should, in fact, establish a joint acquisition agency or entity of some kind to buy joint command and control systems, particularly for things like joint task forces. The Department is doing a lot of studies on this subject, but I have not seen any sharp decisions to move in that direction. It still strikes me as very important.

My final major point is better access to technology. The desire for better access to technology is what got us to the Office of Technology Assessment (OTA) concept, bringing in creative, small companies to bring new technology to bear. That has gotten out of hand on major systems acquisition in my view, but the Department still needs the authority and the incentives to bring in new technology.

More broadly, as Norm Augustine's new study on the U.S. economy, done for the National Academy, points out, only the Federal Government funds basic research. Much of the current commercial technology that powers our productivity improvements came out of DOD-funded basic research, and DOD basic research funding is stagnant. The U.S. Government's basic research funding is declining, and this is a big problem not just for the Department of Defense, but for the Nation as a whole. Congress could increase the funding and I think one of your fellow subcommittees is looking at the funding of basic research by the Department. You could also consider incentivizing industry to put more of their independent research and development (IR&D) funding back into basic technology rather than just products.

Finally, just three points. You asked about industrial base, competition, and outsourcing.

Industrial base: I believe that it is important to maintain design teams. If we are going to maintain competitive design teams, you have to fund them without promising production, and that means R&D has to be profitable in its own right. The Defense Science Board (DSB) said this for years. We still have not done that very well.

We need to fund surge capabilities for things that need to be surged: antidotes, vaccines, some kinds of ammunitions, but not much else.

In competition, competition is vital. It has led us to some superb weapons systems and is vital at the front end of our major weapons

programs. We get the best and the brightest in industry working days, nights, and weekends to create new weapons systems concepts of enormous importance and effectiveness for this country.

But once we have down-selected, once we have chosen a prime contractor to build that new airplane or ship or major weapon system, competition goes away, and that contractor's incentives, very properly, are very different now than the Government's. That contractor has a responsibility to his shareholders, to keep his profits up, his revenues up, and he is not incentivized, as has been discussed at this committee and elsewhere, to drive subsequent costs down once he is the sole source. We call that a competitive program, but when a contractor has that business for 20 years, it is not competitive after the first major down-select, as long as he is doing a decent job.

So the Government needs other tools to drive down the cost, and some of those have been talked about. Detailed cost tracking is one of the tools. "Breaking out" subcomponents is another potential tool. Chairman Hunter of the House Armed Services Committee has suggested greater use of the Challenge Program which is on the books but not used very much.

But this is a tough area. There are a lot of intellectual property issues associated with data rights and trying to compete pieces of equipment.

Finally, on outsourcing: I was around the Pentagon when Reinventing Government was going on, and I remain a strong believer in strategic sourcing, competitive sourcing of things you can find in the Yellow Pages: services that are not inherently governmental. But lead systems integrator work integrating the major weapons is not a capability that you can find in the Yellow Pages, and I strongly believe that that is the sort of expertise that needs to be restored within the Government, which particularly needs the technical expertise to do the kind of systems integration work that the Department used to be very good at.

I will not take more time to go through an anecdote about how the Navy did the Navy tactical battle system after the kamikaze attacks, which has now led to the AEGIS system, but that initial work was done by in-house naval engineers. We need to work at restoring that technical expertise, and if we do that, we will not need as many overarching integrated product teams (OIPTs), working integrated product teams (WIPTs), integrated product teams (IPTs), and what have you to spread the blame around.

[The prepared statement of Mr. Porter follows:]

PREPARED STATEMENT BY GENE H. PORTER

Mr. Chairman, I welcome this opportunity to present my views on the management of defense acquisition programs to this subcommittee.

I am currently a research analyst at the Institute for Defense Analyses (IDA), a federally-funded research and development center that is chartered to provide objective analyses primarily to the Office of the Secretary of Defense and the Joint Staff. I have attached a brief overview of IDA to this statement. At this subcommittee's March 2005 hearing on the Army's Future Combat Systems (FCS) program, the chairman said, "The Institute for Defense Analyses should look at the entire procurement issue." As it turns out, I am currently involved in a similar project. This ongoing effort, plus my personal experience, forms the basis for my statement. My industry and government background on these matters is briefly and informally summarized in an attachment.

Although I will refer to the results of some IDA research, this statement and my responses to any subsequent questions are mine alone.

My statement deals primarily with the deliberate long-term planning and execution of major weapons systems acquisition programs. It does not address the obvious need for effective emergency procedures for meeting unexpected near-term needs of forces in combat—procedures that Congress and the executive branch have recently dealt with in some detail.

Having been involved in several high-level reviews of defense acquisition management in recent years, I remain a strong supporter of the findings and recommendations of President Reagan's Blue Ribbon Commission on Defense, commonly referred to as the "Packard Commission." Some of the Packard recommendations were never fully implemented. Others were implemented in DOD policies and procedures but not always followed in practice, as Senator Levin observed at the hearing of the full committee on September 27. My view of the major weaknesses in implementation are summarized below and described in more detail throughout this statement.

I find only two major elements missing from the earlier Packard recommendations: (1) the widely recognized need to improve policies and procedures that encourage more and better joint acquisition, for which no formal acquisition management structure currently exists, and (2) "milestone budgeting," which I deem to be less urgent but still worth pursuing.

In my view, the current major problems with the Department's management of the acquisition portfolio can be usefully categorized into the five areas outlined below. The relative importance of each of these problems varies widely among the military Services.

1. Weak integration of the Department's weapons system requirements process, the formal acquisition management process, and the programming/budgeting process.
2. Excessive departures from proven systems engineering management practices already embedded in policy, sometimes summarized as "Fly-Before-Buy."
3. Frequent—indeed chronic—changes in the actual funding provided to programs compared with the initially approved funding profiles.
4. Lack of progress toward Joint Acquisition, as exemplified by the lack of a formal DOD management structure, except at the Special Operations Command (SOCOM) and at the Defense Agencies.
5. The shift in the locus of scientific and technical advances that are likely to be important in the future to outside the primary purview of the Defense Department and in some cases outside of the United States.

I believe these problems underlie many, if not all, of the issues about which the subcommittee asked the witnesses to comment, including the reported excess growth in the cost of too many programs. Unfortunately, there is no single solution that I can recommend that would make progress on all fronts.

As this committee well knows, improvement of defense—indeed government—acquisition is a complex topic, and significant progress will be a long, hard slog. I will highlight some aspects of each of the foregoing five topics and then close by addressing your questions about the industrial base, outsourcing, and competition. For lack of time and relevant expertise, I will not address in any detail other important acquisition management issues of potential interest to this subcommittee, and to the full committee, such as services contracting and accountability other than to note that in his testimony on September 27, Secretary Kreig cited better accountability as one of the three key principles he intends to pursue. This is a complex area that extends from the difficulty of holding accountable program managers that have insufficient control of their own funding, to the accountability of higher level officials.

REQUIREMENTS—RELATED ISSUES

This section deals with better integrating the requirements aspects of defense acquisition. The problems with acquisition-budgeting integration are dealt with in a subsequent section.

A key step in sound acquisition program planning is to establish realistic, achievable, and affordable statements of the intended principal characteristics of a national new weapon system. There is an ongoing tendency in some quarters to consider the establishment of such "requirements" as quite separate from the acquisition process. That is not what the Packard Commission recommended, nor is it consistent with the legislation that established the position of the Under Secretary for Acquisition, as I understand it. At the end of the day, the Under Secretary of Defense for Acquisition, Technology, and Logistics, acting on behalf of the Secretary

has the responsibility and authority to decide the equipment characteristics the Department will ask the President to request that Congress fund.

Nevertheless, it is highly appropriate that the Nation's warfighting experts, both the combatant commanders, and the Chiefs of the military Services, be deeply involved in the decisions that lead to establishing a formal acquisition program. Indeed, the Service Chiefs in particular are in fact heavily involved, not only in identifying needs and setting the requirements at the start of programs, but also in the ongoing cost-performance trades that are made as a program proceeds through development and into production.

In addition, the Chairman of the Joint Chiefs of Staff has established a formal process by which his staff develops advice that is provided to the Defense Acquisition Executive (DAE) as to what the Department should acquire to meet a recognized need—particularly from the viewpoint of the combatant commanders and the joint warfighting community. The DAE ultimately makes such decisions in consideration of the advice rendered by the members of the Defense Acquisition Board, and ideally after examining the results of an objective analysis of alternatives. For this process to work well, there needs to be close cooperation between the warfighting “customers” and the acquisition executive, as was envisioned by the Packard Commission's unimplemented recommendation for the establishment of a Joint Requirements Management Board (JRMB).

Inadequate Integration of Requirements into the Acquisition Process

The objective formulation of requirements for new weapons systems has sometimes—some would say frequently—been hindered by pressure from the sponsoring Service—and its supporters—for a particular programmatic solution. As a result, DAEs have sometimes been presented with essentially a fait accompli, wherein both the need and the solution have been decided outside the acquisition chain, without a sound analysis of alternatives, and presented to the Defense Acquisition Board as a contract ready for issuance.

I was encouraged to read Secretary Krieg's testimony of September 27 in which he reported that he, too, believes the Department's requirements and acquisition processes must be better integrated, and laid out his principles for achieving that end. It is my understanding that he has moved to take a greater role in the examination of requirements, not only for major defense acquisition programs (MDAPs) but also for those other programs that may not meet the MDAP cost thresholds, but that are vital enablers to future joint military operations, such as command and control systems.

Inadequate Latitude for Cost-Performance Tradeoffs

In addition to the sometimes lack of “due process” in establishing the analytic basis for a new acquisition program, once a new program is started, the detailed performance requirements and other characteristics are sometimes still specified in such detail that the program manager (PM) has little room for making the sort of cost-performance trades for which, most agree, the PM needs both authority and latitude to decide if costs are to be adequately controlled. In my experience the degree of such cost-performance flexibility provided to the F-35 Joint Strike Fighter program managers is a rarity.

Secretary Krieg and two of the Service Acquisition Executives testified 2 weeks ago that they, along with their military counterparts, the Vice Chairman, Joint Chiefs of Staff (VCJCS), and the Service Chiefs, are increasingly involved in making such cost performance trades on ongoing major programs. As a result, some performance goals are being significantly altered in order to better balance cost and performance risks. As noted earlier, such activities by the civilian acquisition executives were an important element of the Packard Commission recommendations. However, it seems likely to take some time before these increasingly routine management actions at very senior levels get translated in kind to the management of cost-performance trades on smaller programs.

Requirements that have been dictated in minute detail, without a full appreciation for the upcoming technical challenges, are a contributing cause of the dramatic rise in cost on some programs as cited by the subcommittee's invitation letter. Indeed, much of this apparent rise in cost may be due more to a poor understanding of the technical risks at the outset (and premature commitment to the next phase) than to weak program management, as will be discussed in the next section of this statement.

By the same token, the pejorative term “requirements creep” doesn't always imply poor management. Indeed, in most major programs that are expected to take over a decade to proceed through risk reduction, system design and development, and initial production, the government should be open to changes that may add cost, if that

added cost can be justified and funded without undue risk to other capabilities. Such changes include revised responses to changing threats, the unplanned availability of new technology that can lower production costs, and engineering changes that lead to worthwhile reductions in operating and maintenance costs. Many such changes are clearly in the Department's interest, but they should be made in a manner that demonstrates their appropriateness via the appropriate acquisition executive's requirements review process, and they should be clearly explained as prudent to Congress, including their impact on other programs.

In keeping with this concept, a 2004 IDA study on the reported growth of costs of 138 defense programs attempted to differentiate between growth due to "decisions" such as changing performance requirements or changing production rates, and growth due to "mistakes," such as erroneous estimates of labor hours or material costs. IDA found that about half of the cost growth in development programs and one-third of the (smaller) growth in production programs was due to deliberate "decisions," rather than "mistakes."

DEPARTURE FROM PROVEN SYSTEMS ENGINEERING PRACTICES

A major thread of the Packard Commission's recommendations was to "fly before buy." Secretary Kreig now calls it "try before buy." One could also say, "do it right the first time." However it is stated, this old chestnut remains as valid today as it was almost 20 years ago. In fact, one could argue that it is even more valid today because there is no major new threat so imminent that sound system engineering management practices need to be sacrificed in order to accelerate the fielding of unproven technology and equipment. Although the precept is embedded in DOD policies, I sense that it has been insufficiently heeded in recent years.

The Department has relied heavily on two key tools that are intended to implement this principle: One is working well; the other isn't.

Formal Operational Testing

Significant benefits have accrued to our warfighters by independently ensuring that their equipment has demonstrated both operational effectiveness and supportability in the field. U.S. military equipment is the envy of the world's fighting forces, in my view in large part as a result of our rigorous and independent testing.

Technical Readiness Assessments (TRAs)

As Congress recognized when it passed section 804 of the National Defense Authorization Act of Fiscal Year 2002, and as the Government Accountability Office (GAO) noted in its recent reports, the Department and its component Services have too often departed from well-established rules that require all elements of technology to have been demonstrated in the relevant environment before acquisition programs are allowed to proceed into full scale development. Premature ramping up of programs poses a high risk of problems that then require program activities to be recycled at great expense in time and money. The Army's FCS program is an example well known to this subcommittee.

More generally, the ability of DOD to independently and competently assess the maturity of technology is hobbled by the lack of in-house technical expertise. One reason that operational testing is so successful is the independence and technical competence of the Department's operational test and evaluation staff. A similar model could be developed and required for identifying critical technologies and assessing their maturity. This would better assure that the Milestone Decision Authorities and Congress would have reliable information at key decision points. This would of course require a greater degree of Government technical expertise than now exists—a need that is broadly recognized.

The 2004 IDA review of the Army's FCS program noted a large number of technical issues that had not been resolved at the time approval was given to proceed into system design and development. One result of these unresolved technical issues appears to have been the slippage of the Preliminary Design Review until late next year and overall slippage of initial operational capability by 4 years. These changes call into question the appropriateness of the Milestone B decision in 2003.

Given the lack of threat-driven urgency for the Department's major acquisition programs, I personally believe that there should be a very high bar for waivers of this sound management principle. This subcommittee may wish to sponsor extension of some (possibly expanded) version of the existing reporting requirement under section 804 beyond its scheduled expiration in 2006. I suggest that such future reporting include major information systems, retrospective reports on the accuracy of prior year's assessments, and on the degree to which previously approved risk mitigation plans succeeded. Such assessments need to be made by technically qualified

personnel that are free of conflicts of interest. Service acquisition executives could logically be required to report to the DAE similar information on the development programs under their purview.

FUNDING INSTABILITY

As the members of this subcommittee are well aware, the Department has accumulated an elaborate set of procedures for the detailed planning and management of acquisition programs—procedures that, when followed, and when accompanied by stable funding, have generally produced good results, given the complexity of DOD programs. The resulting “baseline” plans are tightly coupled to the timely allocation of the planned funding. Therefore, any significant change to the postulated funding profile—almost always a reduction—is quite disruptive to even the best-planned and most technically stable program.

There are myriad reasons why the funding levels actually appropriated and apportioned to acquisition programs are frequently changed from those originally planned and agreed to within DOD. Some major contributors are as follows.

The migration of planned acquisition funds to the operating accounts

The mismatch between the Department’s ability to carefully forecast the funds needed in the future for each approved weapon system and the Department’s ability (or willingness) to forecast its needs for future operating funds is an important contributor to instability. Given that DOD must always constrain its total funding plans to the level prescribed by the long-range budget plans of the President and Congress, every year the Department is faced with the need to cut back on previously planned acquisition spending in order to meet unplanned needs for operating and maintenance (O&M) funds. This ongoing problem is frequently exacerbated by having to adjust previously overly optimistic estimates of future total DOD funding levels to accommodate emerging near-term Government-wide funding realities.

This source of instability in acquisition program funding is chronic—not just associated with either the current high tempo of unplanned operations or with deficit concerns. The acquisition program “cuts” imposed as a result of this phenomenon are usually broadly spread across most acquisition programs, requiring that most be re-planned in detail and at considerable increase in total cost. This type of instability is not confined to actions in the executive branch across the 5-year plan. In some former years, Congress would level a “tax” on DOD in the form of an undistributed reduction for the imminent budget year that would have the same broad destabilizing effect. Indeed, I understand that fresh consideration is unfortunately being given to such a destabilizing “tax” for the current budget year as a way to limit the deficit.

Because this impact results from purely budgetary considerations and not from changes in the threat, or program troubles, or other changes in a particular program, it is difficult to argue within DOD that any particular program, or set of programs, should be sacrificed in order to protect the stability of the remainder, although such vertical cuts would be sensible.

A broad solution to this problem of annual transfers of previously planned acquisition funds to operating accounts would of course be for the Department to plan its long-term operations and maintenance spending to the same “most likely cost” criteria that it tries to apply to the planned cost of its weapons systems. For this reason, it is important that acquisition program planning be more closely coordinated with the Department’s overall resource allocation and budgeting processes. The latter is particularly challenging in that decisions on acquisition programs are largely event driven—completion of development, etc.—and budgets are calendar driven. Nevertheless, it is a hopeful sign that Secretary Krieg continues to emphasize the need to better integrate acquisition and resource management in his recent testimony.

“Fencing” is not the solution

From time to time the suggestion is made that, once an acquisition program has been thoroughly reviewed and approved by the Defense Acquisition Executive, the associated funding profile that would lead to the next major milestone should be exempted from further adjustments, such as those frequently made during the annual budget preparation cycles. As important as improved funding stability is to the coherence and efficiency of acquisition program management, it is not more important than the need for the Department to be able to respond flexibly to changing threats, risks, and total funding availability as it prepares budget proposals. “Fencing” the funding for some acquisition programs would have the effect of further destabilizing others, under current procedures. For this reason, except for occasional isolated pro-

grams of great strategic importance, secretaries of defense have been properly reluctant, in my judgment, to mandate that specific levels of funding be earmarked for specific acquisition programs as the Services update their long range plans in response to his guidance.

The need for planned "reserves"

The lack of DOD "Management Reserves" is frequently cited as a source of program instability. Managers of civil projects ranging in complexity from building a single family home to tunneling under a major city know they cannot accurately predict the total cost just by adding up costs of each of the initially planned steps known to be needed. There are always unknowns, and even unknown unknowns, that drive up the final cost. Builders that promise a result at a fixed price always include some unallocated contingency reserves in their bids, or they would soon be bankrupt.

In sharp contrast to private sector practice, the half of the DOD acquisition spending that is devoted to RDT&E, and most of the other half that goes to procurement spending, is contracted not on a fixed-price basis, but using cost-type contracts. In principle, the Department could—and should—include prudent contingency reserves in their estimates of both development and procurement costs. In practice however, there is a bias against such prudent planning in large part because there is always some need that is more tangible than the "unknowns" that motivate planning for reserves.

As the subcommittee is aware, the Department has long supported an independent Cost Analysis Improvement Group (CAIG) dedicated to improving its estimates of future costs. This activity has been moderately successful, in my view, in strengthening the Department's ability to forecast, and budget for, future production costs. Because of the uniqueness of every development program, and the sparsity of analytic tools, independent estimates of development costs have proved somewhat less reliable than those for production costs. These uncertainties lead to a tendency with the Department to, on average, accept rosy forecasts of development costs. Therefore, when a particular program develops a serious problem in development that raises its cost well beyond the budget, presuming the program is still important, the usual practice is to transfer funding from other acquisition programs to, in principle, "equalize the pain". It may do that, but as with annual "taxes" by either Congress or the executive, the result is broadly destabilizing across many programs.

This of course is not a new issue. In past years the Department has tried several different approaches to establishing prudent levels of reserves, at least in its out-year plans, that can be allocated as needed to salvage troubled programs, or accommodate other sensible changes, without having to tax and destabilize others. In all cases, such schemes seem to have been abandoned after only a few years, or even months, because of the difficulty in holding back funds—even outyear funds—against unknown eventualities, when there were so many competing demands to meet known needs.

My personal sense is that the stability of acquisition programs is important enough to warrant yet another try at establishing such a reserves program—not necessarily for the budget year, but surely for the outyear plan. Whether such reserves should be held at the Program Executive Officer (PEO), Service Acquisition Executive (SAE), or Defense Acquisition Executive (DAE) level is currently beyond my ken.

Other Funding Destabilizers

The Appropriation Process

DOD acquisition budgets are prepared years in advance of the actual intended dates of obligation of the requested funds. As time passes, more and more is known about the status of each ongoing program and its actual need for, and ability to effectively use, the requested funding. The executive branch updates its annual budget requests for the latest "fact of life" changes just before submitting the requests in February, and even occasionally submits amendments that have similar features. Nevertheless, it is Congress that usually has the latest information on program status when the markups of appropriation bills near completion. It is not unusual to find that millions of dollars requested months earlier by the executive branch are no longer needed due to program slippages and are thus available to Congress for reallocation.

