HOW DO WE ENSURE A ROBUST FEDERAL RESPONSE TO A CATASTROPHIC EARTHQUAKE IN THE NEW MADRID REGION?

(109–49)

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BEFORE THE

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ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS AND
EMERGENCY MANAGEMENT

OF THE

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TRANSPORTATION AND
INFRASTRUCTURE
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CONTENTS

TESTIMONY

	Page
Burke, William C., Director, Illinois Emergency Management Agency	24
Pawlowski, Michael S., Federal Emergency Management Agency	7
Reynolds, Ronald, Director, Missouri Stste Emergency Management Agency	24
Schweig, Dr. Eugene ″Buddy″, U.S. Geological Survey	7
Talent, Hon. James, Former U.S. Senator from the State of Missouri	36
Van Uum, Betty, Assistant to the Chancellor, University of Missouri	1
Wilkinson, Jim, Central United States Earthquake Consortium	7

PREPARED STATEMENTS SUBMITTED BY WITNESSES

Burke, William C	41
Pawlowski, Michael S	43
Reynolds, Ronald	53
Schweig, Dr. Eugene ″Buddy″	58
Wilkinson, Jim	78

HOW DO WE ENSURE A ROBUST FEDERAL RESPONSE TO A CATASTROPHIC EARTHQUAKE IN THE NEW MADRID REGION?

Friday, February 24, 2006

HOUSE OF REPRESENTATIVES, SUBCOMMITTEE ON ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS AND EMERGENCY MANAGEMENT, COMMITTEE ON TRANSPORTATION & INFRASTRUCTURE, WASHINGTON, D.C.

The subcommittee met pursuant to call at 9:00 a.m. At University of Missouri, One University Boulevard, St. Louis, Missouri 63121, Bill Shuster [chairman of the subcommittee], presiding.

Mr. SHUSTER. The subcommittee will come to order. First I'd like to recognize Betty Van Uum from the University of Missouri. Betty.

TESTIMONY OF BETTY VAN UUM, ASSISTANT TO THE CHANCELLOR, UNIVERSITY OF MISSOURI

Ms. VAN UUM. Thank you, Mr. Shuster. I'm Betty Van Uum, the Chancellor's Assistant from the University of Missouri, and I bring you greetings on behalf of our administration. We think this is a great honor, Mr. Shuster, and we're very pleased to have a congressional hearing on our campus. It's a great learning experience for our kids and a great honor for us.

So we thank you very much for coming. We welcome your colleagues. We welcome all of you who are going to testify. I hope you have a productive morning. I only have one little announcement. We have coffee and donuts in the hall at the—in the room at the end of the hall. So if any of you need that to stay awake—no. If any of you would like that, please feel free to help yourself. And welcome.

Mr. SHUSTER. Thank you very much. Appreciate it. I really appreciate the University of Missouri for hosting us here today, and I've got to make sure I say this up front. When I look at the New Madrid line—I want to say Madrid, takes me back to my Spanish. So if I fall into calling it Madrid, please overlook that, and you know what I'm talking about.

I want to thank Mrs. Emerson for her work on this issue, including assembling a congressional working group for the New Madrid Seismatic Zone. I know she has a strong interest in ensuring that the Federal Government has learned the hard issues, hard lessons of Katrina, and is prepared to respond to a catastrophic earthquake in the New Madrid region. I welcome your participation here and thank you for having us.

I also want to thank Mr. Carnahan for his participation today. Both of you have shown a great deal of interest in the response to Hurricane Katrina and reforming the current emergency management system. I look forward to your contributions here today also.

I want to ask unanimous consent that Mrs. Emerson and Mr. Carnahan be permitted to sit with the subcommittee at today's hearing and offer testimony and ask questions. Without objections, so ordered.

I also want to thank our witnesses for being here today. We are meeting this morning to receive State and local input for improving emergency management capabilities and readiness at the Federal, State, and local levels.

Hurricane Katrina revealed problems in the emergency management system at all levels of government that have to be addressed—and you have a role in guiding the efforts to fix those problems—after all, you are the end users.

Unfortunately, this hasn't always been a collaborative process. Too often the Federal Government has failed to take into account your views. There has never been a greater need for your professional advice and expertise. We have to get this right, and we need your help to do it.

Like Hurricane Katrina, a catastrophic disaster in the New Madrid region would destroy the infrastructure, leave tens of thousands homeless and paralyze the region.

The New Madrid ″seismatic″ region stretches from Arkansas, Mississippi, north through Tennessee, Missouri, Kentucky, and Illinois. Since 1974, over 4,000 earthquakes, most too small to notice, have been recorded. The large metropolitan areas of Mississippi, Tennessee, and St. Louis, Missouri are located in the New Madrid region.

Because this region lacks widespread seismatic building codes, it is estimated that a 7.7 magnitude earthquake in the region will cause a direct economic loss of over 70 billion and the destruction of over 60 percent of the buildings in the region. Without reforms to the current emergency management system, we will have another disorganized Federal response like that in the gulf coast.

I was on the House Select Committee that investigated the response to Katrina, and our key findings for the Federal failure were the plan was flawed and the execution was ineffective. There was confusion over who had the authority to make decisions; response capabilities were deficient. In some places it took weeks before the Federal Government even arrived.

Is the New Madrid region prepared for a week or even longer? The conventional wisdom says you only need to be prepared for 72 hours. The House Select Committee report found the Federal response to Hurricane Katrina was slow because key decisions were made late, ineffectively, or not at all.

Today these decisions about how and when to engage Federal response assets are no longer in FEMA. They are with DHS. Also, DHS and FEMA responded to Katrina with a business-as-usual attitude. Business as usual means sitting back and waiting for the State to request assistance instead of proactively getting supplies into the field prior to the formal request. Business as usual does not work in a catastrophic disaster.

Following a catastrophic earthquake, the State and local government may need Federal assistance before there is a clear operating picture. If Federal assistance is needed immediately to save lives and prevent suffering, should the Federal Government wait for the State to follow protocol? Can the people of the New Madrid region wait for help while the Federal Government demands that the State follows bureaucratic procedures? We cannot afford to get it wrong again.