One problem with this seemingly logical process is that there is no easy way for programs that have lost money in 1 year's appropriation process to get it restored early in the next year. In cases where the entire program has slipped to the right by the amount of the reduction by virtue of its internal problems, this is not a major

source of instability. However, in cases where Congress makes a marked reduction in funding because a major funding milestone has slipped a few weeks into the next fiscal year, that program will likely need most of that funding early in the following year, if disruptions are to be minimized. If DOD is to find the funds needed to keep the program on its slightly slipped track, it most likely will have to do so at the expense of the stability of several other programs. I have never seen the data that would be needed to accurately scope the full extent of this “congressional” instability, and therefore can’t judge the need for procedural changes.

Emerging, unplanned, programs

An additional source of instability is a decision to move a promising experimental program that had not been planned for production into the formal acquisition system. The Department funds a variety of promising experiments that each have some prospect of becoming worthy of longer-term funding than originally planned. Such programs are typically managed by the Defense Advanced Research Projects Agency (DARPA) or in the Department’s Advanced Concept Technology Demonstrator (ACTD) portfolio. If one or more such programs are tested and found to warrant prompt inclusion in the Department’s long-term program plans, they usually must displace one or more other programs—a destabilizing activity that has a chilling effect on the mainstream defense acquisition community’s enthusiasm for such programs. One obvious solution to this threat would be for the Department to create a standing outyear “wedge” of unallocated funds, some of which could be shifted annually to fund emerging good ideas without disrupting other programs. A problem with this approach is similar to that for establishing an outyear reserve for funding troubled programs and other program changes—there would be a significant one-time destabilization of other programs in order to fund such contingency accounts.

One other potential improvement in program stability: Milestone Budgeting

A different step towards stabilizing the funding for the development/initial production phase of programs would be to shift to “milestone budgeting” as recommended by the Packard Commission. Under this approach the full estimated cost of development, and perhaps the first year or 2 of initial production, would be appropriated and managed as a lump sum in much the same way as the cost of a new lead ship used to be appropriated. A full-scale change to such a procedure would have a major impact only on obligational authority, but not on actual outlay rates, as the funds would be actually expended at approximately the previously planned rate. The benefit would be the greatly increased ability of program managers to efficiently plan and execute the multiyear activities of their development programs due to the confidence they would have in the availability of funds.

Towards more accurate pricing of defense acquisition programs

Some seem to believe that the Department still deliberately underprices many of its acquisition programs in order to be able to get as many new programs started as possible. Examples of such “low-balling” can undoubtedly be found, but my general experience in recent years has been that both the Services and OSD leadership have worked rather hard to budget their acquisition programs to the “most likely” cost, at least in the first year after such estimates are made.

Based on the IDA’s 2004 examination of data on 138 programs mentioned earlier, it appears that the decades-long effort to align DOD acquisition procurement budgets with the results of truly independent cost estimates has been modestly successful in reducing apparent production cost overruns. That analysis showed that about 75 percent of the cost growth in production programs was attributable to only 20 percent of the programs—outliers beyond the expected normal distribution of estimate errors. I suspect, but cannot demonstrate, that many of these outliers are attributable to both the aforementioned technological immaturity at the time the initial cost estimates were made, as well as some “requirements creep” that may not have received sufficient oversight.

LACK OF JOINT PROGRAM AND ACQUISITION PLANNING

The impediments to jointness in the Department of Defense acquisition program planning are particularly well known to this subcommittee, dealing as it does with the interface between the air and ground combat forces of the U.S. The Goldwater-Nichols Act is widely acknowledged to have led to significant improvements in the planning and execution of joint military operations. Its impact on increasing the “jointness” of the Department’s long-range program planning process, including its acquisition program planning, has been much less impressive to date.

It may be overly simplistic to contrast the apparent internal jointness between the air and ground elements of the U.S. Marine Corps, with the ongoing difficulties in

achieving similar synergies between the Army and the Air Force, but there are two important points that can be illustrated using that analogy.

Joint Operating Concepts

First, a common, unified concept of how to operate together not only really helps, but is essential to real jointness. The Marines pride themselves on having hashed out effective operational concepts for air-ground operations across a broad range of combat scenarios. The unity of such concepts is widely advertised as integral to their Marine Air-Ground Task Force (MAGTF) organizational structures. However, joint operating concepts and joint integrating concepts that cross the boundaries of the other Services are much less developed.

It is difficult to make a lot of progress in defining an acceptable set of joint “requirements” for new equipment that would be operated by multiple Services in the absence of agreed, and relatively specific, joint operating concepts. As the subcommittee knows, the Department is working to develop a broad range of joint operating and integrating concepts to address this need, but progress seems glacial. This, plus the funding issue discussed below, constitutes the major impediments to achieving the longstanding goal of having programs “born joint.”

The closest the Department has come in recent years to a successful major joint acquisition program is the Joint Strike Fighter—now the F-35. Research at IDA into the differences between the originally joint F-111 program that reverted to a single Service, and the largely successful (to date) joint F-35 program, identified one overriding factor. In the F-111 program the Navy and Air Force failed to agree on an acceptable set of joint performance requirements. Such agreement, reached early in the F-35 program, has largely persisted through many changes, by virtue of the joint management and funding structure. But the F-35 type of “jointness” flows more from a desire to save acquisition and maintenance costs through the use of common equipment than it does from the need to operate more jointly. Even with common airframes, the Services could in principle equip them with uncommon sensors, communications equipment, and weapons—the type of equipment important to joint operations.

Joint Funding

Second, a single flow path for funding clearly helps. When the Marines plan their future spending programs, they can internally resolve issues and assemble, at least within the Department of the Navy, a coherent long-range program plan for the several components important to joint air-ground operations. Other examples include the integrated radar and missile air defense systems that were developed separately by the Army, Navy, and Air Force. There are no examples of single sources of funding for successful major cross-service programs that come to my mind.

The lack of planned interoperability among the military services is not a new problem even though warfighters in the field have a strong recent record of successful last-minute improvisation that ends up getting the job done, albeit at considerable expense in time and efficiency. In discussing the acquisition of equipment important to the interoperability of U.S. forces, the 2004 Center for Strategic and International Studies (CSIS) Beyond Goldwater-Nichols (BG-N) report stated:

This enduring lack of jointness in how DOD procures weapons has both raised the cost of military operations (e.g., persistent interoperability problems cause friendly fire casualties) and constrained the growth of U.S. military capabilities (e.g., Services invest too much in duplicative capabilities and too little in Low Density/High Demand assets)

Nowhere is the need for improved coherence in the acquisition of military capabilities more apparent than in command, control, and communications systems. Citing “repeated failures over the past decade to develop common, interoperable” command and control systems, the aforementioned CSIS report explicitly recommended that funding and responsibility for managing such programs be transferred from the Services to a new joint management entity. I have seen no concrete steps being taken to implement such a recommendation.

The Department is reportedly looking broadly into the planning for such joint command and control and supporting information infrastructure programs. The central issue being addressed is how to assure that separately acquired and fielded programs provide the necessary integrated joint capabilities.

It is worth noting that “purple” funding of common support activities has largely proven its worth. Despite their considerable birthing and growing pains, such DOD-wide activities as the Defense Logistics Agency, Defense Information Services Agency, Defense Finance and Accounting Service, and the Defense Contract Management Agency, are widely agreed to now be working well and are considerably less costly than would have been the case had the Services each retained such functions. This

outcome is much to the credit of my fellow witness, Dr. John Hamre, who oversaw much of this effort as Comptroller and Deputy Secretary in the previous administration. It is my belief that more such "joint" funding is a necessary condition for achieving much real progress towards joint acquisition.

My sense is that it may take another herculean effort, such as that that went into the Goldwater-Nichols Act itself, to boldly move the Department into a new approach to acquiring capabilities that are truly "born joint". This subcommittee clearly has the expertise to lead such an effort. It seems unrealistic to expect much more progress toward improved joint acquisition without a major effort by both the Secretary of Defense and Congress.

ACCESS TO TECHNOLOGY

This subcommittee is well aware that the day has long passed when the Defense Department could rely exclusively, or even primarily, on technology that had been developed as a result of DOD investments. The explosion of new applied technology in the U.S. commercial sector, coincident with globalization of such developments, poses a significant challenge to DOD. No longer can Government laboratories and traditional defense contractors be looked to as the primary source of new technologies important to future defense systems. Indeed, acknowledgement of this trend lies behind many of the acquisition "reforms" adopted by the Department over the past decade, including its enthusiasm for the use of Other Transaction Authority (OTA) agreements to hopefully gain access to non-traditional suppliers.

But applied technology flows out of basic research, which in this country is still dependent on Federal funding. The problem for DOD is being exacerbated both by the ongoing decline in Defense and other U.S. Government investment in basic and applied research, and by the Defense Department's decision in the 1990s to cease giving industry incentives to spend its Government-reimbursed independent research and development funding on long-term science and technology projects that are of particular importance to national defense needs. The simple solutions to these trends, to which this subcommittee could contribute its expertise and influence, would be to reverse the decline of DOD spending on basic research and to encourage the Department to resume its former practice of "scoring" industry independent research and development (IR&D) projects against the Department's long-term goals when determining the level at which such investments would be reimbursed via DOD contract overhead allowances.

More broadly, I invite the subcommittee's attention to the excellent treatment of this increasingly urgent national problem that Norm Augustine's National Academy Committee on Prospering in the Global Economy of the 21st century recently produced for the Senate Energy and Natural Resources Committee. This study emphasized that the Federal Government is the only source for funding basic research in the United States; that corporate R&D funding is product-oriented; and, noting that many of today's most successful commercial technologies originated in basic research funded by the Department of Defense, where support for such funding continues to wane, recommended that DOD funding of basic research be increased at a rate of 10 percent per year. The growing plight of the ocean science community, whose research is so important to a broad range of national security issues, adds conviction to my recommendation that the members of this subcommittee strongly support the efforts of the Subcommittee on Emerging Threats and Capabilities to implement the spirit of the Augustine Committee's recommendation. Such a funding increase would also benefit efforts to increase the availability of the meaningful, interesting, and important research work needed to further motivate U.S. students to pursue challenging technical and scientific education goals.

The more complex issue involves DOD access to advanced technology whose centers of excellence are outside the United States. To date DOD has relied primarily on its large, multinational prime contractors to manage such access, and this may continue to be the best approach. However, this is an area that I believe warrants increased attention, as do so many facets of the defense acquisition process.

OTHER TOPICS

Industrial Base

Just as the American public broadly benefits from the growing globalization of the consumer economy, within limits, the Defense Department also broadly benefits from the globalization of the supply chain both for the lowered cost of its commercial products needs and its access to advanced technologies for which the U.S. is not a leader. But for supplies for which a surge capacity is assessed as an important element of U.S. national security planning, there is no reason to depart from the current practice of funding such standby capacity in the U.S. Such needs include, for

example, vaccine production; antidote production; other limited shelf-life supplies; and some types of ammunition.

It is also vitally important that the equipment on which the United States relies for its most sensitive communications and intelligence activities are assembled from “trusted sources” of components.

There are obviously other strong incentives for the United States to ensure that its industrial base can continue to produce the principal weapons systems that are used to equip its military forces. However, as DOD becomes increasingly dependent on technology for which other free world countries may have gained a competitive advantage, it is unrealistic—even counterproductive—to demand that arbitrary percentages of DOD equipment components and software originate in the United States. Furthermore, paying for the maintenance of excess defense industrial production capacity in the hopes of reducing costs though competition is also generally counterproductive, as discussed below.

Paying for extra capability to design and prototype new, innovative forms of military equipment may well be worthwhile, but, as also discussed below, such a program would need to be made profitable in its own right to be successful.

Competition

There are two chief perceived benefits of formal competition in defense acquisition programs: design innovation and cost reduction.

Design Innovation

In my experience, competition is very effective in bringing forth the best industry can offer at the beginning of every major new acquisition program. Top talent is frequently switched from lucrative ongoing programs to help formulate the company’s technical concepts for the big competition at hand. The reason for this success is not hard to discern; the companies know that the winner probably will never have to face further real competition on that program. For this reason, bidders not only commit their best design talent, but also frequently promise to share the cost of the early development phase of the program. Some may still believe this is a good deal for the Government; I do not. By accepting such in-kind “contributions” early in development, the Government sub-optimizes its long-term interests and makes some implicit commitment that it will proceed into full-scale development and production. Such a commitment, whether implicit or not, limits the Government’s ability to decide on alternate courses of action. Furthermore, if the Government places any significant weight on such “up-front” contributions when selecting the prime contractor, it may well forgo much larger benefits available from other bidders in terms of lower future production and operating cost and/or better system performance features. Such considerations have motivated the Department’s growing use of “best value” source selection criteria in recent years.

As noted earlier, I believe at least the early phases of research and development (R&D) activity should be made profitable in their own right, without the promise of a production run to “get well.” Such an approach could greatly increase the Government’s ability to keep competent design teams productively employed without the obligation to take designs to production before they may be needed. It might also bring into the DOD orbit many nontraditional R&D firms that may be able to contribute innovative ideas. But this would be a hard sell, in part because of the very real intellectual property ownership issues that surround such programs.

There are also always ongoing pressures to only invest significantly in developments for which there is a follow-on production program. My recollection is that the Joint Strike Fighter program started as a series of design and prototype testing competitions for advanced aircraft components and subsystems, and that industry, and perhaps Congress, quickly insisted that such expenditures would be justified only if an aircraft development program was established in the funded program of record.

Cost reduction

In contrast to the benefits of formal design competition, I believe the cost reduction benefits of competition are highly overestimated, at least at the major system level. Indeed, as a practical matter, once a major defense contractor has won a design competition and any subsequent down-select that is intended to lead to production, the threat of further competition will have largely vanished. At that point the contractor’s duty to his shareholders to keep costs and profits up on the prevalent cost-type contracts begins to conflict directly with the Government’s interest in driving costs down. From time to time the Department has attempted to compete the subsequent production of complex systems, such as battlefield trucks. Although I have seen no recent systematic study of the results of such competition, my sense is that most results were disappointing due to such factors as long delays and unex-

pected costs in fully qualifying the alternate supplier. Such prime-contract re-competitions are becoming much more difficult to orchestrate as systems become more complex and tightly integrated, and the intellectual property rights to embedded commercial products and components become harder to deal with.

Once a qualified prime contractor is producing satisfactory equipment under a prime contract, the Government needs to employ tools other than direct re-competition to encourage cost limitations and reductions. These tools take many forms, such as detailed tracking of the contractor's actual costs, component break out, and incentive fees and are highly unique to Government management practices. The private sector has very few, if any, long-term cost-plus contractual relationships where the buyer has no alternate supplier reasonably available.

Other types of competition

There is a third potential use of competition in defense acquisition that has not been generally adopted but may be worth additional attention. This is the notion of cross-system and even cross-Service competition for funding to meet a real "mission" or "capability" need. Such an approach has been suggested by past Defense Science Board task forces through such broad examples as comparing the costs of striking inland targets from Navy carriers with the costs of Air Force bombers for the same effects. The Department is not currently organized or staffed to routinely conduct such studies "in house." Having conducted a Deep Attack Weapons Study along these lines for OSD several years ago, IDA can attest to the difficulties of such attempts at explicit cross-service competition.

Finally, I note that the Department at one time championed a "Challenge" program in which outside suppliers could formally offer to provide some piece of equipment, or subsystem, to DOD at a lower price than was currently on contract. The opportunities for benefiting from such a program have probably declined in recent years as the Department has undertaken less and less of its own system integration work, thereby reducing its ability to switch sources for components or subsystems. Nevertheless, some such new effort to open ongoing DOD contracts to new ideas and technologies from outside suppliers may well be warranted.

Outsourcing

As noted earlier, I am not prepared to comment on the details of the problems involving contracting for services, although I recognize the importance of Senator Levin's comments thereon in September.

However, I was on the fringes of DOD's involvement with the Reinvention of Government and supported the use of public-private competitions for the types of services that one can find in the "Yellow Pages."

I still believe in the value to the Department of such competitions for routine services that are not "inherently governmental," but would be quick to recognize that there are problems in managing such contracts when they are outsourced.

Representing the Government's interests in structuring and overseeing major defense acquisition programs is not a skill set that one finds in the Yellow Pages. At the level of weapons systems acquisition, the Government is different. There is a very real limit to the applicability of commercial program management practices to the Government's needs. When a private company chooses to undertake a major, multiyear development of a complex new system, it does not outsource the bulk of the work using a cost-plus multi-decade contract. Indeed, almost all major systems developments in the commercial sector are done "in house" and very little information on either the costs or success rate of such developments is available in the public domain. Furthermore, the company program managers have great control over, and confidence in the stability of their own budgets. I make this point not in defense of any current Government acquisition practice, or to advocate a return to the arsenal system, but to remind the subcommittee, though I doubt it is necessary, that contracting for such major system developments really is unique to the Government.

As this subcommittee knows from the IDA review of the FCS program, and the related testimony of Dave Graham, the IDA project leader, IDA found that the FCS integrated Army/Boeing "One Team" management approach "results in inherent tensions in the roles of Army participants—teammate vs. customer representative, and in the roles of industry representatives—teammate vs. representative of corporate management and stockholders." IDA recommended that the Army strengthen its corporate independent assessment capabilities. I cite this report not to imply that there is a particular new or ongoing problem in the FCS program, but as an example of what I personally think should be the high-water mark for outsourcing the types of systems integration activities that were once the hallmark of the Defense Department's in-house technical abilities.

Acting on behalf of the Government in overseeing the design and integration of complex, multi-billion dollar acquisition programs takes a high level of skill and experience. Ensuring that the Government has enough such talent is a major and continuing challenge. I believe the Government needs to take strong actions to beef up this senior segment of the acquisition workforce. This particularly includes systems engineering talent at both the PM and PEO levels. Hopefully, the new National Security Personnel System will facilitate such actions by the Department.

CLOSING

Finally, I would like to compliment the chairman and the subcommittee for holding these hearings. In my view, they provide an exceptionally valuable forum both for the subcommittee to gather information important to the discharge of its legislative duties and for the broader goal of elevating the public dialog on matters vital to the future security of this Nation.

Thank you for the opportunity to present my views.

Senator MCCAIN. Thank you very much.

Mr. PORTER. Thank you.

Senator MCCAIN. Mr. Anderson.

**STATEMENT OF FRANK J. ANDERSON, JR., PRESIDENT,
DEFENSE ACQUISITION UNIVERSITY**

Mr. ANDERSON. Thank you, Mr. Chairman. Senator Lieberman, Senator Chambliss, thank you for the opportunity to appear before you today to discuss improving the DOD acquisition system.

For the sake of time, I will quickly highlight my main points, but I request that the entirety of my prepared testimony be included in the record.

Senator MCCAIN. Without objection.

Mr. ANDERSON. There are several longstanding systemic issues that I think must be addressed. I think the Department knows what those issues are and I would not disagree with any of the previous discussions about what the issues are. But I do not believe we will produce better acquisition outcomes unless we take on several of these systemic issues. I do not believe that our most pressing issue is the way DOD is organized.

The systemic issues that I believe must be addressed if we are to produce better acquisition outcomes are actions required to create better program stability, how we do a better job of managing costs and schedule growth in our programs, and critical is creating an integrated and aligned "Big A" process. There have been other leaders from the Department who have been over and talked about this idea of "Big A." I believe that that is really a step toward full fulfillment of the Packard recommendation that really suggested that we overlay the major decision processes in the Department.

Changes of the type needed are both cultural and process and will require determined willpower by the DOD leadership and all other key stakeholders, including Congress. I do not believe just making the organizational changes without taking on the cultural and process issues will produce outcomes that are desired.

Based on what I have seen and believe is ongoing in the Quadrennial Defense Review (QDR) process, and the Defense Acquisition Performance Assessment (DAPA), I believe that acting Deputy Secretary of Defense England and the Honorable Ken Krieg both share your sense of urgency about the need to address these issues now. I believe they also have the determined will to push for the required process and cultural changes that must be addressed.

Finally, I would feel remiss in not addressing the absolutely critical role that the acquisition, technology, and logistics (AT&L) workforce must play in reengineering, shaping, or executing future courses of action.

I am prepared to go into further detail on any of the systemic issues that I identified, and I look forward to your questions. Thanks for the opportunity to be here.

[The prepared statement of Mr. Anderson follows:]

PREPARED STATEMENT BY FRANK J. ANDERSON, JR.

Chairman McCain, Senator Lieberman, and members of the subcommittee: Thank you for the opportunity to appear before you today to discuss improving the Department of Defense (DOD) acquisition system. I know this is a very important subject for you and also for the Department of Defense. Today there is a broad consensus (among Congress, the DOD leadership, private sector senior leaders, and others) that DOD must act now to improve acquisition outcomes. This is important for all stakeholders. The challenge is in maintaining this consensus, collaborating effectively, and developing and implementing specific changes. You requested that I provide my views on three areas: 1) acquisition organization structure and what laws, regulations, and practices governing defense acquisition policy may need modification and improvement; 2) structural problems associated with the dramatic rise in the cost of, and widespread delays in developing, testing, and fielding major defense systems; and 3) the effects of the U.S. industry consolidation, the effects of competition on defense contracts, and my assessment of how critical the defense industrial base may be to defense acquisition policy.

The pending National Defense Authorization Act for Fiscal Year 2006, S.1042, Section 806, would require Defense Acquisition University (DAU), acting under the leadership of the Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)), to conduct a review of the acquisition structures of the DOD. Also, the Acting Deputy Secretary of Defense initiated an "integrated acquisition assessment to consider every aspect of acquisition, including requirements, organization, legal foundations, decision methodology, oversight, checks and balances—every aspect." The results of this effort will be provided to the Deputy Secretary of Defense and to the Quadrennial Defense Review (QDR) team this month. Based on what I have seen and believe, I am convinced the Honorable Ken Krieg, USD (AT&L) and the DOD senior leadership team shares your concerns and sense of urgency about the need to improve acquisition outcomes and they will share their recommendations with you in the near future.

Now, to the issues you highlighted in your letter and my views on required actions relative to improving acquisition outcomes. My thoughts are on producing acquisition outcomes that are both responsive and better in terms of cost, schedule, and performance commitments. Acquisition structure is certainly a contributing factor in achieving improved acquisition outcomes. However, I do not believe our most pressing issue is the way DOD is organized to accomplish the acquisition mission, and I do not believe a single focus on organization alone will address our most significant issues. There are several longstanding, systemic issues that I think must be addressed first, and if they are not, I believe we will only produce marginal improvements. These issues are 1) program stability; 2) creating an integrated and aligned "Big A" process; 3) cost growth in our programs; and 4) competition and the industrial base. Changes of the type needed will not be easy and will require an unusual willpower by leadership and all other key stakeholders.

PROGRAM STABILITY

Virtually every major study of the defense acquisition process has identified the lack of program stability as a driving factor influencing cost growth and schedule delays. It is still a major issue. Funding instability is created by a number of factors and leads to a continual reallocation of funds between programs to address near term priorities. Some funding reallocation is absolutely necessary but this area must be thoughtfully addressed. Repeated reallocation of funds between programs ultimately leads to a ripple effect of cost growth and schedule delays on multiple programs, not just the original program. We must find ways to fund programs at the "most probable cost" instead of the "most optimistic cost," and this includes smartly addressing risk factors up front. This will be painful and require hard decisions, however, we must start a process to address the issue of "too many programs chas-

ing too few dollars.” If we fail to address this systemic issue, the detrimental perturbations created by program instability will continue to drive undesirable outcomes.

AN INTEGRATED & ALIGNED “BIG A” PROCESS

One of the common observations about the defense acquisition process centers on how long it takes to acquire today’s complex weapons systems. The serial sequence of decisionmaking for acquisition programs (starting with the requirements process, then proceeding through the budgeting and acquisition processes) has been repeatedly identified as a driving factor. The “Big A” concept, which includes integrating and aligning the major decision support systems (Requirements, Budgeting, Technology, Acquisition, and Sustainment), is attractive, among other reasons, because it could create a robust, yet more streamlined, decisionmaking process. This would allow leaders of each of the decision support systems to make a “360 degree” assessment before deciding to proceed with a major acquisition program. This process would support the emerging concept of capability portfolio management.

COST GROWTH

Program cost and schedule growth has attracted widespread criticism from Congress, the warfighter community, and our DOD senior leadership. This is a major issue. The exact causes of cost growth are numerous and difficult to precisely quantify. Some of the contributing factors are: requirement changes, stretch cost goals, initial program underestimation, known and unknown technical issues, and planned/unplanned schedule slips. In addition, the pressures of the marketplace, in many cases, push contractors in the heat of competition, to significantly under bid their cost of delivering products and services. As noted above, our tendency is to fund at the most optimistic price and the fact that most of our programs have no formal management reserve creates an environment that is primed for cost growth.

One of the most promising strategies to help manage cost growth is evolutionary acquisition. In the past, many new weapon systems were designed to achieve dramatic leaps forward in capability. This often led to using immature technologies that contributed to cost growth and schedule delays. By using evolutionary acquisition, new technologies and capabilities are tested and fielded in carefully planned increments. Evolutionary strategies allow us to field more mature capabilities first, thus allowing us to better address cost and technical risks. As promising as evolutionary acquisition is, it is not without risk, and also requires that we smartly address the issue of technology readiness.

COMPETITION AND THE INDUSTRIAL BASE

You also asked for my views regarding the effects of the U.S. industrial base consolidation, and the effects of competition on defense contracts. Over time, the U.S. has experienced a significant reduction of prime contractors in the defense industrial base, moving to the current configuration of the “Big 5,” with a supporting first-and-second-tier-structure, and small business industry sector. This consolidation has impacted our ability to leverage competition. In spite of this drawdown and consolidation, the U.S. defense industrial base is still the best in the world. We must continue to smartly increase the use of commercial solutions and best practices in supporting both DOD and Federal requirements. This will require that we operate successfully in both competitive and limited or non-competitive markets. Our goal must be to consistently define smart business strategies and solutions. We must also be sensitive to the evolving and growing influence of the global market place and global competition while ensuring a strong role for small business as part of our defense industrial base. I believe the Department of Defense, industry, and Congress must work together to ensure the defense industrial base continues on a path of integration with the commercial sector, while remaining globally competitive. Finally, I think we must provide competitive opportunities for our small business suppliers, as well as our first-and-second-(and lower) tier suppliers.

CONCLUSION

Mr. Chairman, I believe the goals and desired outcomes that you, Members of the Senate and House, and our DOD senior leaders have communicated, are on target. But, to successfully improve will require significant cultural change. There are some significant cultural hurdles we must address if we are to successfully produce better acquisition outcomes. Finally, I would feel remiss to not mention the critical role the AT&L workforce must play in both shaping and implementing any future improvements. We are developing a thoughtful human capital strategic plan to address future workforce capability needs. I note that the Honorable Ken Krieg has com-

mitted to the Senate and the House to have an AT&L human capital strategic plan within 120 days of the QDR completion. We have started that process and we are working it hard.

Mr. Chairman, thank you again for the opportunity to testify before the committee on these important topics. I would be happy to answer any questions you and the members of the committee may have.

Senator McCAIN. Thank you very much.
Mr. Christle.

**STATEMENT OF GARY CHRISTLE, SENIOR PROJECT
DIRECTOR, CENTER FOR NAVAL ANALYSES**

Mr. CHRISTLE. Good afternoon, Mr. Chairman, Senator Lieberman, and Senator Chambliss.

I too, like everyone else, am very happy to be here in spite of the fact that I did not know I was going to be here until 2:30 yesterday afternoon, but I will try to do the best that I can.

Senator McCAIN. I think you requested to come here. Is that not true, Mr. Christle?

Mr. CHRISTLE. Yes, sir. I did not mean that as a shot. It is useful in that I have a statement that I would like to have entered that has not been vetted by anyone, so it is my words.

Senator McCAIN. Without objection.

Mr. CHRISTLE. I will not read it because that would probably be the first time I actually read it through, but I would like to talk a little bit about where I come from and what I think is the fundamental problem that we have in achieving successful outcomes in our programs.

I spent most of the 1990s within the OSD as the Deputy for Acquisition Policy, the Secretariat for the DAB, responsibilities for establishing acquisition program baselines for all congressional reporting, and the internal oversight process that the Under Secretary's organization runs. One could say that I spent a career at conducting program management as a spectator sport and finished my last 10 years as perhaps the commissioner of that sport. What that has led me to believe is our oversight processes are totally wrong. They are smothering our program managers.

Since I left in October 2000, I have been fortunate at CNA and with our naval primary customer, the Office of the Assistant Secretary for Research and Development, to have an opportunity to look into how industry practices program management and how they practice oversight of the programs that we care about. I have come away with a very different model than what we do within the Department.

The first place I will start is to echo Gene Porter, Packard, and the Packard recommendations. Despite being a part of the implementation of those things, it was not until the last couple years that I actually read those, delved into the background, and looked into the part of Goldwater-Nichols that plays here. That is the role of the Service Chiefs. I actually have read the 1985 staff study that was the basis for that, and there are probably few people that can say they have done that.

We end up in a place that none of those people intended us to be. We have not implemented Packard. Packard identified an industry model to follow that had six attributes, and I would contend that none of those attributes can be found in our current policies

and practices that in any way, shape, or form reflects what Packard intended.

Clear command channels—this has already been alluded to regarding the overarching IPT process. Packard said we want no more than two layers between the program manager and the acquisition executive. That would be the program executive officer and the service acquisition executive. If you overlay the codified IPT process that is put on top of that, starting with the overarching IPT, the mandated requirement to have an integrating IPT, the allowance, which turns into a requirement for whatever number of additional working IPTs are necessary—and there is always a cost IPT. There is always a test and evaluation (T&E) IPT, and there are virtually always one or two more. If you overlay those on the decisionmaking structure that Packard envisioned, it is very clear that program managers have a very long way to go from the time they need a decision until they can get it. All of those intervening layers are capable of saying no, but they are not capable of saying yes. As someone who practiced that game for a long time, I would say I have a great deal of sympathy for the program managers I have had to deal with for the last 5 years and how the world looks from their point of view.

We have substituted oversight—and I think all of us collectively—for the fact that there is very limited accountability within the Department. Now, John Hamre and I talk about two different kinds of accountability, I think. I think John talks about institutional, organizational accountability, and I am talking about what John, I believe, calls transactional accountability.

Some of these are things that I have gleaned from the work that I have done since I retired in October 2000 to go out and validate that industry model—whether it was current today. In the process of interviewing all the CEOs and CFOs of the five major defense programs and their counterparts one level down, it is clear that the Packard model for project management still exists.

Are those good models? I can only say in reviewing Aviation Week for the last 4 years from 2001 through 2004 and their annual review of top performing defense companies, those companies that were involved in my interview list all significantly improved their overall performance in that annual rack-up of 19 large aerospace and defense companies.

More important, though, more to the point is that Aviation Week has identified through their performance studying the fact that program management—and focus on program management—is the key distinguishing characteristic between those companies that perform well—and perform well is largely financial the way they are looking at it. They explicitly describe the likelihood that those companies will bring programs in on cost, on time, and within per spec. The degree to which those companies focus on the project manager is a great predictor of how well they will do relative to companies that do not do that.

Senator MCCAIN. What weapons system has come on board on price on time?

Mr. CHRISTLE. It is a good question, sir, and the answer is none.

Senator MCCAIN. Then how could we identify someone if there has been none?

Mr. CHRISTLE. They are looking at two things. They are looking at firm, fixed price programs and their own internal programs, but they are also looking at how well those companies do within our context.

I am going to jump right to my bottom line with that question because that is a good lead-in for something. I spent much of the last 5 years working with Navy acquisition management, and not too long ago I had a discussion with Secretary Young where I told him that when I talked to his program managers I always asked them what does the Assistant Secretary expect from you on your program, and the answer always came back with the Defense Acquisition University (DAU) answer, bring my program in on time, on cost, and on schedule. My response is what drove your question, Senator. I tell them that the next program manager who does that is going to be the first one.

However, I modify the question and I say what I really want to know is what do you, Captain Joe Smith, think that John Young expects from you on your program as it is configured today with all of its warts today. What does he expect from you right now? The answer to that question is always a blank stare except from those program managers for a program that has just come apart and they have been through a wire brush review with the Secretary.

That leads to what I think is our biggest problem which is we have a failure of individual accountability up and down our process. This is not new. If you go back to the A-12 report by Chester Paul Beach, now the general counsel at United Technology, his section 6 is worth reading by anyone who is interested in this. Paul describes the abiding cultural problem—those are his words—as to how we get to where we are in this decisionmaking. It comes down to accountability and lack of it.

I cannot address the top level of accountability, which some of your staff have asked about, but I know who to hold accountable for things like the Druyan affair and what not. I do not know how the Department institutes that accountability. I do know how the uniformed and civilian professional acquisition people can and should be held accountable below that, and I think it requires two things to be done.

One, it requires that they have their goals and expectations transmitted to them. People will say that our programs last too long. How can they hold a program manager accountable for meeting initial operational capability (IOC) that is not going to occur for 12 more years? The answer is they cannot. But I can hold a program manager accountable for what happens in the next 12 months, and I would suggest that we borrow again from industry and their concept of an annual operating plan. Virtually all the companies have something that is similar to what the world understands as a balanced scorecard, but it is a means of communicating expectations for the next 12 months. I can hold the program manager accountable for those.

It has the advantage that I do not have to put it on the program manager until I have basically finished the resource allocation process. So I get rid of the number one excuse of our program managers: it was not my fault. Somebody else messed up my program. By the time you start a fiscal year, most of that work is done. You

can set the plan for the next 12 months and you can hold program managers accountable to those and for certain goals. That would follow clearly an industry model in a little more detail than what Packard provided.

The other part of that and the last part that I want to talk about is we need to take control of the acquisition workforce. A lot of us were hopeful that the National Security Personnel System (NSPS) would do that for us, but I am afraid that we probably missed the window for the easier fixes. We need an acquisition workforce that is nimble, is flexible, can be redeployed to where management needs them, and is prepared through such things as actively managed career development and succession planning, again to follow the industry model, to prepare people and move them into positions of later responsibility.

The reason that is so important in an accountability sense is that people in our acquisition workforce need to understand who they work for and why they work for them. Again, I will take you back to Paul Beach and his A-12 report, but I will also take you to one of my current favorites, Jim Collins, in *Good to Great* where he talks about getting the right people on the bus and then making sure they have the right people in the seats. It is well worth reading if you have not read that.

An element of doing that for us is to start doing active workforce planning, eliminating the waivers, the 18-month time to get qualified for our senior jobs, and we should have absolute, ironclad mobility agreements with our people, certainly anybody who aspires to be in a critical acquisition position.

It is my strong belief, in closing, that if we do not address this accountability issue, we will become the 129th study in the pile of studies that Secretary Rumsfeld alluded to in his 128 studies question. We will continue to fix things on the margin, things that probably ought to be done, but we will not bring this organization to where it really needs to be.

Thank you, sir, and I appreciate your time.

[The prepared statement of Mr. Christle follows:]

PREPARED STATEMENT BY GARY E. CHRISTLE

Mr. Chairman and distinguished members of the Airland Subcommittee, I am honored to be invited to appear before this subcommittee, despite the fact that the invitation came only 24 hours ago. The good news about the lateness of the request is that I did not have to vet this statement. The bad news may be that it is not a particularly polished piece, but this is a subject that I know intimately.

I have spent more than 25 years practicing project management as a spectator sport in OSD, including the last 10 years of my career as the "commissioner" of that sport. When I retired in October 2000, I was the Deputy Director for Acquisition Management, in the Office of the Under Secretary of Defense for Acquisition, Technology, and Logistics. At the time, my responsibilities included the DOD 5000 series policy documents, the Defense Acquisition Board (DAB) Executive Secretary, the Acquisition Program Baseline (APB) process, and the recurring program oversight process commonly called the Defense Acquisition Executive Summary (DAES) process. We also managed the congressional reporting functions, primarily the Synthetic Aperture Radar (SAR) and the so called "Nunn-McCurdy unit cost reporting and breach certification processes, the contractor cost and schedule control policies, often referred to as Earned Value Management, and finally, the Defense Acquisition Workforce Improvement Act (DAWIA) functional boards for Program Management and Business, Cost Estimating, and Financial Management. With the late addition of the remnants of the systems engineering organization, all of the pieces were in

place to take on a true program management advocacy and policy organization. Then I retired.

I have since been with the Center for Naval Analyses (CNA), largely doing research on acquisition management issues. CNA and our Navy sponsors, mostly the office of the Assistant Secretary of the Navy for Research, Development, and Acquisition, have provided an opportunity to study both industry and Defense approaches

- To program management,
- To development of program managers, and
- To conduct of program oversight. This has been a personally rewarding opportunity to examine my acquisition career in the light of how the public and private sectors approach the subject. I have also had the luxury of actually reading the thoughts and findings of the major management theorists of recent years. You may soon note that I have been heavily influenced by pundits such as Peters and Waterman, the “In Search of Excellence” authors who arguably kicked off the past 20 years of management reinvigoration, through Jim Collins, author of “Built to Last” and “Good to Great.” I have also had the opportunity to revisit the history and details of both Goldwater-Nichols and Packard, and to conclude that despite having been part of the implementation history of both, neither, was ever implemented in a manner consistent with the stated intent. This is especially true of Packard.

In an Acquisition sense, people who raise the subject of Goldwater-Nichols really are talking about the Packard Commission recommendations. Goldwater-Nichols is all about jointness, and from an acquisition perspective is simply a statutory enabler of the Defense Acquisition Executive advocated by Packard. The real issue with Goldwater-Nichols is that it is the source of the acquisition frustration every Chief, of every Service, since 1986, has had over the perceived prohibition against their participation in the acquisition process. All I will say in this opening statement is that there are three decision processes in DOD:

- Resource allocation;
- Requirements generation; and
- Acquisition.

The Chiefs own or control the first two, and by virtue of that ownership and control, probably have far more to do with the outcomes of programs than do the acquisition managers.

The real issue is what happened to the Packard recommendations. Packard recommended an industry model with six characteristics:

- Clear command channels
- Limited reporting requirements
- Stability
- Small, high-quality staffs
- Communications with users
- Prototyping and testing

I would suggest that NONE of these attributes is found in today’s acquisition management model, in any way remotely approaching what the authors intended.

Clear command channels are what Packard hoped to achieve by limiting intervening layers between the program manager (PM) and the acquisition decision-maker (DAE or SAE) to no more than two. This layering was also supposed to be the source of personnel reductions envisioned by Packard as oversight staffs withered. While our policy documents say we have done this, one has simply to overlay a graphic of the Packard chain with the formalized IPT structure in DOD 5000. First there is the Overarching IPT (OIPT) with its subordinate IPTs consisting of a Mandatory Integrating IPT, and whatever other working IPTs are deemed necessary. This will virtually always include a cost IPT and a test and evaluation (T&E) IPT at a minimum. All of these IPTs are impediments to the rapid and effective decisionmaking intended by Packard.

As for “limited reporting requirements,” you could not call any PM before this committee who would agree that attribute was implemented, and they would be talking about more than just congressional reporting requirements.

As for stability, this is a topic far broader than the current time permits, but this is a program baseline or internal “contract” or agreement between the PM and the acquisition executive (actually, Packard’s model presumes a “Corporate” decision-maker such as a CEO) but we can discuss that at another time. The point is, that there is virtually no enforced agreement between PMs and decisionmakers. Our propensity to routinely change baselines, washing to actuals, to use a pejorative term,

is a frequent and justified criticism levied by the Government Accountability Office (GAO).

In the area of small, high-quality staffs, there has been much progress as a result of DAWIA but there is much more to be done to achieve the kind of workforce management Packard contemplated, especially in the area of workforce mobility, career planning, succession planning, and the ability to marshal resources when and where needed, all hallmarks of the industry model.

I will not dwell on the other two attributes, despite their importance, other than to say there remain significant issues, especially with regard to prototyping and testing which is simply a variation on fly before buy and the tools others have mentioned regarding Technical Readiness Levels and "Knowledge Points."

One might ask if the Packard model is still relevant. In the past 4 years I have personally conducted interviews with CEOs and CFOs of the five largest Defense contractors to verify the model is still a good one. As a benchmark on these interviews, Aviation Week's annual review of top performing companies reported that these five companies made substantial improvements in the period 2001–2004. This is important to our discussion because Aviation Week's analysis has found effective program management to be a major discriminator between companies likely to bring a project in on time and on cost, and less competitive companies who consistently struggle with program execution. Packard remains an appropriate model for DOD.

SO, WHAT IS OUR PROBLEM?

In June 2001, Secretary Rumsfeld rhetorically asked, "Why has there been little fundamental change in the Department's acquisition process despite the 128 different studies that have chronicled the ills of the procurement system?" This question was asked in the context of the 2001 QDR but there is no answer to the question in the subsequent QDR papers. Today, we are again in the middle of QDR 2005 and Acting Deputy Secretary England is asking the same question. In June 2005 he said, "Prices are going up, we need to improve performance, acquisition times are getting longer—so it's not working. We have to understand why and correct the system." Should we expect an answer this time?

Secretary England may have put his finger on the problem in a speech given at the Current Strategy Forum, held at the Naval War College, 12 Jun 2001, when he said "DOD . . . is perhaps one of the last bastions of the Cold War's legacy of centralized planning and execution. Unfortunately, it is largely out of step with modern American management."

I would like to suggest to this committee that the answer to Secretary Rumsfeld's rhetorical question is a nearly complete lack of accountability in our system. The need for accountability is obvious in Packard's recommendations on short decision chains and personal commitments between PMs and acquisition executives. In my recent confirmation of the continued relevance of the Packard model, the industry executives uniformly stressed the need to "stay out of the details," and made comments such as "We don't manage the operation, we direct it." "It doesn't matter how hard you try, it's the result that counts."

Unfortunately, we in DOD have tried to make up for the lack of accountability with more and more oversight. We have created a system that is based on a lack of trust, and one that rewards staff for "catching" the PMs.