Additionally, the report found the government failed to effectively execute response plans and authorities. This failure can be attributed to an inadequate Federal disaster workforce.

At the time Katrina struck, FEMA had 500 vacancies, which is about 20 percent of their workforce. This is a small agency within a big Department. They cannot afford to be without that many people. Without the right number of the right people, this will never work.

If we are to successfully respond to a catastrophic earthquake, we must enhance State and local emergency management capacity.

One of the important lessons of Katrina is that the Federal Government's ability to respond to a catastrophic disaster is often dependent upon the quality of State and local disaster systems.

Disaster management is a shared responsibility, and State and local governments need to be able to handle most disasters on their own and be prepared to integrate Federal systems into their operations during larger events.

Despite spending over $10 billion on first responders since September 11th, it is very difficult to see where these dollars resulted in improved capabilities or readiness in our response to Hurricane Katrina.

The report found that inadequate capabilities and readiness resulted in the Federal response being overwhelmed in critical areas such as logistics, communications, situational awareness, and command and control. It is truly staggering that we have spent so much on preparedness and have so little to show for it. We have to do better.

These are systemic failures. Clearly, the system needs to be reformed. We are here today to hear about the specific challenges you face and your recommendations for reform at the Federal level.

At the end of the day, if the Federal Government fails to reform itself, then the State and local governments will have to face the next disaster and its consequences largely alone for the first week or longer. I look forward to hearing from you today. And thank you.

And I'd like to recognize Mr. Carnahan, if you have an opening statement.

Mr. CARNAHAN. Thank you Mr. Chairman. It's good to be here, and I want to thank you for your efforts and your leadership on this issue and to the committee on which I'm honored to serve.

I also want to recognize Congresswoman Emerson for her leadership in the Congress on this issue. She has been a very key figure in trying to get this to the attention of the people that are potentially harmed in this region but also in the Congress.

Also, my friend, Congressman Marion Berry from Arkansas who's also been very active in the earthquake preparedness caucus in the Congress.

I wanted to share something I learned, actually, this morning over coffee at home. I'd gotten my neighborhood newsletter from the Compton Heights neighborhood where I live in South St. Louis, and I learned a bit of earthquake trivia I had not known before.

And that is, back at the time of the last earthquake in 1812, that area of St. Louis was a common field, and there were settlements around it, but it was a common field used by the community. And it became one of the first Federal Government resettlement areas after the New Madrid earthquake.

So I did not realize that the very neighborhood that I lived in had been impacted in the aftermath of that 1812 earthquake.

I want to welcome those from out of town—particularly the Chairman—to St. Louis and also want to say that I think the time is especially appropriate that we assess how prepared the Federal Government is to respond to an earthquake in the New Madrid region.

As we have all seen and as we have discovered through a series of investigations, the level of preparedness and subsequent response to Hurricane Katrina was inadequate. FEMA and the Department of Homeland Security failed to protect the lives of the very citizens they were charged to protect. And I think we are all about trying to learn from the mistakes that were made so they don't happen in the future. We need to ensure that a similar response does not occur; Not if, but when, we are struck with the next damaging earthquake.

Unlike in 1812, when there were very few people that lived in this region, now over 75 million people live in 39 States directly vulnerable to a serious earthquake. Moreover, because my entire district is contained within the New Madrid Seismic Zone, every one of my constituents is subject to losing their homes, or worse, their lives, when an earthquake hits our region.

Much of our rich historic infrastructure that makes St. Louis such a great place to live—we have more historic brick homes and buildings than just about any region in the country—also makes us especially vulnerable.

Being prepared for natural disasters is one of the major functions of FEMA. However, since the subcommittee is in St. Louis today, I'd like to take just a short moment to address another one of FEMA's major functions: disaster recovery.

As the Chairman is aware, the St. Louis region was damaged in 1993 by a record Mississippi River flood, and now more than 12 years later, many parts of this area are still recovering. In particular, some of the recovering area in south St. Louis County has been placed under the jurisdiction of FEMA's Hazard Mitigation Grant Program.

Due to this placement, the land is deed restricted, and further development on it has been stalled. As a result, I'm seeking assistance to obtain an easement from FEMA to construct a priority transportation improvement project in south St. Louis County.

This project would facilitate thousands of jobs and revitalize a devastated area. Members of the Transportation Committee have been generous with their advice, from Chairman Young on down, and for that I am truly grateful.

Our country has faced many natural disasters, and as this hearing today proves, there is great potential for more. As such, we must begin to pay attention to FEMA's ability to facilitate long-term recovery. I ask the subcommittee to begin to consider this project in south St. Louis County.

Chairman Shuster, once again, thank you for your leadership. I look forward to working with you, Chairman Young, Ranking Member Oberstar and the entire subcommittee on these important issues.

And I also want to apologize. I do have to go to another meeting at 10:00, so I will step out in a few minutes. Thank you.

Mr. SHUSTER. We appreciate you being here today, and thank you for having us into your—well, I guess it's close to your district.

Mr. CARNAHAN. Right next door.

Mr. SHUSTER. Thank you very much for being here today. Now I'd like to recognize Ms. Emerson for an opening statement.

Mrs. EMERSON. Thank you, Mr. Chairman. I really want to thank you very much for coming to Missouri and to participate in what is a very important issue, critical issue for all of us in the State as well as all the contiguous States around us, and I'm very grateful to you.

I also want to thank my colleague, Russ Carnahan, for being part of our congressional working group, as well as for all the work that he has done and will be doing in the future to help us try to meet the expectations that we have in preparing for any kind of a natural disaster.

I also want to thank all of our witnesses for being here today and for the work that they continue to do. It isn't easy, but it is very, very necessary.

Having been to New Orleans, Mr. Chairman, 1 week after Hurricane Katrina befell that city, and then having been to New Orleans 2 weeks ago this week, I haven't seen a lot of difference. I mean, obviously, some of the cleanup has been done, but it's very, very disheartening to see that our agencies have not been working together at any level in the system.