I have discussed these issues in several fora over the past months and the most common response is "yeah, we need to fire more people." But that's not it. The Oxford dictionary defines accountability as the "liability to give account of, and answer for, discharge of duties or conduct; responsibility." People simply need to know they will be called to account and they must know what they will be held accountable for.

I had a discussion with Secretary John Young in which I described a recurrent conversation with Navy PMs. I ask, "What does Research, Development, Acquisition (RDA) expect from you." Invariably, the answer is "to bring my program in on time, within cost, and meeting performance goals." My response is always, "Yeah, we know the Defense Acquisition University (DAU) answer and if you actually do it, you will be the first." I rephrase the question, "What does John Young expect from you, Captain Mike Smith, on your program in its current state of affairs that is different from the state of any other program?" The answer to that question is always a blank stare, and that is the issue. We put too much emphasis on how to do things and not enough emphasis on what to do. We need to change that and unless we do we will be continually improving acquisition at the margins, usually doing things that probably should be done, but never achieving the "fundamental change" the Secretary has asked for.

MY SUGGESTIONS FOR CHANGE ARE IN TWO PARTS:

- We need to communicate clear goals and objectives from the Defense Acquisition Executive (DAE) to the Service Acquisition executives, and they in turn to their program executive officers (PEOs), to PMs and to the staffs of all.
 - This sounds a lot like a balanced scorecard approach and it may be, but it does not need all the data collection and perfect metric baggage that so often kills balanced scorecards. Most of the companies I examined have fairly simple scorecard approaches that clearly communicate current management expectations.
 - The length of our programs is too great to hold people accountable for program level goals. How do we hold today's PM accountable for an initial operational capability (IOC) that is 12 years away? We can't. But, if we use the common industry concept of an "annual operating" plan we can establish measurable goals for the next 12 months that will clearly measure progress towards the long term program goals. An annual operating plan has the added advantage that it can be annually assessed to greatly diminish the vagaries of the planning, programming, and budgeting system (PPBES) and appropriations processes, removing one of the most common excuses for not succeeding.
- The second thing we need to get effective control of the acquisition workforce to make it trained, flexible, and mobile, so management can marshal resources when and where it needs them, and so management can conduct both career and succession planning without violating Civil Service rules.
 - We can require mobility agreements for all who wish to take a critical acquisition position (GS-14 or O-4 and above);
 - We should not only reduce qualification waivers, but also greatly reduce the amount of non-acquisition experience that we count towards qualification, and eliminate the "grace period" for qualification.
 - Require cross-functional and cross-organizational assignments for critical acquisition positions.
 - Pass enabling language to permit PM and PEO succession planning including the ability to identify high performance individuals early on and enable career paths for them that will lead to acquisition leadership positions.

I would like to thank the committee for this opportunity and hope this last minute stream of consciousness has been helpful to you. Again, thank you.

Senator MCCAIN. Thank you very much.

Dr. Hamre and Mr. Porter, there are very few benefits of growing old, but I have found that recollecting the 1980s has some relevance to this discussion we are having today because in the 1980s we took some very serious budgetary actions: no cost-plus contracts, incentive contracts only, strict accountability, and the cost escalation associated with the acquisition of major weapons systems was certainly there, but it had no comparison to what we are experiencing today.

I have recently—and maybe you have too—seen the recent numbers of then-year dollars of a destroyer which is now \$2.2 billion, an aircraft carrier now \$13 billion or \$14 billion. The F-22 is now up to nearly half a billion dollars each.

What has changed, Dr. Hamre, Mr. Porter?

Dr. HAMRE. I think that the primary thing that has changed is the denominator in most cases. When we buy so few things now, when we forecast an affordable F-22, we thought we were going to buy 750 of them.

Senator MCCAIN. I do not mean to interrupt you, John, but the original plan for the F-22 was that we would buy 648 of them, and because of the cost escalation, we are now only buying 181. So is this a chicken or an egg situation?

Dr. HAMRE. It is both, sir. The F-22 was very high technology and then we ran it through a very long and tedious acquisition

process. A very high amount of the F-22 cost is in operational testing. We have a huge infrastructure that is still executing programs the way we did 15–20 years ago. If you go out and look at the contractor base, there is an awful lot of the money that is going for overhead. I think it is a combination of the rules and the way we continue to buy things, an annual budgeting process that forces an unreality in how we forecast costs.

Senator MCCAIN. I guess my point here is, though, that to reinsert the Joint Chiefs into the process is not addressing the fundamental issue here.

Dr. HAMRE. The reason I recommend it is because you do not have anybody you can hold accountable right now because it is split and diversified so many different places inside the Department. The reason I recommend at least getting the Chiefs back in is at least the Chiefs are responsible for putting a budget proposal together for their Service, and right now they put a budget proposal together for the Service, and they say to the acquisition guys, okay, you go up to the Hill and get more money. There is not enough money for this. You have to start aligning their accountabilities and their responsibilities, and we bifurcated it. That is why I recommend it, sir.

Senator MCCAIN. I understand. I understand, John.

Go ahead, Mr. Porter.

Mr. PORTER. I mildly disagree with my colleague on this business of bringing the Chiefs back in.

Senator MCCAIN. That is not my question. My question is why in the world we are experiencing these kinds of cost overruns dramatically different from the situation in years past.

Mr. PORTER. Two answers, Senator. One, I was out in industry during the 1980s, and while I do not carry water for the National Defense Industrial Association, I am strongly of the belief that the Government was wrong in the 1980s to force on the major contractors fixed price development programs of brand new systems that neither the Government nor industry had a good idea of what it was going to—

Senator MCCAIN. I could not disagree with you more. We have a fundamental, serious disagreement because on the present trend, we are not going to be able to afford it. No matter how good the technology is, we are not going to be able to afford it. So to somehow insist that just whatever technology we decide to do, that it is a cost-plus contract, and when there is nobody building it except one, as was just pointed out in the testimony, and then you ask for additional technology and it is cost-plus, guess what happens. We now quadruple the cost of a destroyer to \$2.2 billion so that we can now buy four Navy ships. That, I think, concerns Mr. Christle. I do not know whether we can buy an aircraft carrier or not. So I could not disagree with you more.

Mr. PORTER. Then I did not express myself very clearly, Senator, because the point I was making was we should not have signed those contracts when we did know what they were going to cost. We should not have—

Senator MCCAIN. That is up to the contractor to tell us what it is going to cost. If the contractor cannot tell us what it is going to

cost, then he should not be seeking a contract. That is a fundamental of economics.

Mr. PORTER. Agreed.

Senator MCCAIN. Go ahead, please. Do you want to continue, Mr. Porter?

Mr. PORTER. The other point I would make—and this is consistent with what Dr. Hamre said—is that the overhead that is associated with our industrial base and our Government side is much too large. There need to be efforts to reduce that overhead. I have toyed in the past with the idea of separate contracts for overhead so that we can really see what the direct costs are of material and labor that go into programs and we can have a separate incentive structure for driving down overhead costs that is not so invisibly intertwined into individual programs.

Senator MCCAIN. Ms. Schinasi, was it a smart thing for the DOD to encourage consolidation amongst the defense corporations in the 1990s?

Ms. SCHINASI. I am not going to speak from anything published that we have, but to go to the issue of competition, I think clearly competition is what we need to get discipline built into the system. To the extent that you have competition that works, you can back off of the regulations and some of the oversight that you need.

There are different ways to get competition, I would argue, and there is healthy competition in defining what the requirements are that you need and who is going to satisfy those requirements from inside the military before you move out into the industrial base itself.

Senator MCCAIN. As I see it, I say to the witnesses, we have two problems. This technical side of it we are addressing, but also are we acquiring and using weapons systems that meet the threat since the post-Cold War era, which perhaps is an issue of a separate line of conversation.

But getting back to the accountability issue, who was accountable within the Air Force to allow the C-130J to be procured under a commercial item procurement strategy for 10 years? They did not provide visibility into contractor costs and without the protections to ensure the prices negotiated and eventually paid are reasonable. So now we have a C-130J that was supposed to cost \$33 million and is now up to \$68 million and still climbing.

Who was accountable within the Army to make the decision to use an OTA which lacked the standard legal protections? And guess what. The cost, as I remember it, has gone from \$90 billion to \$130 billion. Clearly the OTA was supposed to be tailored for small entries into the defense business. There is no stretch of the imagination that you could make that would qualify this as the OTA.

Of course, we all know about the tanker lease issue, to lease the 767 tanker as a commercial item.

That seems to me that somebody made a decision to go around the traditional procurement process in the most blatant fashion. Maybe it is Congress' fault for not paying more attention. I do not know, but to justify the C-130J as a commercial item and the FCS as something which applies to small competitors who are trying to get into the business staggers the imagination.

I will let you respond, Mr. Christle, but these four Navy ships may have the greatest technology in the world. It may be just gangbusters, but if you can only buy four of them—there is a number of missions that the Navy has, and if you are only building four ships a year, they are not going to be able to carry them out.

Go ahead.

Mr. CHRISTLE. I am not here representing the Navy and that is not my background. However, it is a good question to answer.

We know who is accountable for the decisions, just like we know who is accountable when we relieve the captain of a ship. The people who sign those decision memorandums are the ones who ought to be accountable. Our problem is how do we exercise that accountability. Here we are probably talking about firing, but accountability is not all about firing people. It is about the incentives and the motivations and how we hold people responsible for where they are going.

The price of a ship that gets us to the point where we can only buy four is in part a resource allocation problem that is not resolved, and is too easily passed off by the Chiefs by saying, well, the acquisition people let it cost too much. In that sense, the Chiefs are ignoring the fact that they own two of the three major decision processes in the Department. They own requirements generation, they own or certainly control resource allocation, and it is too easy to pretend like those two do not affect acquisition.

This is one of the places where John and I disagree as far as the Services getting back the acquisition authorities. If you are happy with the way they are handling requirements determination and how they are handling resource allocation, then maybe it is time to give that to them. But my view is that until they show that they can handle those in a way that looks at the long-term needs, things will cost a lot of money.

We have done work at Center for Naval Analyses (CNA) trying to sort out the reasons for the cost growth that you have just talked about, and you can put an awful lot of that into the fact that these are, in fact, better ships and better systems, but a very large chunk is not explainable by that. So there clearly is some cost growth.

I go back to individual accountability again. We make decisions in programs. You ask who is accountable for these other things. A program decision was made by someone. That does not get turned into the goals and objectives for which the people who are going to implement those decisions are going to be held accountable. We do not do that in the DOD.

If we did that, one of two things, probably both over time, would happen. People would try harder to meet those goals, number one, but number two, our processes might start to adapt. If we knew we were going to be held accountable for meeting the goals that we set out and we tell you and ourselves that we are going to meet, if we find out that someone is held accountable for not doing that, we may start figuring out how to do a better job of that.

That is a much better approach to solving some of these problems than if OSD or the Army or the Navy or the Air Force tells everybody chapter and verse how to do business. That is not what we want.

As one CEO told me, we do not manage our business. We direct it, and I think OSD needs to get into that kind of a mode in how we flow down responsibility for achieving the objectives that we all want.

Senator MCCAIN. Mr. Anderson, do you have any comment?

Mr. ANDERSON. Yes, sir. I think there are some structural issues that we need to address to get to your core concern about why cost continues to grow, why we continue to get things late, and why in many cases there are performance issues.

I think the first one is an issue that is being addressed today, and that is there is a fundamental disconnect in terms of how requirements are set today, the acquisition process, and the funding process. We need to integrate those decisions so that the key owners of those processes are together at the same point in time so that you get a 360-degree look in terms of aligning resources with requirements.

I think as you look at the structural issue, there are two levels of oversight: the immediate program where you have specific requirements, and then a broader corporate review where you are looking at portfolios, how many programs we have chasing a particular outcome or objective. So it is getting the decision processes in the Department today overlaying each other so that we make a better informed decision. There is a thought process of how much you are willing to allocate to achieve a desired objective. That is also a part of the structural decision.

I believe that these issues are, in fact, being addressed in the Department now. I believe that you are going to see some recommendations out of the QDR and the DAPA that will take on these issues in a significant way with the intent of changing outcomes.

Senator MCCAIN. Thank you.

Senator Lieberman.

Senator LIEBERMAN. Thanks, Mr. Chairman.

Let me just build on some of the questions that Senator McCain raised and also a comment, which is this is a problem of real urgency now beyond the baseline reason, which is our concern about the expenditure of taxpayer money and whether it is being expended wisely. But to build on John's comment about the four new ships out of the Navy, they can be phenomenal, but four ships is four ships, and maybe your ability only to turn out four impacts our ability to protect the country.

I give you another example from the Army now of the impact of increasing costs of acquisitions. Some of us feel that the Army should be bigger than it is today to meet the requirements that we are placing on it and that it will face in the years ahead. Now we have a situation coming where the word is coming out of the Army that in fact, as opposed to even filling the increased Army end strength that has been in the last two DOD authorization bills, including the one today, we may be ending up cutting back to about 480,000 Army end strength to free up money to make acquisition, particularly of the FCS, possible.

So we are in a squeeze here and it should propel us, in a very difficult area, to try to find economies. This is not easy, as you all testified. This is an enormous operation. The numbers are enor-

mous. The Department is enormous, but we have to figure out how to get our hand on it.

I want to come back to one part of what I said in my opening statement, and I will preface my question this time by citing Mike Wynne, then Under Secretary of Defense for Acquisition, Technology, and Logistics (USD(AT&L)), now of course, Secretary of the Air Force, who testified before this committee earlier this year: "I believe we are at the point where any further reductions in the defense acquisition workforce will adversely affect our ability to successfully execute a growing workload. The numbers are startling. The defense acquisition workforce has been downsized by roughly half since 1990 while the contract dollars have roughly doubled during the same period."

So I want to go down the row and ask each of you briefly whether you agree with Mr. Wynne's assessment of the state of the acquisition workforce, and what you think we should do about it. Ms. Schinasi?

Ms. SCHINASI. Senator Lieberman, can I make a comment on your earlier statement before I answer that question?

Senator LIEBERMAN. Sure, so long as it is favorable. [Laughter.]

Ms. SCHINASI. I think I might want to suggest that we redefine how we talk about performance with this issue of fewer and fewer of what we have. The Department has been steadfast in its thinking about performance as the performance characteristics of any individual system, and that is what forces us to push technology and push technology and push technology. If we think about performance in terms of how many things we actually have in the field, it gives us a different way to think about what incentives we want to put in place to get success. So I am offering that.

Senator LIEBERMAN. I think I understand what you are saying. Should we not first be thinking about what the threats are we want to be able to protect America from and then build back to the systems we need? Maybe turning out four ships or going down to 480,000 Army end strength does not meet those threats.

Ms. SCHINASI. Right. Absolutely. I think what has happened is that we have defaulted to something called "capabilities-based," and what that has turned out to mean is anything we can get.

Senator LIEBERMAN. Anything we can get on any system we are building to make it the best.

Ms. SCHINASI. When the monies run out, we will take what we have, and I think maybe that gets back to the question of why we are seeing such cost growth now. There really is no endpoint that we all agree on that we are moving toward as a measure of success.

Senator LIEBERMAN. Whose fault is that? Is that our fault in Congress? Is it the lack of somebody in the system at DOD to say, hey, wait a second, this is more capability than we can afford?

Ms. SCHINASI. I think the responsibility lies within the Department. They are the ones that have the responsibility for managing these taxpayer dollars.

I will say it is the money that really drives these decisions, and every time a bad decision is enabled by additional money, then the incentives perhaps are not in the right place for making the right decision the next time.

Senator LIEBERMAN. I appreciate that comment.

So how important is it that we hire more people in the acquisition force?

Ms. SCHINASI. To move to your actual question, I think it is very important. We are very concerned about the loss of capability and certainly I hear that from every program manager I talk to every place I go. It is the management people. It is not the oversight necessarily, but you cannot perform good oversight on the contractors unless you have the management expertise yourself. Particularly with systems engineering, there are very few people left who understand how to do that.

Senator LIEBERMAN. So what is the problem there? That we failed to recruit adequately or that we are not paying folks enough?

Ms. SCHINASI. I think it is a variety of things. It is an issue that faces the Government as a whole. Demographics are affecting us and other things within the—

Senator LIEBERMAN. People are retiring. Is that what you mean?

Ms. SCHINASI. People are retiring. The experience is leaving the Government, and it is not being replaced at a fast enough rate.

I think also we are asking people to do much more, and we are not able to get them up to speed as quickly as we need both to manage and to oversee the responsibilities that we are putting increasingly on the contractors.

Senator LIEBERMAN. John, what do you think?

Dr. HAMRE. Sir, I think the Navy probably less so than the other two, but I think all the Services are right at the edge of not being able to really be good buyers any longer.

Senator LIEBERMAN. Yes.

Dr. HAMRE. I think they have, in many ways, lost the organic competence to be good buyers. They have been experimenting with alternatives. That is what LSI is really, it is trying to get the private sector to do a job that in the past the Government did.

Senator LIEBERMAN. Is that a good idea? In other words, contracting out the acquisition function.

Dr. HAMRE. Yes. We are just not going to go back to the days when we could hire lots of engineers and bring them into the Government. We have had 17 years of pay caps. Frankly, that is a part of why we are losing competence. You asked why have we lost the competence. We have taken a lot of the transactional work out of the Government, and so you do not have a way to really grow talent inside the Government any longer. If you get one new start in 17 years, it is pretty hard to get competent program managers. So there is a whole combination of reasons that this has happened.

I suspect we are going to have to evolve very much of a hybrid system where we buy technical competence from the private sector but still develop enough organic expertise inside the Government.

One recommendation I would ask you to consider is that we think about creating a federally funded research and development center (FFRDC) that is designated and designed to help the acquisition process itself. We really do not have that now.

Senator LIEBERMAN. An interesting idea.

Dr. HAMRE. I think getting a central entity that could provide the technical support—for example, the way that aerospace has done this for the space division out at El Segundo or the way that Mitre has provided this for the Air Force where it is actually pro-

viding the technical support that in the past we had in the Government. We just cannot afford to do it now. But put it in an FFRDC and have it available to all the Services so they can tap into it and use it to help them. I think we could use something like that, but I have not thought about this in sufficient detail.

Senator LIEBERMAN. I would invite you to do that.

You said something powerful, though. We are at a point where we are not able to be very good buyers or consumers, which I take it you mean not informed adequately.

Dr. HAMRE. With the technical competence it takes to do it well now.

Senator LIEBERMAN. Yes. Thank you.

Mr. Porter?

Mr. PORTER. Yes, sir. As I said in my statement, I too am concerned about the technical competence in the Government, and I associate myself with Dr. Hamre's remarks as a potential solution.

Pay caps. You asked why we cannot do it. Pay caps and not just pay caps per se, but position caps. We can only have so many highly paid positions in the systems commands, for example. There is the general lack of appreciation for what the GAO acknowledges. These are highly paid people, highly talented, experienced people that we need to do the Government's business and we cannot treat them like they are interchangeable with the private sector because they are not.

Now, I will go back to the substance of your question about Mike Wynne's quote, and I suspect that he was perhaps exaggerating for effect; not that his numbers were wrong, but the 50-percent reduction in the defense acquisition workforce includes all of the depot work that was transferred from DOD depots to private sector depot work in the 1990s. There was a massive shift of that kind of work. I do not consider that kind of work acquisition management of conceiving of and doing the analysis on new design and new weapons systems and figuring out what is doable and at what price as per my previous discussion with Senator McCain.

Senator LIEBERMAN. Thank you.

Mr. PORTER. So the 50-percent reduction of the workforce was not all senior acquisition managers.

Senator LIEBERMAN. Understood.

Mr. PORTER. It was a lot of depot people.

Senator LIEBERMAN. Mr. Anderson, do you have a response on the size of the acquisition force and its competence? There is an implication here that if we spend a little more on a better acquisition force, we will save a lot more money in the acquisition process.

Mr. ANDERSON. We have an ongoing study to look at the size of the acquisition workforce. We are in the middle of that. There has been significant downsizing.

A part of the answer to this question is the construct that the Department chooses to put in place for how we conduct acquisition. I would disagree with the input that we have lost the art and the skill of buying. I do not believe that that is the case. I believe that we do have a workforce with sufficient talents. We do have an issue that requires thoughtful assessment in terms of how we handle it. There is a 10-year gap where we had a significant drop in the workforce in the mid-1990s.

Senator LIEBERMAN. As the budget dropped?

Mr. ANDERSON. Right.

I am concerned about our bench strength in terms of the middle managers that exist in the workforce today and how we replace an aging workforce. Right now we have a significant part of the acquisition workforce that is retirement-eligible, and when you are in a position that you have to retain a high percentage of your workforce that has the flexibility and the option to retire, that is certainly a concern.

One of the big issues that we are working right now is to put in place a thoughtful, human capital strategic plan that is based on a comprehensive analysis of the workforce as it exists today. We should have that complete. In fact, the Honorable Ken Krieg has made a commitment that he will have a human capital strategic plan 120 days after completion of the QDR.

The technical or engineering workforce is certainly a significant recruiting issue for us, but we do still have a strong internal engineering capability. The question that we need to answer is whether or not that is adequate for positioning the workforce in the future. Some of the personnel ceiling issues that we have to deal with are set up and then the Department has to go through a priority process of deciding how do we allocate talent across all of the functional areas where we need people. That will drive the numbers of people that are allocated for acquisition or allocated for engineering and other functional areas. Also there is an issue of how you size the operational warfighting force. So that is a combination issue and that also has to be dealt with in the context of a budget.

Senator LIEBERMAN. Right. Thank you.

Mr. Christle, I am going to switch just briefly because I want to get somebody's reaction to what John Hamre said instead of asking about the size of the acquisition workforce. What about the recommendation that we address some of these problems by taking responsibility for acquisition of major weapons systems away from the USD(AT&L) and giving it instead to the Service Chiefs, which would reverse reform recommended by the Packard Commission 20 years ago?

Mr. CHRISTLE. I see no reason why going back to 1985 will change any outcomes. As I stated earlier, two of the three decision processes are already in the control of the Chiefs. If we think they are doing a good job in those two, then maybe this is time. I for one do not think that the resource allocation process is well run and I do not think that the requirements generation process is well run, and I would not add to the Chiefs' difficulties with that.

I am reminded of what was in the conference report for Goldwater-Nichols. It referred to the vice chairman but it was in the context of the vice chairman being the co-chair of what then was called the Joint Requirements and Management Board (JRMB). It has now morphed into the JROC. But more importantly, it was the combination of the JROC with the DAB. In today's terms, that is what it would have been. The conference report cautioned that they did not want the vice chairman getting overly involved in acquisition matters.

Now, in the context of Goldwater-Nichols, as you know better than I do, they were all about jointness and they did not want the

Chiefs sidetracked by these fun day-to-day issues in acquisition where the toys are. I think that is still a good concern.

Senator LIEBERMAN. Thanks, Mr. Christle. Later on, if we have time, I would like to hear Dr. Hamre's response to that, but I am going to yield now. Thank you, Mr. Chairman.

Senator MCCAIN. Mr. Chairman, Senator Warner.

Chairman WARNER. I just want to commend you, Mr. Chairman, and your ranking member and members of the subcommittee and thank this panel.

We just passed our bill here an hour or 2 ago. This is the conference report that accompanied it, and in here is quite a detailed section on the goals which you are pursuing here. I have asked the staff to provide each of you with a copy of this report and I hope that you have the opportunity to study it and critique it and continue to work with this subcommittee so that we can strive to improve the system.

So I thank you very much and thank you, Mr. Chairman.

Senator MCCAIN. Senator Chambliss.

Senator CHAMBLISS. Thank you, Mr. Chairman. I too appreciate your holding this hearing. You and I have had some extensive discussions about this issue and it is extremely important to both of us. So, to you and Senator Lieberman, thank you for doing this.

Ms. Schinasi, Dr. Hamre answered the question relative to the huge increases we have seen in weapons systems. He said that it is a combination of program management and technology, as well as a reduction of these numbers. Would you agree with that statement? Would you elaborate on that a little bit too please?

Ms. SCHINASI. I would agree, but I would separate those two things. I think the push for technology and the competition that is going on and the lack of controls in assigning priorities to what we need to get to our military in capabilities is part of the problem. We have too many programs competing for limited funds, which means you are overpromising capability and underestimating the cost of those so that a lot of the cost growth that we see is predictable. I think the companies that are engaged and the Department itself would admit that we do not know a lot about what something is going to cost when we set that first acquisition program baseline and make promises that we will get it to you in this amount of time with this performance and at this cost. We do not know enough when we do that. So a lot of this cost growth, we would argue, is predictable.

The point about quantities is one that plays out after we get started because we need to find money now to pay for those cost overruns that we did not have enough knowledge about when we started that program. A lot of that comes from within an individual program where you cut production quantities because you have given yourself a certain limit on that program, but it also comes because other programs themselves are not doing well and need to go find money. So the instability is caused by each individual program, but it ripples throughout the whole modernization account. So I think those are the two pieces of that.

Senator CHAMBLISS. Yes. It is interesting when you say it is predictable. I think that is exactly right. The way the Pentagon operates, in and of itself, from an acquisition as well as a procurement

standpoint, dictates that the cost of anything we buy is going to be more than if you bought it off the shelf. With the sophistication of the equipment we buy, it obviously is magnified.

I am particularly interested in how that relates to a couple of weapons systems I have significant interest in. The F/A-22, for example. The fly-away cost of lot 1 of the F/A-22 was \$211 million and the quantity was 10. The fly-away cost of lot 5, where we are now up to 24 in that one lot and we have increased it by about 60, is \$133 million. So there it looks like from the sheer numbers—the more we buy, obviously, the per-unit cost is going down.

I noticed in your presentation and in your written statement, you have some interesting figures on this particular issue. If you look at the FCSs, the initial quantity was 15 systems. The latest quantity is 15 systems, but it has a 54.4 percent unit cost increase. There is no reduction in the number that we are buying. Obviously, with something like that, the increase in cost must be due to technology issues and program management issues.

You look at the *Virginia* class submarine. Initial quantity, 30 submarines; latest quantity, 30 submarines, again 100 percent, but you have a 49.7-percent increase. The same thing I would assume.

The same thing relative to the space-based infrared system, the satellites. You have 100 percent of the satellites, but you have a 160-percent cost increase.

But then you look at the F/A-22. This is pretty significant, and I have not seen this comparison before. You have a reduction from 648 down to 181. We are buying 29 percent of the aircraft, and you have a unit cost increase of only 188.7 percent. So it is pretty obvious if you compare that to the others, that the reason you are seeing a per-unit cost increase should be more attributable to a decrease in numbers rather than program management and technology. Would you agree with that?

Ms. SCHINASI. I think they are included in that cost increase, but clearly the decrease in quantities does have an impact on the increase in unit cost.

Senator CHAMBLISS. John, let me tell you what really frustrates me. Again, you and I have talked about this. You know what great respect I have for you. I think it is the same thing that frustrates the chairman and Senator Lieberman. I will use the F/A-22 as an example again. In 1985, we decided we were going to buy it. Here we are in 2005, and we do not have that plane flying in Iraq today. That has been 20 years. I know we kept moving the bar. The goal post kept going down the field, and we had technology, particularly during the 1990s, that changed almost every day.

But at some point in time, when we contract to buy a weapons system, we need to know that we are going to get it. We need to be able to set a time frame that assures us that when we give that bid to somebody we are going to get it in 5 or 6 years and not be 20 years down the road and still not have the weapons system in our inventory.

How are we going to get to that point? What do we have to do, from an oversight standpoint, to lean on the Pentagon, to lean on our contractors all across the industrial base to try to get to some point where, when we give that contract, we know we are going to

get that weapons system in inventory in a reasonable period of time?

Dr. HAMRE. Senator, I would like to echo something that Gene Porter said, which I think is not really appreciated adequately, that the biggest cause of our program turmoil is budget changes year to year. The primary reason we have budget changes year to year is because we do not honestly budget for O&M and military personnel (MILPERS).

I will give you an example. We say we want to get savings in the O&M account. The only way we know how to do that is we program a negative wedge in the outyears for O&M and say, you all figure out how you are going to save this money. If you save 60 cents on the dollar—and that tends to be average over the last 10 years—that is good, but that means that you have to make up 40 cents on the dollar every year when you fall in on your budget. The only flexibility you have is you cut procurement. So that is one thing.

Second, for military personnel, we do not budget real cost growth in military personnel. We budget for pay raises but not real cost growth. We know that the real cost growth averages 2 percent a year. That means that 40 percent of your budget every year you fall in on, you have to make up an extra 2 percent because you did not honestly budget the cost for it in previous years. We have never done this for 40 years. So two-thirds of our budget, the O&M and the MILPERS accounts, which start every budget year with, frankly—I do not want to say it is a dishonest budget from the past, but a hole that has to be made up. The only place you can make it up in the budget year tends to be your discretionary accounts and discretionary accounts are R&D and procurement. So we jerk around those programs every year. This is what happened to us on the F/A-22.

As Ms. Schinasi said, there is an institutional bias to be optimistic when we budget the cost of a new weapons system. It is so hard to get something going in the budget that we opt for the most optimistic assessment for the R&D costs and for the technology advancement. Invariably we understate the cost of every new system because it is so hard to do. So we take the optimistic estimate at every line.

We know how to handle that by trying to budget to “should cost” estimates that are independently derived. So we know how to handle that, but we have never honestly tackled the problem about dishonest budgeting in the outyears for O&M and MILPERS. That would be one of the most important things you could do because it would take away the instability that the procurement accounts have to confront every year. That is one of the major things I think you could do. I would encourage you to look at that.

Senator CHAMBLISS. My time is up.

Senator MCCAIN. Go ahead.

Senator CHAMBLISS. One thing I have not heard any of you talk about in your presentations is multiyear contracts. Good, bad, indifferent? It looks to me on any weapons system, whether it is four ships we need or four airplanes or 10,000 pieces of body armor, if we know that we are going to buy them over 4–5 years, whatever

it may be, we are a lot better off. I think C-17 has shown us that. Would anybody like to comment on multiyear? Mr. Porter?

Mr. PORTER. Yes, sir. Senator, I am glad you bring that up because that is one of the traditional ways that both Congress and the Department have tried to hold down cost. But there is clearly a hazard and we have seen that in recent years, that you really need to be sure you are going to want that system. Threats change. The Soviet Union goes away suddenly, and if you are locked into 5-year, multiyear contracts for something that you no longer need because the threat has changed—and I am supportive of Senator Lieberman's interest in paying attention to the threat—then you may want to cancel that program after 2 or 3 years. Now you have a legal obligation to this contractor with whom you have signed a multiyear contract and he has bought a whole bunch of equipment, landing gear, what have you, in the expectation of going ahead. So one needs to, I think, be very sure that this really is going to persist for 5 years and that the threat is not likely to change in a way that may obligate us to spend money on things we really do not need in the last part of that contract.

Dr. HAMRE. Can I just make one observation, sir? The Department, despite the rhetoric saying they like multiyears, really does not like multiyears. That is because it locks in the budget the next year and gives you less flexibility. So if you look at the history through the 1980s and the 1990s, Congress pushed for more multiyears, and it was really the Department that pulled back because it, frankly, gives you less flexibility to move the dollars around the next year. If you start taking away 20 and 30 percent of a Service Chief's flexibility to move dollars around in the succeeding year, it is a lot harder to put your budget together if you do not have honest budgeting at the top. So it really is a structural bias against multiyears, although I think they are a very important and good thing to do. If we could get ourselves the discipline, it would be a good thing to do.

Senator CHAMBLISS. Yes, which goes back to your previous point about not being honest with our budgeting.

Dr. HAMRE. Yes, sir.

Mr. ANDERSON. Could I add to that? I did a study for the Air Force in 1996 where we went out and looked at multiyear contracting. There have never been a lot of programs that have actually had multiyear contracting for the specific reasons that Dr. Hamre mentioned. At that time, the highest percentage of the procurement budget that had really ever been locked in multiyear contracting was about 33 percent. So there is kind of a pain threshold in terms of how much of the procurement budget the process today is comfortable having tied to multiyear contracting.

Ms. SCHINASI. Senator Chambliss, I would like to weigh in on that one as well.

Senator CHAMBLISS. Sure.

Ms. SCHINASI. The criteria for multiyear is stability, and I think, as with everything, if you have the preexisting conditions, then you can move forward with that. The thing I think that we need to be mindful of in the environment today is with the continual churn that is going on within the procurement account and the lack of stability overall, we see 25 percent of the programs in a restructure

at any point in time, that that condition of stability is likely to be less and less available for us to even consider the multiyear option.

Senator CHAMBLISS. Lastly, I would just say, Mr. Porter, I never heard a more correct statement than what you said when you said competition ends with the awarding of the contract. It is after that contract is awarded that we just get eaten up with costs. I do not know how we get around that, but that is exactly right.

Thank you, Mr. Chairman.

Senator MCCAIN. Senator Lieberman.

Senator LIEBERMAN. Mr. Chairman, I just want to ask John Hamre if he wants to respond to the criticism of the idea. I will add to that. John, you are going to love this. In your years on the committee, you used to give Sam Nunn questions like the one I am about to ask you. It seems only fair that I should—[Laughter.]

Dr. HAMRE. That was before I became a virgin. [Laughter.]

Senator LIEBERMAN. In a way this may structure your response. Obviously, under the current DOD system, the Service Chiefs have major responsibility for resource allocation decisions, budget and requirements decisions that drive the acquisition process. They do not have responsibility for the acquisition process itself.

Your report recommends that the Chiefs be held directly responsible for both resource allocation and acquisition, saying that should reduce the friction between the processes. But you also appear to endorse the separation of supply functions and demand functions in the sense that you recommend that the Service Chiefs be given responsibility over the acquisition process, but they be removed from the requirements process. So help explain what some might think was an inconsistency.

Dr. HAMRE. No, I do not think they are inconsistent.

First, if I could go back. I think, as Gary Christle mentioned, there are three main processes: establishing requirements, allocating resources, and buying things. My argument is that when you intentionally segment that and give a guy responsibility for two of them but not the third, you basically have taken him off the hook for being systematically accountable for outcomes for his Service.

I have enormous regard for Gary. I have worked with him for 20 years. I do not disagree with his argument for accountability, but I believe he is advocating transactional accountability: people accountable for things they do on an individual case. I do not think you are going to get good transactional accountability if structural accountability is so ambiguous that you can lose true responsibility in a broken system. I think we have that now.

Now, my advocacy for cleaning up the two chains of supply and demand are really a different formula in the sense that I am saying the Secretary is ultimately accountable. The Secretary cannot manage the Department in a single integrated way, and so the way we do it is we make sure that there are good advocacies for contending points of view and make them make their best case so that the Secretary has the best information in front of him. So you need to have a strong advocate for demand, and the strong advocate demand really is the combatant commanders and the Chairman of the Joint Chiefs. The strong advocate for supply is your Service Chiefs, and those need to be as cleanly delineated as possible.

My argument is they are confused right now. They are confused on the requirements side because we have the supply guys on the requirements board. I believe we really ought to get that aligned so that people that are in charge of demanding better performance should be in charge of demand, and then having a very clean advocacy for supply. We do not have a clean advocacy for supply because we have broken the process between requirements, resource allocation, and acquisition. So I think if we bring those together and clean up these two chains—I think they are very consistent, Senator, by the way.

Senator LIEBERMAN. Can you do it in a way that preserves the jointness that was, obviously, at the heart of Goldwater-Nichols?

Dr. HAMRE. That is the great critique of our recommendation. Does it undermine your capacity to get joint systems?

Senator LIEBERMAN. Right.

Dr. HAMRE. The first thing I have to say is, in all honesty, there are not that many joint things we buy. Where we get joint things, they tend to be things like helicopters and missiles. Yes, we know how to make those joint. We have had a joint Air Intercept Missile (AIM)-9 for years. We have had a joint AIM-7 for years. We know how to get joint missile systems. We do not buy joint aircraft carriers. We do not buy joint tanks. These are things that are for the Services. So I think we tend to overstate this problem of jointness.

There is one exception to that and that is command and control. Here our system is broken, and it is broken because we basically let the Services buy their own command and control. This is the one area where I would change things. I would buy command and control centrally because I do not think we will ever get true interoperability trying to work from the edges into the middle. I think we have to start with an integrated core in the middle and work our way out to the edges.

That was the basis for our recommendation that you move the title X responsibilities for command and control and make those centrally acquired. I think you are going to see the Department move in that direction.

Senator LIEBERMAN. Thanks, John. Thanks for making some very specific recommendations. Obviously, when you do that you may be subject to criticism but that is the way we are going to move forward from where we are to something better.

Thanks, Mr. Chairman.

Senator MCCAIN. I thank the witnesses. It has been very helpful. Thank you.

This hearing is adjourned.

[Questions for the record with answers supplied follow:]

QUESTIONS SUBMITTED BY SENATOR JOHN MCCAIN

CAUSE OF COST GROWTH

1. Senator MCCAIN. Dr. Hamre, Ms. Schinasi, Mr. Porter, Mr. Anderson, and Mr. Christle, many within the DOD, Congress, and industry have mentioned requirements creep as the prime reason for cost growth today. What do you believe is the single most important cause of cost growth and which position in the DOD should be held accountable?

Dr. HAMRE. I don't think there is a single most important cause. There is a lethal combination, however. It is so hard to start a new weapon system in the Department that we tend to stipulate extraordinary capabilities, often beyond a reliable

basis for technology at the time. Then the budget climate forces unrealistically optimistic assumptions in order to minimize the cost and development time. Finally, unrealistic and oversubscribed budgets cause annual turmoil. In my view, those three things in combination cause the problem.

Ms. SCHINASI. Our work has shown that the single most important cause of cost growth is that the Department continually makes decisions to commit major investments to product development without demonstrating that requirements set out by the military Services can be met with the technology, time, money, and managerial capacity necessary. Because the Services' requirements are often the result of years of work and articulated in a way that promises leaps in capability, they are usually considered "untradeable" in efforts to get a match with resources. Therefore, the Department begins a program assuming that immature technologies will be available on a predetermined calendar-driven schedule and that levels of funding will be available, regardless of the original baseline cost estimates. Demonstrating that critical technologies are mature by the start of system development is a key measure of the knowledge needed before committing to product developments. We reported last March (GAO-05-301) that only 15 percent of programs we assessed began development with all their technologies mature; their research and development cost growth averaged 9 percent. The remaining 85 percent of programs that started development with immature technologies averaged 41 percent cost growth.

Once committed to such a precarious course of action, the Department rarely, if ever, recovers. However, despite policies to the contrary, the Department continues to make decisions during development and to enter production for which it does not have sufficient knowledge about design and manufacturing. At the same time, a lack of discipline in the requirements community—often referred to as requirements creep—and budgeting processes exacerbate both the Department's inability to make informed decisions and the inability to assign accountability for the impact of those decisions.

Mr. PORTER. Although there has been little empirical study of this issue, the consensus view is that the single most important cause of apparent growth in the RDT&E cost of acquisition programs is the premature initiation of programs before their technical risks and associated costs are adequately understood.

Growth in production cost is more complex. IDA studies indicate that about three quarters of the growth in procurement cost across all programs is accounted for by only about 20 percent of the programs. The most important proximate causes of these instances of major cost growth were:

1. Acceptance of unrealistic cost estimates at the "baseline" milestone review either because of unrealistic descriptions of program content or because off-lawed costing data or techniques.
2. Major changes in the configuration of the system to be produced made after the baseline was established—"requirements creep"—well justified or not.
3. A contract strategy that incentivized "buy in" by the winning bidder.

In addition, I believe an important, if not major, reason for production cost growth is the departure of actual funding from the funding profile that was expected when production was initially approved. Stretching production program schedules always increases the total production cost for the same total quantity of equipment. The source of such acquisition funding instability is primarily the failure of the Department to plan its future spending on operations and personnel with anywhere near the discipline that it applies to its acquisition programs—as was explained in some detail by Dr. Hamre in his response to a question from Senator Chambliss.

The defense acquisition executive who makes the formal decision approving program initiation or advancement and the associated cost estimates is the accountable official. To the extent that subsequent resource allocation decisions made by other defense or congressional officials result in the growth in cost of an acquisition program, that deciding official should be accountable.

Mr. ANDERSON. I do not believe identifying a single growth factor adequately addresses the issue I think you are raising. I believe the five most significant cost growth factors are:

- (1) overly optimistic cost estimates and stretch goals at the initiation of high technology development programs;
- (2) pushing programs into production with unresolved technical risk and immature technologies;
- (3) too many requirement changes as a required capability is evolving instead of block upgrades;
- (4) funding instability driven by both unanticipated operational costs and too many acquisition programs chasing limited available funding. This in-

cludes inserting new start programs with inaccurate assumptions about future funding availability; and

(5) initiating state-of-the-art technology programs without appropriate management reserve funding to deal with known and unknown risk factors.

As stated, several, and in most cases all, of the five factors are at play on programs experiencing cost growth problems. All five factors must be addressed to significantly improve cost performance.

Today, inadequately integrated decision processes make it extremely difficult to fairly hold a single person accountable for program cost growth because of independent decision processes and decision points where many decisions are made by different decisionmakers that influence program cost growth. However, based on my understanding of the Defense Acquisition Performance Assessment and the Quadrennial Defense Review proposals, I believe appropriate initiatives are evolving that will thoughtfully address both program cost growth and program accountability in a meaningful way.