And so this is very important, and I'm very proud of all of us in Missouri and all of the States contiguous to us who understand and realize that we have so much work to do to prepare for any kind of a natural disaster. And the fact that you are as interested as you are in it gives me great hope.

You know, having read at least the executive summary of the House Select Committee's report ″A Failure of Initiative,″ it is very dismaying and disheartening. And the fact that the report concluded that ″The preparation for and response to Hurricane Katrina show we are still an analog government in a digital age,″ is really something and so very, very true.

And I sit on the Homeland Security Subcommittee of the House Appropriations, and with all of the billions and billions, hundreds of billions of dollars that we have given to the Department of Homeland Security, it's really shocking to me that we still have failures along every step of the way.

I know that the Department has endeavored to modernize it's preparation, mitigation, and response capabilities through reorganization and restructuring, but I think almost everybody can agree

that more work still needs to be done to ensure that our emergency managers and first responders at all levels are properly equipped to handle the potentially catastrophic situation that could occur in Missouri, Illinois, and nearly half a dozen other States in event of a major earthquake in the New Madrid region.

And while I am pleased to note that many initiatives planned by FEMA, the U.S. Coast Guard, and other DHS agencies to address preparedness in our area, ″A Failure of Initiative″ also showed that recognition of potential danger does not equal preparedness for the danger.

We all saw the infamous Hurricane Pam model which obviously showed us many dangers of a major hurricane making landfall in the New Orleans area. But, really, relatively little was done to truly prepare the region for such a disaster. And we cannot, we must not make that same mistake twice in preparing for a New Madrid disaster.

As you may know, I, along with Senator Jim Talent, have requested a formal exercise that should include FEMA, Coast Guard, Corps of Engineers, Department of Defense, State and local law enforcement, health care volunteer agencies and response agencies.

Mr. Chairman, a major earthquake along the New Madrid fault could have a devastating effect on commerce and infrastructure in the entire Midwest. I am so grateful to you for holding this hearing today so that we can draw even more attention to this important issue, and I look forward to hearing the testimony of the witnesses.

Mr. SHUSTER. Thank you very much. I'd like to ask unanimous consent that all our witnesses' full statements be included in the record. Without objection, it's so ordered.

Since your written testimony has been made part of the record, the subcommittee would request that you limit your summary to 5 minutes.

We have three panels of witnesses today. On our first panel, we have three witnesses representing the various organizations involved in disaster planning from the New Madrid region:

Dr. Schweig and Mr. Wilkinson are going to provide a presentation that will demonstrate the likely consequences of a catastrophic earthquake in the New Madrid Seismic Zone.

We'll also hear from Mr. Pawlowski. Did I get that right? My Spanish is better than my Slavic.

Mr. PAWLOWSKI. Pawlowski.

Mr. SHUSTER. Pawlowski, who will discuss ongoing efforts to plan for an earthquake in the region. Just as the consequence of a Category 4 storm hitting New Orleans were well-known, I believe it is important that we fully understand what we could face here at a moment's notice.

Dr. Eugene Buddy Schweig is the U.S. Geological Survey—is with the U.S. Geological Survey, and Jim Wilkinson is the director of Central United States Earthquake Consortium.

Michael Pawlowski is the acting chief for Incident Response Section of the Response Division at the Federal Emergency Management Agency.

We'll hear from all of our witnesses on the panel before opening for questions.

TESTIMONY OF JIM WILKINSON, CENTRAL UNITED STATES EARTHQUAKE CONSORTIUM; DR. EUGENE ″BUDDY″ SCHWEIG, U.S. GEOLOGICAL SURVEY; AND MICHAEL S. PAWLOWSKI, FEDERAL EMERGENCY MANAGEMENT AGENCY

Mr. SHUSTER. Dr. Schweig, you may proceed.

Mr. SCHWEIG. Thank you, Mr. Chairman, and members of the committee, for this opportunity to appear before you to testify in the likelihood and potential effects of a worst-case catastrophic earthquake in the New Madrid region.

Now, it's certainly true there are fewer earthquakes in this part of the country than there are in California or in Alaska, but by some measures, the hazards that they pose are actually as great as many parts of California and Alaska.

And pardon me in advance. The projector has washed out some of these slides so they're a little difficult to see. The first thing I want to show you is this map here.

This is one of the earthquake hazards maps made by the U.S. Geological Survey; in fact, the one that feeds into many of the building codes that we have in use by many States and many municipalities.

The reddish colors are the higher hazards, and as you see, the New Madrid Seismic Zone in the Mississippi Valley there, and it's an area of hazard that, although much smaller than the large area of high hazard in the West, is still as high as many parts of California.

One thing that drives the fact that we consider the hazard high is the 1811 and '12 earthquakes. During that sequence we had three earthquakes that were between magnitudes 7.5 and 8, although, of course, there weren't any instruments around at the time, and then thousands of aftershocks following. And the earthquakes continue to this day, and those earthquakes are known as the New Madrid Seismic Zone.

During the, during the—excuse me. During the earthquakes, the effects were dramatic. Vast tracts of land sunk and were uplifted. This is the Reelfoot Lake in northwestern Tennessee. Other areas in Arkansas and Missouri were the same.

River banks caved all along the Mississippi River. Areas of the river were unnavigable for weeks. Islands disappeared; new islands formed. Landslides occurred along the bluffs all the way from northern Mississippi into southern Illinois and Kentucky.

One of the most dramatic things that remains today are the sand blows in southeastern Missouri. And these are areas of sand that erupted during the earthquakes. They stand out starkly against the Mississippi muds. They can be 100, 200 feet across, very dramatic and still visible today.

And they're important not just because they tell us about the earthquake, Because these are a phenomenon that is related to what's called liquefaction, and this happens during every almost large earthquake. You have strong shaking water pressure, increases in the sands that you have below the surface soils until the sand turns into a liquid, and the soil itself loses its ability to bear weight.