Mr. CHRISTLE. The single most important cause of cost growth is probably the Milestone B initiation of programs before technology and requirements have been stabilized. This is largely a matter of DOD's failure to follow its own policies. Since the appropriate policies are largely in place, this is mostly a management issue that can be laid at the doorstep of the Defense Acquisition Executive (DAE—the Under Secretary of Defense (Acquisition, Technology and Logistics)) for not ensuring proper implementation of policies. In addition, for specific programs, the Milestone Decision Authority (MDA) should also be held accountable. For major programs, this is the DAE. For lesser programs, the Service or other Component Acquisition Executive (CAE) should be held accountable for all programs under their jurisdiction.

Much is made of instability as a major cause of cost growth and while I certainly agree, going down that road diffuses accountability and opens the door to a mind set of "its not my fault." With that caveat in mind, one could make a case for holding the Deputy Secretary of Defense or the appropriate Chief of Staff accountable for funding instability, as they are owners of the funding processes.

ESTIMATING COST

2. Senator MCCAIN. Dr. Hamre, Ms. Schinasi, Mr. Porter, Mr. Anderson, and Mr. Christle, cost estimates have often been a problem. In a report from 1995, the GAO stated that a substantial amount of cost risk is associated with the 1995 to 1999 FYDP. They reported that the cost estimates for weapon system development, procurement, and other defense related programs might be underestimated by about \$112 billion. This next statement is very important. The GAO went on to state, "By underestimating costs, DOD was able to include billions of dollars in additional programs in the FYDP."

This statement greatly concerns me. In March of this year the GAO released an assessment of selected major weapons programs. In this recent report the GAO discussed the increase in cost of the DD(X). In 1998 the estimated R&D costs hovered at \$2 billion. In August 2004 the R&D costs had risen to over \$10 billion. This example highlights a whole host of issues, but the GAO specifically stated that errors in cost estimates contributed in part to the significant rise in costs.

Do you have any concrete recommendations that DOD can use to incorporate better cost estimating so that the budget request forwarded to Congress each year can better reflect the costs of a program throughout the FYDP?

Dr. HAMRE. Cost estimates depend on assumptions. The plausibility of the assumptions should be questioned. If I could recommend one thing, I would suggest that every major weapon system have an independent technical assessment to accompany the independent cost estimate. The independent technical assessment would determine the degree of realism in the technical assumptions informing the original cost estimates.

Ms. SCHINASI. First, we would like to see an environment created that recognizes the necessity of dependable cost estimates. For example, the need to fit many programs into the FYDP is a competitive process that does not require truth or transparency in the cost estimating process to succeed. To refer back to your earlier question, many players can add requirements to a program during its product development without any assessment of the cost consequences. A different environment can be created using either incentives or penalties or a combination of both. Without any value to be gained from good cost estimates, attempts to improve cost estimating techniques are likely to have little impact. Cost estimating techniques can be improved by ensuring that all cost estimates provided to Congress clearly indicate the confidence level of the estimate. All major acquisitions should also have an inde-

pendent cost estimate performed as a check on the program office's often optimistic estimate and if that independent estimate is not used, then DOD should provide a rationale.

While cost estimating problems are not unique to ship acquisitions, we recently reported (GAO-05-183) that Navy practices for estimating costs, contracting, and budgeting for ships have resulted in unrealistic funding of programs, increasing the likelihood of cost growth. Despite inherent uncertainties in the ship acquisition process, the Navy does not measure or provide for the probability of cost growth when estimating costs. Moreover, the Navy did not conduct independent cost estimates for carriers, which could have provided decisionmakers with additional knowledge about a program's potential costs. In addition, contract prices were negotiated and budgets established without making full use of design knowledge and construction experience.

Mr. PORTER. In my view, the best way to improve the accuracy of the Department's budget requests to Congress for acquisition programs is to ensure that DOD's program for making independent estimates of the cost of proposed acquisition programs are fully staffed with qualified personnel, particularly at the Service level. In addition, the responsible acquisition executives must know that they will be held accountable by Congress if the independent cost estimates are not used as the basis for the budget estimates and if the requisite levels of technical maturity have not been achieved when programs are approved to proceed into the next phase. It would also be helpful if both Congress and the Department could agree on a clear definition of "cost growth," including the baseline from which it should be measured and reported. My own view is that growth should always be reported relative to the Milestone B/2 Baseline Estimates, unless of course there is a major technical change to the program that requires rebaselining.

Mr. ANDERSON. Addressing the cost growth factors identified in the answer to question one will significantly improve the accuracy of individual program budget estimates thereby improving the overall accuracy of program cost estimates contained in DOD budget requests.

Additionally, I believe shifting to a process of consistently estimating and funding programs using most likely cost that includes appropriate cost estimates for risk factors instead of using most optimistic cost estimating techniques would improve the accuracy of budget estimates. This would require a significant internal cultural change based on current practice. This would have the impact of reducing the number of programs in the budget at any given time. Finally, we must improve the training we provide our cost estimating workforce, and also improve our cost-estimating tools and models.

Also, periodic due diligence reviews to validate cost to complete estimates for existing programs would improve the accuracy of budget submissions. This is extremely tough, and would require unique collaboration and open communication. Budget program estimates need to reflect alignment of DOD's three decisionmaking systems: requirements, resources, and acquisition. Opportunities to improve integration and alignment of the three decision processes are being addressed by the Defense Acquisition Performance Assessment study and in the Quadrennial Defense Review.

All stakeholders, including Congress, can make a difference here by being sensitive to the impact of inserting program initiatives and requirements without adding appropriate funding.

Mr. CHRISTLE. This is not an easy question to answer because the subject usually involves predicting the future, which is inherently risky. However, some improvement should come from requiring the budget requests for significant programs to include a certification from the Chairman of the Cost Analysis Improvement Group (CAIG) that the budget request is consistent with the independent estimate.

Congress should tighten the "baseline" rules for unit cost growth, commonly called "Nunn-McCurdy" breaches. In general, baselines should be set at the Milestone B estimate with no changes allowed for any reason with the possible exception of a change in forecast program quantity. Any program that experiences a breach should be rebaselined to the breach estimate with a lower threshold established for the next breach.

You used the DD(X) as an example, and I would say some different baseline rules should probably apply to ships. The first request to start a hull should be the unit cost baseline until Milestone B, with the same threshold rules recommended for all other programs.

A word about restrictions on adjustments. From a congressional and taxpayer perspective, the only thing that matters is that something now costs more than what Congress approved. All other parsing is just a way to explain the problem away, no matter how "good" the reason may be. Congress should expect DOD to establish

whatever internal procedures and controls DOD deems necessary to control changes in cost for any reason. If DOD fails to do this, it should expect personal and legislative consequences that clearly state the particular malfeasance as the reason. This is a form of institutional accountability that Congress could easily establish.

LAYERS OF MANAGEMENT

3. Senator MCCAIN. Dr. Hamre, Mr. Porter, and Mr. Anderson, former Deputy Secretary of Defense David Packard observed that excessive layers of management in DOD acquisition organizations resulted in slow decisionmaking and a loss of accountability, especially for failures. How can we ensure that layers of management do not accumulate in large organizations like DOD, when bureaucratic pressures in government typically encourage growth in budget and personnel?

Dr. HAMRE. I advocate structural solutions to the acquisition problems we face. I don't believe these problems can be fixed by procedural changes. I recommend that the acquisition process be returned to the military departments, that the Service Chiefs-of-Staff be returned to the chain of command, and that the size of the staff working for the Under Secretary for Acquisition be cut at least in half.

Mr. PORTER. The Packard Commission recommended a streamlined reporting chain that has not been fully implemented. The complexity of modern weapon system development programs, as well as the normal bureaucratic search for consensus, has resulted in a proliferation of "integrated product team" (IPT) arrangements. IPTs have proved effective at the working level—within government and industry program offices, and for the purpose of improving cost visibility. However, at the Service and DOD headquarters levels, such "teams" often act as additional, informal, layers of management. One approach to reducing the need for such organizational arrangements is to ensure that each acquisition executive, program executive officer, and program manager in the formal chain is highly qualified to meet his or her responsibilities without requiring a large supporting and coordinating staff. In addition, some Services have continued to keep their senior "Systems Commanders" in the command chain, at least informally, thereby adding another layer beyond that envisioned by the Packard Commission. Similar concerns exist concerning the expansion of the role of the Joint Staff under the JCIDS process.

Mr. ANDERSON. The Packard Commission recommended organizations have no more than two layers of management between program manager and the Milestone Decision Authority. I believe DOD had achieved reasonable success in this area. However, this question is really focused on the role and impact of multiple decision processes and staff functions that impact how acquisition decisions are made. There are two other decision systems in DOD, requirements and resources, that operate separately from the acquisition decision system and both have significant impact on program outcomes. Program managers must interface with, align, and respond to all three decisionmaking systems. I believe the role and impact of staff functions, as well as opportunities to improve integration and alignment of the three decision processes, will be addressed in the QDR. Specifically, I believe issues of slow decisionmaking and accountability will be addressed in the QDR.

4. Senator MCCAIN. Dr. Hamre, Mr. Porter, and Mr. Anderson, in your view, are there too many layers of management in DOD and do they also negatively impact decisionmaking and accountability?

Dr. HAMRE. I don't think that it is so much too many layers as too many people who are in duplicative oversight functions.

Mr. PORTER. In my view, the several IPT and JCIDS-inspired arrangements above the program office level constitute additional informal layers of management and should be reduced to the degree that they do not add real value to the decision-making process.

Mr. ANDERSON. I think the DOD has effectively limited the number of layers of program management in DOD. There will always be a certain amount of inherent and desirable tension between streamlined, agile decisionmaking and maintaining appropriate checks and balances. Streamlining and defining the appropriate role for staff functions is always a challenge in large organizations. DOD is no exception. However, I believe the appropriate focus is to drive better and more effective integration of the three decisionmaking systems (acquisition, requirements, and resources). The Defense Acquisition Performance Assessment (DAPA) team was absolutely correct when they stated "in reality and practice, these processes and practitioners often operate independent of each other. Actions in each of the processes cause unintended negative consequences that magnify the effects of perturbations

in any one area." Again, I believe that improving the decisionmaking process will be addressed in meaningful terms by the QDR.

5. Senator MCCAIN. Dr. Hamre, Mr. Porter, and Mr. Anderson, in written testimony, Dr. John Hamre stated that ". . . we need to return the military Service Chiefs to the chain of command for acquisition. Goldwater-Nichols made the Service Chiefs the primary advocates for the "supply" function of military capability. They are responsible for determining the manning levels of their respective Services, the priority given to recruiting and training. They manage the long-term shaping of the Service by determining requirements for new weapons and personnel. But they are excluded from the acquisition process. This is an institutional fault line that needs to be removed." Do you believe there is value added in returning the Service Chiefs to the acquisition process and how would it affect the acquisition process?

Dr. HAMRE. The purpose for returning the Chiefs of Staff to the acquisition chain of command is to eliminate a fault line of accountability in the Department. The Service Chiefs are now the primary individuals responsible for supplying people, facilities, and training to the operating elements of the Department. They need to be made responsible for balancing acquisition within that broad mission.

Mr. PORTER. I was privileged to serve with Dr. Hamre in a previous administration and have a very high regard for both his dedication to good government and for many of his initiatives. Unfortunately, however, I find myself in strong disagreement with this particular initiative.

In my view, the road to improved accountability lies in fuller implementation of the Packard Commission recommendations that recognized the need for, and real value of common business procedures in the management of DOD acquisition. Packard's "fly before buy" and "short chain of command" principles are now at the core of DOD acquisition procedures. When they have been faithfully followed, including thorough testing, they have led to greatly improved performance of the Nation's fielded military equipment, and to more predictable costs. But the Department too often has not followed the Packard principles.

Dr. Hamre's expectation that bringing the Service Chiefs of Staff "back" into the acquisition management chain as a way to better align the "requirements," "funding," and "acquisition management" responsibilities and thereby improve accountability has four major problems:

1. Interoperability problems continue to hamper U.S. military operations and contribute to both fratricide and needless, inefficient, duplication of effort. Diluting the acquisition authority of the Secretary would be a major setback for "jointness." Although the Packard Commission did not greatly emphasize the need for improved "jointness" in acquisition per se, subsequent events raised this need to an important national goal. The Goldwater-Nichols Act has led to a widely recognized improvement in the Nation's ability to conduct joint military operations in the field. But too often these improved procedures in the field are still severely hampered by the failure to ensure that the key equipment being used by the deployed forces was "born joint." The strengthening of the position of the Secretary of Defense by the Goldwater-Nichols Act has set the stage for his acquisition executive to take a strong leadership role in ensuring that the new equipment the Department acquires fully supports future joint warfighting needs. Diluting this authority by transferring it to the Chiefs of the individual Services to focus on their narrower, Service-unique, needs would be a major step away from the goal of improved jointness.

The ongoing duplication of efforts to acquire battlefield UAVs by each of the Services is a good example of the need for a stronger Defense Acquisition Executive role in deciding what new systems should be funded.

2. It devalues, if not violates, the statutory responsibility of the Secretary of Defense and his designated acquisition executive to decide what should be acquired, how it is to be bought, and what the proper funding stream should be in light of the Department's overall priorities within the resources made available by the President and Congress. The Service Chiefs, to whom appropriated funds will eventually be allocated for execution of the approved budgets, are certainly a major source of recommendations for "what to buy." Their annual budget proposals are the Department's first cut at what to spend. But the Secretary is both authorized and obligated to consider other sources of such recommendations. In particular, as Dr. Hamre and others have recommended, the Combatant Commanders are already playing an increasingly strong role in advising the Secretary on "what to buy." But the ultimate decision on what the Department deems "required" is made by the Secretary and his acquisition executive. This extant process

could be improved by strengthening the role of the acquisition executive in the annual formulation of DOD budget proposals such that the stability of acquisition program funding could be improved.

3. As a practical matter, the Service Chiefs already exert considerable influence over how equipment is acquired. Although the overall acquisition policies and procedures are promulgated under the authority of the Secretary, detailed decisions on changing program content result from ongoing joint reviews by the Service Chiefs and the relevant acquisition executive. These reviews frequently result in decisions by a Service Chief to modify the performance goals of a particular system in order to better achieve overall program goals. Sometimes this results in very appropriate "requirements creep;" sometimes it results in jettisoning unjustifiable requirements that otherwise would needlessly drive up the cost. Secretary Krieg testified at some length in late 2005 about how the Service Chiefs and their acquisition executives were working together to update such "requirements." The success of this process does not indicate to me a strong need to give up on the Packard principles.

4. A major benefit of the Packard reforms was for DOD to present much more of a "single face to industry." Industry no longer has to deal with as many diverse and Service-unique contract requirements and procedures as was once the case. One of my fears is that if acquisition management authority is shifted from OSD to the Service Chiefs, each Service will once again develop and impose its own unique specifications and contract administration procedures, thereby reversing two decades of improved efficiency. Industry will no doubt accept the increased funding that will be required to reestablish separate procedures for different service contracts being executed in common factories, but this will be at the expense of a real output of equipment from the system.

Mr. ANDERSON. First, I do not believe the Service Chiefs have been excluded from the acquisition process. The Service Chiefs currently have significant influence over all aspects of the acquisition process, including service acquisition executive decisions. Specifically, and as noted by Dr. Hamre, the Service Chiefs play key roles in the development and approval of requirements. They also set priorities for funds allocations for acquisition programs in the planning, programming, budgeting, and execution process. The Service Chiefs provide for sustainment once a weapon system is fielded. The Service Chiefs exercise jurisdiction over the testing agencies that evaluate programs prior to production and fielding. Also, the Service Chiefs manage the personnel system, including assignment, evaluation, and promotion of all military personnel associated with the acquisition process.

As I stated in my testimony, I do not believe simply making this organizational change will address the broader systemic issues that must be addressed to improve acquisition outcomes. These systemic issues are: requirements changes; technology risk/immaturity; funding instability; overly optimistic cost estimating/stretch cost goals; and alignment of the outcomes of the three Department of Defense decision-making systems.

6. Senator MCCAIN. Dr. Hamre, Mr. Porter, and Mr. Anderson, what are the potential negative or unintended consequences of such a change?

Dr. HAMRE. There are numerous arguments made against this recommendation, but most of them are uninformed. There is one legitimate criticism, and that is that it will make it potentially harder to undertake joint acquisitions. Here I think we need to be careful to dissect the problem. I don't think there are that many joint procurement programs, frankly, and we know how to manage them. There are no joint aircraft carriers or destroyers or tanks or landing craft. We do have joint missiles and helicopters and fighters, and we have developed management structures for those few items. There is one major exception and that is command and control. I don't think this can be done at the Service level. I have advocated that command and control acquisition be removed from the military departments as their responsibility, and shifted instead to an enterprise-wide office in the Department.

Mr. PORTER. I believe the major adverse consequence of adopting Dr. Hamre's proposal, at least as I understand it, would be to:

1. Further stymie the Department's already lagging efforts to ensure that important new equipment and weapons systems are "born joint." Service-unique "requirements" are likely to take on even greater importance, to the detriment of improved interoperability.

2. Reverse the major progress that has been made by DOD towards "presenting a single face to industry," thereby significantly increasing the cost

of contract administration, and requiring increased industrial investment in Service-unique manufacturing equipment and processes.

3. Reduce the ability of the Secretary of Defense to construct and manage coherent, efficient long-range program plans within the resources provided by the President and Congress.

Mr. ANDERSON. As stated before, I believe the assumption that the Service Chiefs are excluded from the acquisition process is incorrect. If the roles of the Service Chiefs are changed, a possible unintended consequence would be span of control issues.

Most importantly, this organizational change could have the unintended consequence of loss of focus on the broader systemic issues as presented earlier that affect acquisition outcomes from a Department of Defense perspective.

7. Senator MCCAIN. Dr. Hamre, Mr. Porter, and Mr. Anderson, with respect to accountability, what advantage do you foresee in returning the Service Chiefs to the chain of command for acquisition?

Dr. HAMRE. If you return the Service Chiefs to the acquisition chain of command, you eliminate the primary fault line in the Department. There are three primary functions for the military departments—stipulating requirements, budgeting resources, and acquiring goods and services. If the Service Chiefs are excluded from the acquisition process, you create structural nonaccountability.

Mr. PORTER. I believe that the advantage in accountability would be superficial at best. The Department's big, complex acquisition programs require careful planning and diligent execution over a period of many years. The best approach to this is the continued improvement of the professional Defense Acquisition Corps that acts under the direction of qualified, Senate confirmed, civilian, acquisition executives. The tenure of Service Chiefs is shorter than most acquisition programs, and the mechanisms for holding them, or their Major Systems Commanders, accountable for the progress of the myriad acquisition programs within the Department are highly problematic. Primary accountability should instead be vested with the relevant acquisition executive who decides what will be proposed for acquisition, how it will be acquired—the acquisition strategy—and who is (or should be) empowered to work within the Department's resource allocation system to minimize inappropriate funding instability. Finally, the Department's highly qualified program managers can and should be held directly accountable for meeting the program goals established each ensuing year soon after the appropriated funds are decided.

Mr. ANDERSON. I see neither advantages nor disadvantages from an accountability standpoint. In effect, such a change would be neutral in terms of accountability because of the other systemic issues previously noted, and could potentially drive acquisitions to be more service centric at the expense of jointness. Improving acquisition outcomes rests more on developing a climate and processes that recognize corporate accountability across the entire enterprise.

EFFICIENT ACCOUNTABILITY

8. Senator MCCAIN. Dr. Hamre and Mr. Christle, the Packard Commission expressed concern that poor overall coordination in defense contract auditing has reduced efficiency and allowed harmful duplication of effort. The DOD Inspector General (IG) conducted an investigation and found that 13 different DOD organizations and the GAO were involved in auditing weapon manufacturers. These duplicative efforts lead not to improved accountability, but loss of confidence in the system. This has led some to observe that DOD's current acquisition system is based on a "lack of trust," and "substitutes oversight for accountability." What specific changes to statute, regulations, policy, or organization are required to reverse this system's features or culture, and make accountability the defining feature?

Dr. HAMRE. As I said in earlier questions, I believe the lack of accountability is structural. Return the Service Chiefs to the chain of command, scale back the staff at OSD, and demand honest budgeting.

Mr. CHRISTLE. If we want fundamental changes we need to change how we do business. I cannot say it any better than did Peters and Waterman: "all of us know that much more goes into the process of keeping a large organization vital and responsive than the policy statements, new strategies, plans, budgets, and organization charts can possibly depict. But all too often we behave as though we don't know it. If we want change, we fiddle with the strategy. Or we change the structure. Perhaps the time has come to change our ways." I will address specifics in the later accountability questions.

LIMITING DEVELOPMENT TIME

9. Senator MCCAIN. Ms. Schinasi and Mr. Anderson, the years it takes to develop today's weapons systems seem to be continually growing. The F/A-22 has taken over 20 years to develop. The Army's FCS may take nearly as long. We seem to be continually trying to develop every capability into the base model of the weapon system, which only seems to extend development times. What benefits do you believe there are to putting a limit on the development cycle time—and do you believe that 5 years is the proper amount of time?