Many of you may remember the earthquake, the 1989 Loma Prieta Earthquake in San Francisco in which buildings in the ma-

rina district tilted and foundered into the muds. That was due to this phenomena of liquefaction. And it's a great hazard in this part of the world as I'll show you in a minute.

This is a little washed out, but it's just supposed to show a picture of one of these sand blows in a drainage ditch. And I just want to mention that they're not only a major hazard, but they've provided a key record of past earthquakes.

In fact, by studying these prehistoric sand blows, we've been able to show that the 1811–12 earthquakes were not just a one-time event. We've had similar earthquakes in 1450, 900 AD, and other ones as well.

And perhaps the most important thing is that not only do the earthquakes happen repeatedly through time, but each time we have an earthquake, they appear to be sequences, just like in 1811 and 12. Not one earthquake and its aftershocks, but sequences of many earthquakes in a row.

Another problem that we have that drives the high hazard is that earthquake waves travel much farther in this part of the country for the same size earthquake like shown here, the New Madrid Earthquake, as opposed to the similarly-sized 1906 San Francisco Earthquake. You often have around 20 times the area of damage in the central and eastern U.S. Than you do in the west due to the crust of the earth.

But we sort of have a double whammy because we have these Mississippi Valley sediments shown in the darker color there, and these Mississippi Valley sediments also amplify the shaking. So we have two causes for the shaking for the same size earthquake here to be much greater than it would out west. USGS research is focusing on understanding all these effects so they can be mitigated cost effectively.

One thing we're doing is we have the Advanced National Seismic System which provides realtime ground shaking, and it's focusing mainly on vulnerable urban areas, about 26 urban areas, including Memphis and St. Louis. There's about 35 of these new instruments already in place here.

We're also making urban scale hazard maps. We've completed a map in Memphis, Tennessee. We have just begun one in St. Louis, and we're working on another one in Evansville, Illinois—Evansville, Indiana.

We have community intensity maps where people, when they feel things from the earthquake, they can go onto the Internet, describe what they felt. It's very useful to us and makes them feel a part of the process as well, a very popular Web site.

And, of course, we also do our earthquake notification systems where we let people know what has happened as it's happening.

I just—now, this is very washed out, but I think I can still describe it. This is a scenario intensity map, shaking map, for just one magnitude 7.7 earthquake on that southernmost arm on the New Madrid Seismic Zone stretching from southeast Missouri into Arkansas.

And what this is showing is the amount of shaking you would expect from that earthquake. And this doesn't include the other earthquakes that would be expected to follow. And it ranges from that outer green color is light damage, and the central color around

the fault is heavy damage, significant damage even to well-built buildings. And you see it covers many, many States.

For the other earthquakes that would be expected to follow, that same pattern would exist, but we'd be shifted more towards the north.

I just want to mention again liquefaction and landslides. We tend to think of shaking, which is what that picture was showing, but liquefaction and landslides would be expected to cause failure of the bluffs, failure of Earth and levees, local loss of navigation on the rivers, failure of bridge supports and approaches over a very large region.

Roadways would often be impassable in the low-lying areas along, for example, I–55, rupture of pipelines and cables crossing the Mississippi River and other rivers and buried tanks floating to the surface; many of the same effects that you had in New Orleans, as a matter of fact.

And these are the kinds of things that would take the—would cause economic loss, not just to our area but much of the eastern United States.

What does such a scenario mean in terms of total losses? Well, this is a map done with FEMA's HAZUS program, with a little additional information done by the U.S. Geological Survey. It's a county-by-county estimation of losses.

The lighter green color towards the outside, each of those counties has about 25 million or less losses. Shelby County, Memphis, in southwestern Tennessee, there has about $19 billion in losses just from one earthquake, the southwesternmost arm. Total losses from one quake is about 70 billion, perhaps as high as 77 billion. Similar analyses on the other earthquakes that would be expected to follow also are in the $70 billion apiece range.

The last slide I want to show you is probabilities of large earthquakes in the next 50 years. This is important to know. By looking at the record of prehistoric earthquakes and smaller earthquakes we have now, and our understanding of how earthquakes work, we believe that a repeat of what happened in 1811 and '12, magnitude 7.5 to 8, a sequence, is about 10 percent in the next 50 years. And some people might consider that low. To me that seems actually quite high.

The probability of a magnitude 6 or greater, which could cause damage over a local area, is between 25 and 50 percent over the next 50 years.

And I believe that's the last slide I have, so thank you again, Mr. Chairman and Committee.

Mr. SHUSTER. Thank you very much, Doctor.

Next, Mr. Wilkinson, you may proceed.

Mr. WILKINSON. Thank you, Mr. Chairman and Committee for taking the time to come to the central U.S. And look at this issue. My name is Jim Wilkinson, and I'm going to try to cut this down. I've been told we have 5 minutes instead of 10, so I'm going to run through this pretty quick and try to leave time for questions.

First, I want to set the stage for why we're even looking at planning and preparedness in the central U.S., look at the regional approaches being taken to address this, and then finally conclude

with some of the things that are being done here in the central U.S.

First, as stated earlier, we had a very small population in the central U.S. Back in 1811–1812, and today that's not the case. We have about 11 million people at risk. Of that 11 million, approximately 7 million fall within the small rural areas of the central U.S. Most people think of St. Louis and Memphis as the major areas, and they are as concentrations of population, but we still have a significant number of people scattered out throughout our rural smaller areas which needs to be looked at.

As was pointed out just a moment ago, we have been looking at potential losses in the central U.S. CUSEC, along with FEMA and the USGS has done a loss estimation on the region looking at potential losses from a magnitude 7.7. This is based on a recommendation from USGS that that would be the magnitude we ought to use for our planning, and it's not the worst case.

We then did a modified Level I, which means we added some additional data to the model to give us a more robust view of the losses. And then we did model each of three segments of the seismic zone. And as was pointed out, this does not reflect the cumulative effect of the earthquakes. These are each individual effects.

There's a lengthy document that goes into all sorts of statistics about losses. I've just summarized it here looking at building, transportation, and utility losses. The totals for each of those three segments of the seismic zone looking at anywhere from 60—68 billion to 77 billion in losses on each of those three arms. And, again, this is available on our web site, and I have a hard copy to leave with you as well.

What's driving these losses is the fact that we do have a lot of these unreinforced masonry structures, as mentioned earlier, in the central U.S. We have a high percentage of buildings that just weren't built for seismic consideration, and only recently have building codes brought in the seismic issue. So basically, 1992–3, seismic considerations started showing up in the building codes. We've got a lot of buildings out there that just weren't built to resist the effects of earthquake.

We also haven't had a significant earthquake since 1895. We have had earthquakes that have caused limited damage throughout the region, but not on the scale that we expect to see in the magnitude 6 range, which means, again, we've got a very large inventory of vulnerable structures out there that are susceptible to damage.

And there's more pressing issues, unfortunately, that it's not being focused on the seismic hazards, and this hearing today is a good step in helping to bring that awareness to the issue.

So what is being done on the regional approach, regional hazard here in the central U.S. Is that we've taken a regional approach to this. Back in 1983, FEMA, along with the seven states that originally formed CUSEC, sat down and looked at the complications of dealing with a hazard that did affect all these States. And there wasn't a mechanism for addressing that, so we were formed. We're a nonprofit organization that was established to look at the issue and address the commonalities that these States share, at the

same time to augment the State earthquake programs of each of those States.

I have a board of directors made up of the seven Emergency Management Directors of their States; actually, it's eight now. Alabama was just added. We have nine associate States which surround those original States serving as a backup to those States.

The board of directors sets the policy for the organization, determines the direction we're going, the priorities for addressing the hazards; and then, day to day, we have earthquake program managers that carry out the work, putting on the workshops, activities that go on in each of your States.

We have a number of associations that are also umbrellaed under us which are very effective in helping us address the hazards. Our State Geologic Surveys, our State Transportation Task Force were all initiatives that were brought on by the board of directors in looking at this hazard and bringing their expertise to the table.

We also have four FEMA regions that we fall in, which adds to that complexity of dealing with this hazard when you have those overlaps of different jurisdictions and how they communicate and they interact with each other with these States.

My organization is very small. We have five staff persons, myself and one other work in the field, and then the rest are support. So, you know, it's a challenge there to address the needs of all those States when you have sort of a small organization.

Just to give you a graphic view of where we represent, blue states are the founding states; the light blue are the associates states; and there are three other consortia that are supported by FEMA that cover the western part of the U.S., the northeastern part of the U.S.; and then there's one in the Seattle area that looks at just the Cascadia region.

So pretty much every State is represented by a consortia. We enjoy a very strong working relationship with FEMA, and I think it has worked in the earthquake program and is something that we look forward to trying to continue.

Just to quickly summarize, we have four basic goals that we operate under: public awareness, which drives all the other three; mitigation, multistate planning, and the application of research. That's our founding goals which we have stuck with. It gives us a balanced approach to addressing this hazard, where we're not looking at just one area but all areas.

The States have adopted these same areas for their earthquake programs. I'm not going to read these to you, but it gives you some idea in each of those program areas what we are engaged in in working with the States.

And finally, some of the current activities we're involved with. This is not a complete list, obviously. We have earthquake program managers workshop coming up in which all of your State earthquake program managers are getting together and looking at the regional State issues. We've got training that's been going on. We were in Kentucky two weeks ago doing the ATC 20. We've been in Missouri quite a bit here lately, Arkansas, Kentucky, doing earthquake town hall meetings. Earthquake awareness week just concluded for these States.

So we're very active, and as you're about to hear, we're also engaged in catastrophic planning that's about to kick off with FEMA and the eight States. And we just wrapped up a week conference in Memphis looking at the Spills of National Significance exercise which will focus on the hazard and looking at testing these plans we've been working on currently.

Basically, we can't do this alone. It's a partnership approach. We have to have your help. We have to have the help of a private sector, all the State agencies, local and Federal, to make this work. It's a huge undertaking in addressing this hazard in the central U.S. The good news is we know what we need to do. It's prioritizing what we need to do and setting a course. Thank you.

Mr. SHUSTER. Thank you very much.

Mr. Pawlowski.

Mr. PAWLOWSKI. Good morning, Mr. Chairman and members of the committee. On behalf of the Federal Emergency Management Agency and the Department of Homeland Security, I would like to thank you very much for the opportunity to brief you on the catastrophic disaster readiness program for the New Madrid Seismic Zone.

My name is Mike Pawlowski. I'm the Instant Response Section Chief within the operations branch of the response division of FEMA.

We have a significant concern that there is a potential for a catastrophic earthquake, equivalent to those in the 1800's, centered on the New Madrid zone. I would like to begin by stating that DHS/FEMA has taken the lead on the Catastrophic Disaster Readiness Program for the New Madrid Seismic Zone.

This project is a cooperative multiFederal agency, multiState and local government, private sector and tribal nation effort that incorporates examination of the effects on the critical infrastructure.

This is a large-scale project involving the synchronization of efforts of a number of entities and their activities. FEMA's goal is to apply the results of the Catastrophic Disaster Readiness Program for the New Madrid Seismic Zone to earthquake planning efforts in other parts of the country.

The response division at FEMA is addressing and coordinating interagency and intergovernmental efforts in such areas as command and control, search and rescue, evacuation, emergency sheltering, hosting, transportation, address special needs populations, temporary medical control—medical care, access control, and reentry to impacted areas, commodity prestaging and distribution, donations and volunteer management, and working on other identified regional, State, local, or tribal nation concerns.

FEMA's Recovery Division is developing guidelines that would be used to assist host communities in planning for accommodating large numbers of the evacuees, mass care, temporary housing, and other long-term issues.

Obviously, in developing those guidelines, we will apply the lessons that we have learned over the last year from Hurricane Katrina and looking at the 125 recommendations made by the White House yesterday.

Our approach and assumption for this readiness effort is focused on a no-notice event, an earthquake, but the results of this initiative can also be applied to a no-notice terrorism event.