Ms. SCHINASI. Most importantly, placing a time limit on development cycles appropriately establishes that decisions made in the requirements, acquisition, and funding processes will be focused where they need to be, that is, on delivering capability to the warfighter. Shorter development times can serve to limit the initial product's requirements; allow for more frequent assimilation of technologies into weapon systems thereby speeding new technology to the warfighter; allow for a sound business case to be developed before program start; put programs into production more frequently, which would allow for competition not now available to the Department and alignment with industrial base profitability through efficiency improvements; and increase program manager accountability by aligning the time required for development with the span of the manager's tenure. The increased stability that would result on each individual program would also have beneficial effects on the modernization accounts as a whole as the continual battle for funding between programs would be ameliorated. Although we differ on the causes, instability in programs is universally seen as one of the major problems confronting DOD's acquisition of major weapon systems. We have reported (GAO-06-110) on the importance that leading commercial firms place on limiting acquisition cycle times for many of the reasons stated above. DOD itself has suggested that product development should be limited to about 5 years. It is a strategy worth trying.

Mr. ANDERSON. The key benefit is that weapons systems will be fielded quicker. Additional benefits include potentially reduced development risk leading to more accurate cost estimates and reduced costs. Accomplishing shorter development cycles mandates the following conditions exist:

- (1) definitive operational requirements;
- (2) off-the-shelf systems and/or truly low risk technology developments;
- (3) the development is affordable and fully funded at the most likely cost in the fiscal years defense plan; and
- (4) agreement that new/additional requirements will be addressed in subsequent block upgrades or spirals.

I do not believe we want to lock ourselves into a "one-size-fits-all" developmental construct. That said, evolutionary acquisition, where there is an expectation of fielding a meaningful capability in 3-5 years, where the above conditions have been met, aligns with a time specific developmental cycle. I note that Defense Acquisition Performance Assessment recommends that acquisition shift to a "time-certain development" period from Milestone A of 6 years.

MAKING AND FOLLOWING ACQUISITION DIRECTIVES

10. Senator MCCAIN. Mr. Anderson and Mr. Christle, the Defense Acquisition System is the management process that guides all DOD acquisition programs. The DOD Directive 5000.1, The Defense Acquisition System, provides the policies and principles that govern the defense acquisition system. The DOD Instruction 5000.2, Operation of the Defense Acquisition System, in turn establishes the management framework that implements these policies and principles. Do you believe the regulations in the 5000 series is useful to DOD?

Mr. ANDERSON. Yes, the 5000 series is very useful for DOD. The DOD 5000 Acquisition Management Framework provides a flexible process for rational management of the development and fielding of very complex systems. Further, the DOD 5000 series serves to provide the field with the top-level policy and procedure for review and oversight of acquisition programs.

Mr. CHRISTLE. Yes. We need a framework within which to operate and the 5000 series is a reasonably good framework. The policy is not the problem. The next question addresses the problem.

11. Senator MCCAIN. Mr. Anderson and Mr. Christle, do you believe that DOD follows its own regulations? If not, what is your opinion as to why DOD does not follow its own directives?

Mr. ANDERSON. Yes, overall DOD follows its own regulations. I note that the 5000 series regulations provide needed flexibility. This flexibility can, at times, make it appear that programs are not adhering to regulatory requirements. However, in actuality the provisions of the regulations have been tailored for the specific acquisition program. To the extent that there is a perception of not following regulations, more emphasis must be focused on ensuring program managers carefully document and fully explain the rationale for tailoring or eliminating regulatory provisions in their acquisition strategy so that the logic and benefits of tailoring are obvious to all.

Mr. CHRISTLE. There are few personal consequences for not following our policies. We are talking about behavior, and there are two ways to alter behavior: Do something before the behavior occurs or do something after it occurs. In the behavioral scientists' terminology, this is called antecedent and consequence, respectively.

Antecedents consist of things such as policies, goals, practices, and other forms of enterprise expectations, and while they are necessary they will not, by themselves, sustain a desired level of performance or behavior. Only the nature and likelihood of consequences can do that and too often consequence is missing from the acquisition environment. We substitute more and more policy antecedents (revising DOD 5000.X for example) to obtain the acquisition behavior we want but we fail to realize that the lack of consequences becomes an antecedent that negates our attempted policy fix. When the workforce perceives there are limited, if any, consequences for following or not following policies and practices, that lack of consequence becomes an antecedent and little changes.

12. Senator MCCAIN. Mr. Anderson and Mr. Christle, what changes, if any, would you recommend to the 5000-series regulations?

Mr. ANDERSON. We must continuously look for ways to streamline the 5000 series regulations and make it more user friendly. I agree with the recommendations made by the DAPA team and others that integrating the three decisionmaking processes is beneficial and will entail restructuring acquisition regulations.

Mr. CHRISTLE. None. Changing a policy that is either misunderstood or not followed, simply changes things at the margin. My previous answer addressed the real problem.

STRUCTURING ACQUISITION AROUND COMBATANT COMMANDERS

13. Senator MCCAIN. Dr. Hamre, the CSIS report, "Beyond Goldwater-Nichols: U.S. Government and Defense Reform for a New Strategic Era, Phase 2" stated "that the structures of advocacy in government must be clear. In the DOD context, this means that those charged with executing missions should set the requirements for the capabilities they need." The study team recommended that the process for identifying and advocating joint capability requirements be restructured around the combatant commanders, with Services competing to supply the capabilities required by the combatant commanders. This would entail Service Vice Chiefs being replaced by the commandant command deputies, and adding civilians responsible for requirements policy. Would you please expand on this recommendation and explain what impact this shift could have on the defense acquisition process?

Dr. HAMRE. The Department is too large and complex to be run by an integrated staff. So we have created a system where we counter-pose advocates for various points of view, and bring those advocates in front of the Secretary so he can decide what to do. The problem we have is ambiguous advocacies. The primary voice of "demand" are the combatant commanders and the Chairman of the JCS. The primary advocates for "supply" are Service Chiefs. We balance supply and demand by bringing both voices to a forum chaired by the Secretary. The problem is that the primary method for developing requirements—"demand"—is managed by the chief "supply" advocates in the building. This needs to change in order to create cleaner lines of responsibility and accountability.

14. Senator MCCAIN. Dr. Hamre, how would this change have affected the FA-22 program that after 20 years of development has experienced significant cost growth and, some would argue, only provides capability in a very select mission area?

Dr. HAMRE. It is not likely to affect the F-22. As you point out in your question, we have the momentum of 20 years of history that cannot now be untangled by this change.

INCREASING JOINT HEADQUARTERS STAFF

15. Senator MCCAIN. Dr. Hamre, the CSIS report proposes increasing Joint Headquarters staff, particularly the J-8 (Directorate of Resource Management) function, to build capacity for the combatant commanders to rigorously define and advocate specific requirements, and so increase their voice in resource allocation. Specifically, how would your proposal prevent debacles such as the Army's Aerial Common Sensor where the airframe was too small for the sensor system?

Dr. HAMRE. I am afraid I don't know anything about the Army's Aerial Common Sensor program. These problems develop usually when there are inadequate checks and balances in the programming and budgeting process. I believe stronger debate is the best antidote to these problems.

16. Senator MCCAIN. Dr. Hamre, how would this recommendation prevent "requirements creep," given that it would not be the combatant commanders but the Services that would pay the bill to acquire these systems?

Dr. HAMRE. I don't personally believe requirements creep is such a big problem. In my view, it is far worse that we have over-specified goals at the outset of a program, with inadequate tradeoff of costs and performance at the very early stages of determining requirements and establishing acquisition strategies.

PROGRAM REVIEW

17. Senator MCCAIN. Dr. Hamre, my understanding is that the DOD currently does not have a clear method for program reviews prior to approving each milestone in the life of a program. How would you recommend the Office of the Secretary of Defense (OSD) better organize to review program execution?

Dr. HAMRE. We used to have a clear method for program assessment prior to milestone reviews. If it is not currently in place, it could and should be restored.

18. Senator MCCAIN. Dr. Hamre, based on this recommendation, what criteria should OSD apply to correct or terminate a struggling program?

Dr. HAMRE. This is a very difficult question. The budget pressures cause program managers to hide serious performance or cost problems until near the breaking point, and then we face a crisis. Invariably, we need the weapon system, but the problems are so serious that termination is nearly always up for discussion. The resolution invariably produces a half-fixed/half-broken compromise. It isn't good. So what do we do about it? First, and I hate to sound like a broken record, but we need to get the acquisition system aligned with the resource allocation system. If the Service Chief has to pay the bills, he will do a much better job of policing performance on the part of program managers. Second, we need an oversight system that spends less time on trivial management questions and more time on big questions. Adding technical assessment to the CAIG might be one path we should explore. But I need to think more about this difficult problem.

19. Senator MCCAIN. Dr. Hamre, according to the GAO, the cost growth in the F-22 fighter program is topping out over 180 percent. A program totaling nearly \$70 billion can now only buy less than a third of the total number of aircraft once envisioned for the same amount of money. How would CSIS's office of implementation and execution review have kept this program on track?

Dr. HAMRE. I don't think our recommendation can fix the problems facing the F-22. Hopefully the recommendations we offer would help avoid future problems like the F-22.

MANAGING THE INDUSTRIAL BASE

20. Senator MCCAIN. Dr. Hamre, in your statement you mention that "we do not honor the [defense industrial base's] important role by good management on the part of the government. We do not really know how to manage the defense industrial base today. We continue to use the mindset and the rules and regulations of the mid-1980s." Would you please expand on this suggestion and give some recommendations on how to better manage the defense industrial base in an environment of fewer suppliers and more restrictive defense funding?

Dr. HAMRE. We continue to have a regulatory environment and mindset grounded in the mid-1980s when we had 20 prime contractors, frequent new starts for weapon systems, high production rates, etc. So we continue to think we can manage this industrial base through competition. That is improbable. We can't live without any

one of our prime contractors, and we don't hold enough competitions now to make that threat viable. We now have a contractor environment that is more analogous to public utilities and public utility commissions. That suggests that we need a different approach to regulation that is more interactive and at different dimensions. This will be a hard transition from the current approach, which is rather adversarial.

QUADRENNIAL DEFENSE REVIEW

21. Senator MCCAIN. Dr. Hamre, the 1997 and 2001 QDRs, have a record of being consensus products with respect to examining and apportioning Services roles and missions. Press reports seem to indicate that the current QDR will be of a similar character. This document should guide requirements decisions for the next 4 years. How would you suggest that the QDR process be revised so that it promotes a healthy competition of ideas between the Services to better support the combatant commanders and ensure that they are provided with the most capable and cost-effective solutions to their military challenges?

Dr. HAMRE. I participated in two QDRs and have watched two more. My experience is that every QDR starts by trying to pose major policy directions, but always ends up patching holes in budgets. This is inevitable. Small problems in programs usually get deferred until the point where they become critical and then require a major review. The establishment of the QDR process (created by Congress, as I recall) simply shifts this deferral/crisis/solution process to a once-every-4 years process. Generally, QDRs are heavily dominated by the "supply" side of the Department. We do not have comparable emphasis from the "demand" side of the Department. I think the Bush administration has tried to correct that, but we will have to wait until the next year to see if this is working.

TECHNOLOGY MATURITY, REBASELINING, AND AUDITING

22. Senator MCCAIN. Ms. Schinasi, in 2002, Congress directed DOD to report on the maturity of technology at initiation of major defense acquisition programs based on language in the DOD 5000.2 instruction which states, "The project shall exit Technology Development when an affordable increment of militarily-useful capability has been identified, the technology for that increment has been demonstrated in a relevant environment, and a system can be developed for production within a short time frame (normally less than 5 years)." The reporting requirement is scheduled to expire in 2006. Do you believe this reporting requirement should be extended?

Ms. SCHINASI. The reporting requirement should not be allowed to expire. However, unless DOD decisionmakers actually implement DOD policy on individual programs, outcomes will not change. We continue to find that programs begin product development with immature technologies despite the section 804 requirement. In March 2005, we reported that only 15 percent of the programs we reviewed began product development with all their critical technologies mature (GAO-05-301).

23. Senator MCCAIN. Ms. Schinasi, what can be done to strengthen the Nunn-McCurdy provision mandated by Congress, to include any recommendations on how to deal with the abused practice of rebaselining programs?

Ms. SCHINASI. My answer has two parts. First, as we reported last year (GAO-05-182), DOD has interpreted Nunn-McCurdy in a way that eliminates important program elements in calculating a program's divergence from its baseline. DOD's interpretation excludes the effects of quantity reductions or capability increases when making Nunn-McCurdy threshold determinations. If these adjustments had not been allowed, DOD would have reported between 50 and 90 percent more Nunn-McCurdy breaches between fiscal years 2001 and 2003. We recently reported on the specifics of a Nunn-McCurdy calculation for the Global Hawk program that also illustrated this point (GAO-06-222R). We have recommended that DOD change the way it assesses Nunn-McCurdy breaches and that Congress consider whether DOD's policy of using programmatic adjustments in determining Nunn-McCurdy thresholds is appropriate and provides the information it needs on changes in the value DOD is getting for the funds it spends. Second, however, is that unless there is a way to assign accountability and penalties to program breaches, outcomes are not likely to improve. As one alternative, Congress could consider stricter measures such as automatically de-authorizing programs that have cost growth of a certain magnitude.

24. Senator MCCAIN. Ms. Schinasi, should Congress mandate GAO complete an audit at every major phase of DOD's acquisition process for its major weapon system to ensure proper accounting principles or can DOD adequately evaluate the readiness to move to successive milestones?

Ms. SCHINASI. GAO can—and does—play an important role in evaluating the status of individual programs and in identifying the causes of poor outcomes that exist across programs, based on the depth and breadth of our individual reviews. Our annual “quick look” report (GAO-05-301), which provides status information on over 50 programs, as well as the dozen or so more extensive system reviews that we conduct every year, have proven to be a more accurate predictor of risk than DOD's evaluations. However, DOD can itself adequately evaluate readiness to move to successive milestones. In fact, DOD's current acquisition policies are aligned with recommendations we have made on knowledge-based decisionmaking. However, decisionmakers are rarely held accountable for following DOD's own policies. DOD needs to maintain responsibility for proper program execution and for determining accountability internally for program outcomes. I believe our detailed reviews of individual programs and our annual assessments of major weapon programs strike a good balance of providing independent analysis without becoming a part of the process. We remain committed and open to ways we can improve our coverage and enable needed changes.

25. Senator MCCAIN. Ms. Schinasi, I recognize the need to modernize the Abrams tank and Bradley Fighting Vehicle so I support the Army's FCS concept and program. However, 2 years ago the program moved past Milestone B, the start of a formal acquisition program, without achieving the level of technology maturity normally required by DOD. In fact, the GAO reported that today there is still only one out of more than 50 critical technologies considered mature. If the DAB does not even follow DOD's internal directives to demonstrate technology is ready for development prior to entering the development stage, what recommendations would you give this committee to ensure DOD is following its own directives?

Ms. SCHINASI. DOD has endorsed a knowledge-based approach in the DOD 5000 acquisition regulations, but has not been enforcing its policy when approving major acquisitions to proceed into development. The Army's FCSs is only one example of beginning development with low levels of technological maturity. Other recent examples include the Transformational Satellite Communications System, which began development with six out of seven critical technologies immature; the Advanced Deployable System; the Warfighter Information Network-Tactical; the E-2D Advanced Hawkeye; the Aerial Common Sensor; and the Joint Land Attack Cruise Missile Defense Elevated Netted Sensor System.

The most powerful way to ensure directives are followed is to say “no” to funding programs that ignore the directives. If the Services/branches propose an acquisition that flies in the face of best practice, policy, and lessons learned, but is approved by OSD, then OSD sanctions that violation of policy. If Congress subsequently approves that program for funding, then Congress implicitly sanctions that violation of good practice as well. Money speaks volumes. Every program, taken by itself, makes a compelling case that it is different. Every program is the exception. True policy then is revealed by the predominant practice—committing to major investments without understanding the implications within an individual program or the eventual impact on other programs. The need to protect sunk costs often seems to be the basis of DOD's decisions as a program proceeds. I would offer, instead, the need to look at the opportunity costs of each decision. We have reported in the past that DOD has not instituted the necessary controls to ensure that it is capturing the necessary knowledge at critical junctures and basing the decision to proceed with a program on that knowledge.

CORRUPTION

26. Senator MCCAIN. Ms. Schinasi, when examining the KC-767 tanker lease proposal, Congress found that the Air Force's Operational Requirements Document (ORD) had been tailored to match the aircraft's characteristics. Rather than faithfully represent the warfighter's needs, arguably, the “requirement” served as an advertisement for the Boeing 767 and corrupted the acquisition process. Please tell me how we can bring the requirements, budgetary, and acquisition processes into alignment if one of those sub-processes is corrupt?

Ms. SCHINASI. The requirements, budgetary, and acquisition processes collectively can create incentives to overpromise performance while underestimating cost and schedule. The best guard against these processes collectively or individually skewing

acquisition decisions is to have a solid, transparent business case for proceeding with each acquisition. At a fundamental level, this means following the axiom, if it is the right thing to do, then do it right. Each process must be disciplined to guard against undue influence. For example, the requirements process must show that a need is valid and that the solution chosen is the best alternative for the Government. Of concern, also, is the need to manage the contractor. As stated earlier, the match that needs to occur before committing to a product development has requirements on one side, and resources of time, cost, technology, and the Government's management capacity on the other. As contractors play increasingly larger roles in DOD's requirements, funding, and acquisition processes, this capability becomes even more critical.

27. Senator MCCAIN. Ms. Schinasi, what steps can you recommend to strengthen the requirements process against subversion by external and inappropriate pressure?

Ms. SCHINASI. As mandated in the 2006 National Defense Authorization Act, we are embarking on a study of the requirements and budgetary processes, so I will defer an answer at this time. Generally speaking, however, requirements should not be considered in isolation, but need to be constrained by available funding, mature technology, and joint considerations, while balancing DOD's cross-portfolio near- and long-term needs. We will keep the committee informed as we progress with this study.

COMBATANT COMMANDER INVOLVEMENT

28. Senator MCCAIN. Mr. Porter, your statement notes the success of Goldwater-Nichols in improving joint operations, but not in improving joint planning and budgeting, and joint acquisition. Why do you think that is and what should be done about it? For example, would changing the composition of the JROC from the Vice Chiefs to the combatant commanders increase the likelihood that a truly joint perspective would come out of the process?

Mr. PORTER. The Goldwater-Nichols Act resulted in the Services assigning their most promising officers to joint billets, and in greatly expanding the Chairman's Joint Staff. The result has been a cadre of excellent officers who are much better educated on the abilities of their sister Services than was formerly the case. This has been well demonstrated in all recent military operations. But joint budgeting and joint acquisition is very different than joint warfighting. Each military Service has a long and proud tradition of preparing for hostilities in the ways their doctrines demand. These Service-centric doctrines have grown out of a long history when each Service operated with a greater degree of autonomy than is now possible on most combined-arms battlefields.

While officers from different Services in the field are able to work together to establish procedures for conducting the operation at hand, it is highly unfair to expect them, when working in joint budgeting and acquisition councils in the Pentagon, to adopt positions and make recommendations that are at odds with the doctrine of their parent Service and against the wishes of the senior officers on whom they are dependent for promotion.

This is a knotty problem of long standing to which the solution is not obvious. The problem has been more or less recognized by every Secretary since the Department of Defense was established. The primary solution in the past has been the use of a civilian secretariat for the development and analysis of issues that cross Service boundaries, including the interoperability of equipment. Enthusiasm for this arrangement has waxed and waned with the desires of the successive secretaries to raise and deal with such issues.

One potential and controversial approach that has not been seriously considered to my knowledge would be to establish a separate joint promotion board and assignment system by and for "joint officers" above a certain pay grade. Officers assigned to such a promotion and assignment track would be assured that their future careers were more contingent on their performance in response to joint warfighting, planning, budgeting, and acquisition needs than to the preferences of their original Service. Joint officers would progress through joint staff and joint command assignments, and non-joint officers would remain as subject matter experts within their parent Service organization. This approach, of course, raises the hoary specter of a "general staff," a specter that has been widely discounted, but that still has potency.

Replacing the Service Vice Chiefs on the JROC with representatives of the combatant commanders certainly has the potential to broaden the joint perspective of

the JROC. Unfortunately it would also, almost surely, attenuate the time horizon of the JROC.

At present, the combatant commands are organized, trained, staffed, and equipped to deal primarily with this year's problems—and maybe next year's. On the other hand, the JROC deals almost exclusively with developing advice concerning weapons systems that can't and won't be fielded for up to a decade or more. Assessing the need for weapons systems that will entail major advances in technology requires an extensive understanding of potential threats a decade hence, as well as the likely DOD funding environment during the intervening years. Although each of the combatant commanders have considerable personal expertise in these areas by virtue of their seniority and diverse experiences, at present it is only the Services that are staffed to make the types of systematic long-range threat and technology assessments that are needed by the JROC. For the combatant commanders to acquire such planning capabilities would require either a major expansion of their staffs, or a transfer of staffs from the Services.

OVERSIGHT COUNCIL ROLE

29. Senator MCCAIN. Mr. Porter, over the past several years, Congress has authorized and appropriated funding for up-armored humvees above the budget request. Over the same period, we have seen an upward growth in up-armored High-Mobility Multipurpose Wheeled Vehicle (HMMWV) requirements. It does not appear that the Department has a firm handle on requirements nor a process for synchronizing requirements. The new Vice Chairman of the Joint Chiefs of Staff, Admiral Giambastiani, has stated that he intends to improve the JROC. What recommendations would you give him to improve the JROC's role in the acquisition process?

Mr. PORTER. Historically the JROC has focused on providing advice via the Chairman of the Joint Chiefs of Staff concerning the Department's long-term needs for new weapons systems that have certain performance characteristics. It has not sought to make recommendations regarding the total inventory of such weapons that it believes appropriate and affordable, nor on near-term needs that emerge from ongoing operations. In the latter case, which includes the HMMWV need cited in the question, I believe that the relevant combatant commander's direct reporting relationship to the Secretary should prove adequate. The Secretary has the authority to direct the reallocation of resources to meet such needs without requiring a formal review by the JROC.

COMPETITION BETWEEN THE SERVICES

30. Senator MCCAIN. Mr. Porter, many researchers, such as Owen Cote of MIT, argue that interservice competition for roles and missions has highly beneficial effects, including driving innovation in weapons system design or employment, making public the most informed criticisms about weapons systems, and generating weapon or technology options that would not normally exist.

Some contend that interservice competition has waned considerably since the late 1950s because Services perceive that their budget shares are fixed, and their funding will not rise or fall if their relevance to current defense policy changes. Public disputes among the Services are often condemned by civilian political leaders as examples of the Services' inability to work together, and their persistence led to growing calls for more centralized control over the Services and less overlap among their various roles and missions. Thus the Services are motivated to avoid public disputes, present a united front to civilian oversight, and remain largely content to live within the predictable 30 percent division of the annual defense budget. What are your views on whether it is possible to generate more competition among the military Services for roles and missions and how would the competition benefit the defense acquisition process?

Mr. PORTER. My view is that the mechanism for interservice competition is already in place. Each year, the Secretary provides broad strategic guidance to the components, together with preliminary fiscal guidance. In response to this guidance, which can be construed as a competitive Request for Proposals (RFP), the components respond with Program Objective Memoranda (POMs) that propose programs intended to meet the Secretary's guidance. It is well within the Secretary's authority and historical practice to assess the relative cost-effectiveness of the various Service proposals and decide on the specific mix of component programs that he will recommend the President include in his next budget proposals. There are no legal barriers that prevent the Secretary from making decisions that would result in incremental changes in the component's budget shares over time.

It would be highly disruptive, if not dysfunctional, to establish a process that resulted in the reassignment of an important military mission to a different Service and its associated weapons systems, every 2–3 years. A military capability based on complex modern weapons systems can take more than a decade to develop, field, and perfect. As a practical matter, I believe that such roles and missions assignments should be made very early in the cycle of new weapons systems and be based on the best possible cost-effectiveness analysis. Future Service budget shares should be continually adjusted to ensure that national priorities are being pursued efficiently.

ACCOUNTABILITY DESPITE TURNOVER

31. Senator McCAIN. Mr. Anderson, one frequently cited accountability problem is that weapon system program managers typically do not stay in their jobs for the entirety of the acquisition process. Indeed, most weapon acquisition programs have 5, 10, sometimes even more program managers. Since this is often the case, which program manager do we make accountable or impose consequence on—the one in position when a problem is found, or the one who left the position years ago when the requirements were set, costs were estimated, or schedules established?

Mr. ANDERSON. Your point regarding program manager turn-over and accountability is well taken. Short tenure is problematic. However, as stated in my answer to Question 1, inadequately integrated decision processes make it extremely difficult to fairly hold a single person accountable because of the separate decision processes where many decisions are made by different decisionmakers.

If we move to shorter development cycles as discussed in Question 9, and the conditions cited are put in place, then it is reasonable to expect a single program manager to have the program from inception to fielding and he/she should be held accountable for program outcomes. This is easily discussed but this is very complex and implementation would be extremely difficult and represent a significant culture change.

32. Senator McCAIN. Mr. Anderson, with this kind of program manager turn-over, how can we improve accountability?

Mr. ANDERSON. Again, I agree with your point regarding program manager tenure and my perspective is captured in my answer to the preceding question. Also, I believe that tenure management will be addressed in the QDR.

RECOMMENDATIONS FOR ACQUISITION REFORM

33. Senator McCAIN. Mr. Anderson, most experts agree that the DOD acquisition workforce needs help, but to date, little in the way of specifics has been suggested by the DOD. What is your recommendation as the President of the Defense Acquisition University (DAU) to create a more capable and larger acquisition personnel workforce?

Mr. ANDERSON. The USD(AT&L) shares your concerns regarding the workforce and has consolidated all human capital planning, workforce initiatives, and training under the President of DAU. In addressing the future direction of the USD(AT&L) workforce, he has established “High Performing, Agile, and Ethical Workforce” as his Number One Goal. He is actively involved in shaping the details and objectives for this goal.

Some of the objectives to be accomplished include the delivery of an AT&L Human Capital Strategic Plan by June 2006; creation of a capability to deliver recurring workforce analysis; development of retention and recruiting strategies; deployment of a performance management construct; and development of a competency management construct.

In the area of workforce training, objectives include providing the workforce with real-time, point-of-need access to job-relevant content and learning assets. This will provide the workforce with embedded learning assets; more assignment-specific and tailored courses; and shorter, modular executive training. These learning assets will feature more interactive delivery to include simulations, role-play, case-based scenarios, real world dilemmas, and action training.

As stated, the Honorable Ken Krieg has tasked me to deliver a Human Capital Strategic Plan by June 2006. At that point, I would welcome the opportunity to share with you specific recommendations for the DOD acquisition workforce. We are engaging all the Services in this process. Consequently, shortly after June would be the most appropriate time for DOD to address acquisition workforce size.

34. Senator MCCAIN. Mr. Anderson, how do we retain experienced acquisition professionals when their skills are in demand by contractors?

Mr. ANDERSON. We must continue to emphasize the importance of public service and appeal to those intrinsic motivational factors that cause people to seek a higher purpose and not to view salary as the only, or most important factor, in evaluating a career choice. We have been successful in doing this in the past and we must adapt our retention strategies so that we continue to be successful in the future. I have been recruited for positions that would have paid me more money but I chose to stay with Federal service, and I am not the only one—many others have made the same choice. We do not have to match pay scales in the private sector, but we must ensure we provide competitive pay. We must never lose focus on appealing to a higher calling and all senior leaders across Federal service must properly represent this ideal, and encourage others to serve.

A specific concern that I have in this regard is that with all the attention focused on improving the acquisition process, there is a tendency to ignore the great accomplishments of the acquisition workforce in support of the military mission. Another concern that I have is the DOD is losing many military acquisition professionals to industry. As a recruiting strategy we must do more to enable acquisition professionals who leave the military to easily and quickly transition to civil service.

Any career, especially one in the defense acquisition business, must address, and to a large degree satisfy, both an individual's intrinsic and extrinsic goals. Intrinsic work goals include ensuring that the work is challenging; that an individual's work outcome is recognized and valued; that management listens to workers; that there are opportunities for advancement based on performance; and that rewards are related to performance.

This is not to downplay extrinsic factors such as competitive compensation; job security; ethical and positive work environment; and flexibility in work hours and work arrangements based on differing circumstances. It is true that the Federal sector cannot compete with the private sector dollar for dollar. However the NSPS, when implemented, will foster a performance-oriented environment that more fully rewards and recognizes individual performance and contributions. The DOD believes that the pay banding aspects of the NSPS will aid in recruiting and retaining acquisition personnel.

Other initiatives that address extrinsic factors include flexible work schedules, alternative work schedules, and the family friendly leave policy. Further, DOD encourages other programs appropriate to specific situations, and many DOD organizations offer Employee Assistance Programs (EAP); part-time and job sharing positions; child and elder care resources, information and incentives for adoption, and other child support services.

Finally, I must note that retention is an area where the Honorable Ken Krieg has placed special emphasis. His focus is to move to a performance management environment where we recognize our best employees, ensure we have appropriate developmental opportunities for all employees, and we develop appropriate strategies to make everyone proud to be a part of the acquisition workforce.

ACCOUNTABILITY

35. Senator MCCAIN. Mr. Christle, in 2001, the Secretary of Defense asked rhetorically, "Why has there been little fundamental change in the Department's acquisition process despite the 128 different studies that have chronicled the ills of the procurement system?" No matter what changes to the process have been made or are recommended in the future, they may never be effective because of one missing element—accountability. There is a marked lack of accountability throughout the entire acquisition process, from setting requirements through development and fielding.

In the operational side of the Navy we see what some might term a severe example of the principle of accountability. Since 1999, they have relieved over 80 commanding officers for poor performance or loss of confidence. In the Norfolk Virginian Pilot newspaper, Admiral John Nathman, the Deputy Chief of Naval Operations, said that commanding officers will be held to a higher standard. Many may not agree with their methods, but the Navy certainly holds its leaders accountable for their decisions and actions. We should be able to bring at least some portion of that same element of accountability to the business side of DOD.

In a recent case, the Army's Aerial Common Sensor, an \$879 million contract for a new spy plane, was awarded to Lockheed Martin. But today, because of excessive weight and cooling issues with the preferred aircraft, the Secretary of the Army has stopped work on the program. My understanding is that the program manager and

the program executive officer that led the program into this problem are still directing the program. They have not been held accountable. Do you believe they should be held accountable and if so, in what way?

Mr. CHRISTLE. Senator, I don't know enough about the specifics to answer that question but I know where to look. The Milestone Decision Authority (MDA) who approved the program took on the responsibility to ensure a proper requirement and acquisition strategy and is therefore accountable in the same way the ship's captain who is asleep in the middle of the night when his ship runs aground is accountable. The MDA should then hold the appropriate procurement and requirements functionals accountable. Whether or not the program manager or executive officer should be held to account depends on specifics that I don't know. The point is, senior decisionmakers must be held accountable so as to motivate them to execute their responsibility to establish the structure and processes that will ensure future successes and avoid negative consequences for themselves and their organizations.

36. Senator MCCAIN. Mr. Christle, what can be done to improve the accountability within the DOD?

Mr. CHRISTLE. Accountability will not be changed unless we understand what it is. The Oxford Dictionary defines accountability as the "Liability to give account of and answer for, discharge of duties or conduct; responsibility." But, this definition is not sufficient to understand what changes need to be made. The accountability equation requires a person (or institution) to be held accountable, and someone willing to do the accounting. The first part is easy—the second part is often difficult for many people and requires real leadership.

The acquisition leadership must communicate three things to all levels and elements of the acquisition community:

1. That they will be called to account;
2. That there will be consequences for not meeting expectations; and
3. What they will be held accountable for.

My recommendations would be:

1. The USD(AT&L) should establish a new oversight process that maximizes trust, promotes teamwork throughout the acquisition community, and recognizes tiered accountability by placing responsibility and accountability where it belongs, with the Component Acquisition Executives (CAEs), not the DOD staff.
2. Each CAE should be responsible and accountable for his/her programs. They should determine when their programs are ready for a milestone review and they should have the authority to schedule such reviews with the Defense Acquisition Executive (DAE).
3. The USD(AT&L) should abolish or severely cut back on the size and function of the Overarching Integrated Product Team (OIPT) structure.

TYING POSITION TO PERFORMANCE

37. Senator MCCAIN. Mr. Christle, some have argued that a lack of accountability in the acquisition system allows acquisition officials to progress through their careers regardless of their performance as leaders of programs. If this is true, one might conclude that tying an acquisition professional's career progression to their successful leadership of a program could improve accountability. Do you agree with this opinion and implication? Why or why not?

Mr. CHRISTLE. I agree in principle on tying career progress to performance but there are some practical issues. I believe this issue has more to do with uniformed officers at the O-6 and higher levels. Below the O-6 level, acquisition career progression is probably related to prior performance if the officer is actually in an acquisition billet. The problem is that most uniformed people have relatively short acquisition careers (especially in the Army and Navy) so there is limited opportunity for performance-based progression. Movement above the O-6 level must contend with the flag officer management process. To the extent the CAE can influence that process the component will probably get the right flag officers. The problem for civilians is that for whatever reason, they tend to be scarce in the upper levels of acquisition. When they are in program manager or program executive officer positions, they appear to reflect appropriate acquisition performance histories.

In a side note, one of the problems with civilians in critical acquisition positions is the inability to force them to relocate to where they are needed. Another issue for both uniformed and civilian acquisition workforce members is the regulatory constraint on succession planning. These issues might benefit from regulatory and statutory action.

QUESTIONS SUBMITTED BY SENATOR JOSEPH I. LIEBERMAN

ACQUISITION ROLES

38. Senator LIEBERMAN. Dr. Hamre, please discuss what role you believe the Deputy for Defense Research and Engineering (DDR&E) and the rest of the DOD technology community—labs, Defense Advanced Research Projects Agency (DARPA) etc.—should have in strengthening Pentagon acquisition programs and policy.

Dr. HAMRE. DDR&E used to be the third most powerful position in the Department of Defense pre-Goldwater-Nichols. It is no longer. The position is hugely diminished, and I think that is unfortunate. I believe we should diminish the “gunsmithing” aspects of acquisition oversight and strengthen the “marksmanship” aspects. Those marksmanship aspects are best grounded in DDR&E. I would personally reinvestigate the traditional DDR&E role inside a retooled USD(AT&L).

39. Senator LIEBERMAN. Dr. Hamre, should the roles and authority of the DDR&E be expanded to allow him to more fully participate in making DOD a smart buyer?

Dr. HAMRE. Absolutely. But a smart “strategic” buyer, freed from the tactical aspects of acquisition, which I believe belong with the military departments.

BASIC RESEARCH FUNDING

40. Senator LIEBERMAN. Mr. Porter, in your prepared testimony you noted the role that basic research plays in developing technologies that are used in major acquisition programs. You also pointed out the recent work of Norm Augustine in a National Academy of Sciences study highlighting the need for more R&D investment. Can you provide specific examples of how under-investment in science and technology, or a lack of scientific understanding of how systems may function, has affected the development and deployment of major programs either causing large cost overruns or worse yet, causing casualties on the battlefield?

Mr. PORTER. It is obviously impossible to “prove” a causal relationship between any specific funding deficiency in the Department’s support for basic research, and problems in major systems development. The best I can do is point to the fact that some of the major programs that are most in the news for their cost growth are programs whose key technologies were insufficiently mature to warrant proceeding into full scale system design and development under the Department’s own guidelines. Increased funding alone cannot assure adequate technical maturity by any date certain, but inadequate levels of funding surely delay achieving such maturity levels.

With regard to casualties on the battlefield, I would speculate that heavier and earlier investment in the technologies needed to detect IEDs and to non-destructively halt vehicles and suspicious personnel could well have had beneficial effects. Land mines and car bombs are not new problems.

INDUSTRIAL R&D

41. Senator LIEBERMAN. Mr. Porter, in your prepared testimony you suggested that we should strive to make “early phases of R&D activity . . . profitable in their own right” without even the promise of future production buys to help a company recoup its investments. How would you propose to do this?

Mr. PORTER. There are many potential contractual vehicles to develop and deliver a paper design, or a technology test bed, or a prototype, for evaluation, ranging from small time-and-materials and level-of-effort contracts carrying a fixed fee, i.e. profit, to substantial cost-plus-fixed and/or award fee contracts. Not that this is a simple issue since one would not want to prohibit the contractor from bidding on a subsequent acquisition contract for a similar item, even if such follow-on work had not been envisioned at the time of the initial award.

Because uncertainty is the very nature of technology development, it is exceedingly difficult for a source selection authority to evaluate the accuracy of each bid for a new technology. Pure “cost-based” competitions are sometimes disparaged as “liars games” and have been largely supplanted by negotiated “best value” source selections. Under these procedures technically qualified government personnel thoroughly vet the technical merits of each proposal, such that the source(s) can be selected primarily on technical merit and past performance, rather than just on promised cost.

42. Senator LIEBERMAN. Mr. Porter, what role does the Government’s own set of laboratories play in the R&D and acquisition process?

Mr. PORTER. In my view, Government laboratories—and the specialized laboratories of some FFRDCs and university affiliated research centers (UARCS)—play a very important role as centers of excellence for technologies and specialized system engineering skills and practices that are vital to U.S. military prowess. They are the keepers of the basic knowledge that underlies many of our modern weapons systems—knowledge that does not routinely reside or advance in the private sector. Examples include underwater acoustics, specialized explosives and fuses, and directed energy phenomena. The existence of these centers of excellence facilitates the Government's ability to formulate sound responses to emerging needs for new military equipment, and also serves as a source of expertise for evaluating the technical readiness of new acquisition programs to proceed into their next phase.

QUESTIONS SUBMITTED BY SENATOR JACK REED

ROLE OF OPERATIONAL TESTING AND SYSTEMS ENGINEERING IN IMPROVED ACQUISITION PROCESSES

43. Senator REED. Dr. Hamre and Mr. Porter, today's testimonies indicated the important role that testing plays in the successful development and deployment of new weapons systems. Mr. Porter specifically stated that “. . . there is no major new threat so imminent that sound system engineering management practices need to be sacrificed in order to accelerate the fielding of unproven technology and equipment.” I am particularly concerned about the Department's development and deployment of ballistic missile defense (BMD) and information technology (IT) systems. Do you feel that the Department is using all appropriate and sound systems engineering and testing (including developmental and operational testing) principles, and practices in its development and deployment of BMD and information technology systems today?

Dr. HAMRE. No. I don't think that we have subjected our BMD work to the kind of testing we would insist on for a normal weapon system. As such, we don't know if the system we are currently buying is going to be at all effective, and if it fails its capabilities, what caused the failures and what does it take to fix it.

Mr. PORTER. I believe the segment of my statement that was cited in the question is applicable in principle to both missile defense and IT systems developments. The timing of a future ballistic missile threat to the U.S. by rogue nations appears to me to be such that well proven systems engineering practices could logically prevail. The development of new information systems appears to me to be less driven by specific threats than by an eagerness to reap the very real operational and cost-effectiveness benefits that accrue from fielding IT systems that can help reduce the fog of war, increase weapon system effectiveness by reducing sensor to shooter delays, and improve logistic efficiency. Press reports would suggest that pressures to field equipment in both areas are outstripping prudent testing guidelines, but I have no direct insights into the actual status of either program area.

44. Senator REED. Dr. Hamre and Mr. Porter, what shortfalls do you see in the current regimen of testing for these types of programs?

Dr. HAMRE. I think there are major problems with operational testing in general. There are too many testers, frankly. The number of programs has been cut dramatically during the past 20 years, but the number of testers has gone largely unchanged. So we are doing far more testing to occupy the work of all the testers. I think testing should become integral to the development process, and not a pass-fail test at the end of it.

Mr. PORTER. As indicated earlier, I have no direct knowledge of the specific status of the testing for the major components of the MDA program or for the emerging major new IT systems. Nevertheless, I know of no reason for not following prudent engineering practices in both areas, considering both the financial stakes and the operational needs.

45. Senator REED. Dr. Hamre and Mr. Porter, what are the potential problems in terms of performance and cost that could result for the Department if these deficiencies are not corrected?

Dr. HAMRE. I can't give you an estimate, but the potential is huge.

Mr. PORTER. Although I have no specific knowledge of the deficiencies in the testing regimens of these particular programs, I am well aware of the historical costs of insufficient testing of systems before they are fielded. As a former submarine officer, I was well schooled in the problems encountered early in World War II when many brave submariners died while trying to employ ineffective torpedoes against

enemy ships. To this day, the U.S. submarine force has a strong tradition of insisting on thorough testing of all of its equipment, systems, and weapons as a prerequisite to full fielding.

Not only does poorly tested equipment result in needless deaths of American service personnel, it results in needless additional cost to the taxpayers. Equipment that has been allowed to be fielded without adequate testing frequently requires major redevelopment expenditures.

46. Senator REED. Dr. Hamre and Mr. Porter, does the Department have sufficient in-house expertise to adequately test or manage large IT programs?

Dr. HAMRE. No. I suspect we are no different from major corporations in the private sector which need to secure competent external support to properly test IT systems.

Mr. PORTER. The decline in the Department's in-house technical expertise has been widely recognized, including in testimony before this subcommittee. Fortunately, the Department has at its disposal several highly-qualified FFRDC and UARCs that have a history of providing objective technical support to the testing and management of complex systems, including IT systems. Nevertheless, as the new, even more complex, IT systems needed to implement such networked equipment as the Army's FCS and such cross-Service and cross-agency concepts as Maritime Domain Awareness in support of homeland security/defense proceed through development, I expect the Department's ability to manage and test such programs to be increasingly taxed, even with full use of the available FFRDCs and UARCs.

[Whereupon, at 4:13 p.m., the subcommittee adjourned.]