Our planning venues will present a wide range of intelligence sharing, commodity prestaging, resource deployment, special needs evacuation, transportation and routing, and address the critical infrastructure.

I'd like to point out that this would be a cooperative business, industry, and government partnership with many players involved from the Federal, State, local, tribal nation, and the private sector.

We recognize that there have already been some individual initiatives that have taken—that have been involved in doing prior planning in the New Madrid zone. For example, CUSEC has been involved in prior planning, the Spills of National Significance 2007 exercise is now ongoing as a cooperative interagency effort with FEMA, the U.S. Coast Guard.

The National Infrastructure Simulation and Analysis Center will be involved in this project as well as the Environmental Protection Agency, U.S. Department of Transportation, the U.S. Army Corps of Engineers, the Department of Defense NORTHCOM, Fifth Army North, and the American Petroleum Institute.

Other partners, such as the Department of Homeland Security Preparedness Directorate, are also going to be involved as we move forward. To assure overall coordination of the Catastrophic Readiness Program, an interagency, intergovernmental steering committee will be formed and is expected to be in place by late February.

A project of this magnitude requires synchronization of activities across government, across regions, across State and local government and tribal nations.

Our requirements to manage this project is to establish a Web portal for maintaining all the active in-process planning and information sharing. We will utilize the Homeland Security Information Network to accomplish this. The uniqueness of the New Madrid Seismic Zone poses many challenges for the Catastrophic Disaster Readiness Project.

We initially started coordinating this project with the States at a CUSEC, at the Central United States Earthquake Consortium meeting in December of last year in Gatlinburg, Tennessee. We have initiated planning with our regional interagency steering committee in February of this year. The project, as you know, involves eight States, four regions. A lot of synchronization, a lot of coordination will be required.

Our planning will examine extreme weather conditions such as flooding, snow and ice that could exacerbate the problems of the affected population. There is a variety of potential economic impacts from an event in the New Madrid Seismic Zone that require a strong business, industry, and government partnership which includes the critical infrastructure.

We know there is a historic precedent for such an event. If you were to analyze just a 10-day disruption of the local economies of the areas structurally damaged by a 1985—by an 1895 earthquake, due to the fallen power lines alone, the impact would be $50 billion but would not be centered specifically in the New Madrid region. Two thousand—two-thirds of that impact would affect the infra-

structure across the country. Commodity flows, pipeline, rail, highways, barges would be significantly affected.

How do we go—how do we expect to go about on this project? We have already coordinated with the States and CUSEC with a strategy to initiate a series of workshops within the area to do the planning that's required.

We expect to conduct workshops in two urban areas and one rural area. The two rural urban areas identified would be St. Louis and Memphis. The rural area would be Cairo, Illinois; Wickliffe, Kentucky; and Charleston, Missouri.

Potential impacts to be addressed at these workshops include command and control, saving lives, search and rescue, temporary medical care, access control reentry, business, industry, and government partnerships, private sector coordination, and the critical infrastructure.

We will conduct an overall assessment of the earthquake impact in the area, and we will address the social vulnerability, identify the social and economic consequences of both the short-term and long-term effect on the impacted area.

We have established a schedule for completing this Catastrophic Disaster Readiness Project. In the first quarter fiscal year 2006, we already established initial coordination on this project. By the end of this quarter, we will have established our steering committee, and by the third quarter of 2006, we will have established the workshop design team and specific scenarios and objectives to be accomplished in each of the workshops. In the fourth quarter of 2006, we will conduct preworkshop meetings and initiate functional workshops at the city level.

We will expect to have a complete regionwide coordinated response plan that integrates the effects of all the regions, States, all the Federal agencies to be in place by fiscal year 2007.

We will participate with the Spills of National Significance Exercise as part of this effort to assure that we have strong coordination among all the partners in this effort, and we will be able to address any other areas for improvement that may be identified as a result of conducting this exercise.

I will be glad to entertain questions at this point.

Mr. SHUSTER. Thank you very much, Mr. Pawlowski.

I'm going to recognize Mr. Carnahan first for questions, since he has to depart. Mr. Carnahan.

Mr. CARNAHAN. Thank you, Mr. Chairman, and thank you to the panel. I have really two brief questions. The first I want to ask, and I'll ask of the panel. I understand there's a historic cycle of how these earthquakes have happened in this region of the country, but can you talk to us a little bit about the science, the current science of monitoring and prediction of these cycles and what the better monitoring has done in terms of activity that might signal a quake coming?

Mr. SCHWEIG. Yeah. The U.S. Geological Survey working with various universities in the region, particularly St. Louis University and the University of Memphis have been supporting a seismic network in this region for quite a few years, actually, since the '70's, and that network has done a number of things for us.

First of all, it helps us locate much more exactly where the earthquakes have occurred and are likely to occur. We couldn't even see this pattern of earthquakes until the instruments were in.

The other thing, and I think this is one of the most critical things for preparedness and response, these instruments that we have in the ground are—they allow us, when we have a moderate earthquake in the region, they allow us to understand how buildings will shake in the case of a large earthquake.

So without these instruments, we would not have the ability to appropriately build buildings in the region, cost effectively build buildings in the region to withstand larger earthquakes.

Now, we're not using—although we'd all love to be able to predict earthquakes, that's not what we're generally using those instruments for. We're using the instruments to assess the hazard so that we can cost effectively prepare for earthquakes.

We consider right now, forecasting the likelihood of earthquakes and what they're likely to do, a much better use of funds than actually trying to predict them, although, of course, there's always background research going on, and we'd all love to be able to predict earthquakes.

Mr. CARNAHAN. Thank you. The other question I have is to the extent that you have worked with architects, engineers, and scientists and groups like the Transportation Infrastructure Security Partnership in developing industry standards for new buildings or retrofitting buildings and the type of incentives that could be put in place to help those be implemented in a better way.

Mr. WILKINSON. Well, we do work very closely with local and State building code officials in trying to get the improvement of the building codes. It's a very difficult situation because you're going—in this area, as I pointed out, we didn't have seismic codes until the early '90's. And, so, when you're going from something that's nothing to something, you've ultimately got cost issues involved with that.

The Memphis Shelby County area right now is dealing with that very issue, western Kentucky. So what we're trying to do is to generate these improvements in the codes so that we are reducing our vulnerability but at the same time trying to factor in the economic aspects of community development in the region and at the city and county levels so that, you know, we're not going backwards.

We're improving the situation but still helping the community be healthy economically as we address those very key issues about the cost of this because, as was pointed out in the science part of this presentation, there are some comparable measures to the California threat.

And whether or not our code should reflect a comparable code to what California is under or not is a debate that's going on right now. And we work very closely to try to address both sides of that issue because, you know, from a preparedness side, which I represent, you know, obviously, we're looking for the strongest, safest buildings we could have, but at the same time you've got to factor in the economics of all this.

Mr. CARNAHAN. Thank you very much. Thank you, Mr. Chairman.

Mr. SHUSTER. Thank you, Mr. Carnahan. Thanks for having us here today, and also we look forward to working with you on that situation you have out here in Missouri, and we'll be in touch. Thank you for coming.

I'd like to also now recognize Mrs. Emerson.

Mrs. EMERSON. Thank you, Mr. Chairman. I've got several questions, but Dr. Schweig, just let me ask you one question. It's a science question, too, just to follow up.

When you talk about the tendency for seismic events to occur in sequences, how does that—I mean, just because I don't understand it very well—how does this tendency complicate potential response and relief efforts in the region? And then a scientific question is, are those sequences likely to occur along the same epicenter?

Mr. SCHWEIG. Maybe I'll answer the latter part first because it's a science question. The—we're not really sure about whether they tend to always happen along the same parts of the New Madrid Seismic Zone, but the science seems to suggest they do.

By looking at the pattern of these prehistoric sand blows, we actually can see that they seem to line up in clusters in 1450 and 900 AD that are almost identical to what we see from 1811 and '12. That would suggest that these three arms of the seismic zone, that we really didn't have time to talk about, probably each go off, maybe not in the same order. We really can't tell that. But they each seem to go off each time.

And maybe Jim might better address the issue of response, but the things that are obvious to me are that if you know or if you strongly suspect that additional large events are going to be happening over the next days to weeks, that's going to strongly affect the kinds of structures that you're going to put people into, where you want to take them, where you want to evacuate them to, etc. I don't know if you have anything additional to say about that.

Mrs. EMERSON. OK.

Dr. Pawlowski, one of the shortcomings of Hurricane Pam was that the workshops had not been translated into operational procedures. How are you all going to make sure the planning translates into increased readiness and capabilities this time around.

Mr. PAWLOWSKI. Well, our objective is to review all the State plans, all the local plans to make sure there is synchronization across the board. We will have the opportunity to exercise them.

We will make sure that that, that those plans are coordinated with not only the local communities, the State communities, regionwide amongst the Federal agencies who would have a role to play, and all the external Federal agencies that would come out—come in providing assistance.

The procedures will have to be exercised, and through those exercises, we will be able to identify what are the strengths and what are the areas that need to be improved upon.

And we will use the reports that have been—the after-action reports from Katrina to guide us in making sure that we bring the best of the recommendations to help us in that matter.

Mrs. EMERSON. Will this have been the first earthquake exercise that FEMA has ever been involved in.

Mr. PAWLOWSKI. We've done catastrophic—we had an earthquake that was called Catastrophic 97, I believe, which we were involved

in. But this is a significantly larger effort because you're talking about an effort that's going to involve the eight States, the four regions coordinating, and also the other Federal agencies from the top down.

Mrs. EMERSON. OK. I do have a follow-up question to that that I want to ask. Is that all right, Mr. Chairman?

Mr. SHUSTER. Sure.

Mrs. EMERSON. And then I'm going to ask our State director the question as well. In preparing for these exercises and for the workshops, are you going to be requiring, if you will, major assessments, to have major assessments done of where you might place emergency equipment, and, like, you talked about commodity prestaging and that sort of thing, in areas that can withstand and/or in structures that can withstand, let's say, a Level 7 earthquake? You know, how do you determine all of that?

Mr. PAWLOWSKI. That's part of the planning that we will be doing.

Mrs. EMERSON. OK.

Mr. PAWLOWSKI. But we will also be looking at transportation requirements. If the infrastructure is disrupted—this week we met with a special transportation working group that's looking at the roadways through the system. We will be addressing the airports.

If you have roadways and you have bridges, which ones have been seismic—have been taken—have taken the seismic design into account so that they will be able to survive and provide you support for flowing commodities into and out of the region.

Mrs. EMERSON. OK. But just for an example, say I've got—I'm in a small town. Let's say I'm in Sikeston, Missouri, for example. That's a little north of where Charleston and where you're going to have one of the workshops. What happens if, you know, my public safety department, which is police and fire, and they have a brick building or a cinder block building in which all of, you know, all of our emergency, our ambulances and all of our emergency response vehicles are housed, are you going to be—are you going down to that detail in these assessments so that we would know that that is not a good prestaging area, for example, if it's in a cinder block building because we wouldn't be able to get at those emergency vehicles to get people out of their homes, etc.?

Mr. PAWLOWSKI. That would be our objective because we want to make sure that we have command and control and continuity of government, continuity of services.

Mrs. EMERSON. Right. So you will know down to the last building which, you know, which can or cannot be prepositioned with equipment or commodities or the like. Is that correct.

Mr. PAWLOWSKI. Our objective is to make sure we have communication with every community. Part of our problems with Katrina was losing communications capabilities and having a command and control infrastructure.

So our objective is to make sure when we look down to the lowest level as a result of this comprehensive planning effort that we do have a capability to communicate; that there is command and control down at the local level; that there is a facility that, either the facility there or some alternate facility, that local government can operate from.

Mrs. EMERSON. OK. I wasn't specifically talking about communications. I was talking about prestaging, whether it's water, commodities, whether it's ambulances, school buses, whatever you're going to do to get people out. You will be assessing those buildings, and that's the infrastructure, if you will, of where they would be housed.

Mr. PAWLOWSKI. Yes. In terms of temporary sheltering of population and commodities that you're addressing.

Mrs. EMERSON. And equipment to get people out and the ambulances and the like. So we will know all of that down to the local——

Mr. PAWLOWSKI. That is our objective.

Mrs. EMERSON. OK. I want to come back and ask a follow-up question. How are you going to make certain that all happens, and, you know, what is the accountability requirement that you will demand? Jim, do you want to answer that.

Mr. WILKINSON. Well, I'd like to add to that. On the mitigation side, which is a requirement at the State and local level, they are identifying those vulnerable areas in all those communities and, a part of the mitigation plan, to reduce that risk.

So there is a planning effort in all the communities to look at those structures and determine which ones are vulnerable so that mitigation dollars can come in to strengthen those buildings that may be vulnerable. So that detailed look is taking place, but it's on the mitigation side, not on the response preparedness side.

I guess the objective here is to make sure that mitigation and preparedness are talking and making sure the planning efforts are coming together like they should be, but that is happening through the mitigation directors.

Mrs. EMERSON. I don't think I'm articulating my question very well. Forgive me. I guess when you prestage emergency response, whether it's food, whether it's ambulances, whether it's buses to move people, whatever, is, obviously—well, I would hope that you take into consideration the place where you stage is not a vulnerable place, if you will. That's what I'm trying to say.

But, I guess, is there going to be one agency designated that is going to know all of this information, one data base of information so that everybody can talk to each other, or are we going to have split responsibilities in such a way that we can't have—can't know all of the things that we need to know to do in just one simple database?

Mr. WILKINSON. Well, I can tell you for the State of Tennessee, and I think in talking with Director Reynolds last night about Missouri, they are looking at specific sites to predeploy and store resources.

In Tennessee's case, they're looking as forward as they can get to the area before they start getting into the areas suspected to be impacted. So they are looking at, I guess what you're getting at, is a site in which things are predeployed, stationed, and ready to go in the event we have an earthquake. Again, I can't speak for the other States at this point, but I do know those two States are looking into that.

Mrs. EMERSON. Thanks. Thanks, Mr. Chairman.

Mr. PAWLOWSKI. I'd like to add to that by stating this is a cooperative local, State, and Federal effort. There will be local prestaging, State prestaging. The State will do its own planning in terms of what it needs to do, and we will be looking at what would be the requirement to support the State in that effort. So it has to be a coordinated look at sharing information, databases for logistical support.

Our objective is to get down to the detail. It's dependent upon how close we work with the States, and our objective is to work very closely to make sure that there is that connection from the bottom up.

Mrs. EMERSON. OK.

Mr. PAWLOWSKI. And we will be using the Homeland Security Information Network as the central portal where everybody will have access to the information, the plans, the locations for logistical support, prestaging of supplies and equipment.

It will be a significant coordination effort to make sure that that is managed properly, and we decided the best way to do that is using the Department of Homeland Security Information—Homeland Security Information Network portal set up for catastrophic disaster planning.

Mrs. EMERSON. So everybody will know the same thing.

Mr. PAWLOWSKI. Correct.

Mrs. EMERSON. Have you all determined yet whether, if there is a—is there a minimal or a maximum level? For example, if we have a 7.5 on the Richter scale earthquake, would that automatically prompt military involvement? Are we going to, you know, decide that because I noticed that, you know, yesterday Ms. Townsend said that, in response to Hurricane Katrina at certain levels we may have to have DOD take responsibility. Have you all made any kind of determinations with regard to that.

Mr. PAWLOWSKI. We are doing joint planning with NORTHCOM. NORTHCOM is a partner to this effort. They're participating in SONS '07. This bill is of National Significance, the '07 exercise, so this is a cooperative effort.

We will be looking now as we review the historical basis for—we will be coming up with different scenarios that need to be looked at from the standpoint of planning, reviewing the State plans, the local plans, the national response plans, what the responsibilities are of the Federal agencies, and how we would provide coordinated assistance in this effort. There is going to be an involvement in the military, yes.

Mrs. EMERSON. But it may well be after you've done all these that you would decide that, let's say we have a 7.5 or 8 Richter scale earthquake, that we might just call in the military immediately. I mean, is that a possible scenario? I'm not saying that is. Is that something you all would consider if everything else is, you know——

Mr. PAWLOWSKI. The Governor is responsible for his or her State, and if the local community determines by a request that they need assistance, they go to the State, and then the State, through the Governor, would determine what type of assistance the Governor wants to bring in under a Presidential disaster declaration.

Mrs. EMERSON. Thank you. Thanks, Mr. Chairman.

Mr. SHUSTER. Thank you. And my question, I think, follows up to Ms. Emerson's. I think you get an answer to what her question is if you held the exercise that she's requested. We had a Hurricane Pam exercise. We pretty much knew in New Orleans what was going to happen and probably what would be needed. We didn't learn the lesson from that exercise.

So my question is, she's requested an exercise here in the New Madrid region. What's the status of her request? Are we moving forward with doing an exercise? How far away are we from doing something?

Mr. PAWLOWSKI. Currently, we're coordinating, all the planning that we're doing will lead up to the Spills of National Significance exercise, but——

Mr. SHUSTER. When will that be, approximately?

Mr. PAWLOWSKI. That's in 2007, June of 2007. But in the meantime, we will be looking at all the individual plans. We've just initiated this effort.

Mr. SHUSTER. Right. Exactly. But I think that gets to the core of what she's asking. If you have that exercise, you're going to be able to see that, ″Oh, my goodness the State is going to be—not going to be overwhelmed where it's going to take a DOD response. It's going to take, you know, just other States coming in.″ Go ahead, Mr. Wilkinson.

Mr. WILKINSON. We are engaged in exercises on a smaller scale between now and '07 because each of these various work groups are looking at different parts, whether it's transportation, sheltering, evacuation, and testing that in a small way leading up to this monumental exercise which will involve, you know, all these four regions, the States, Federal Government.

So, you know, there's a big undertaking to pull something like that together. But that's not to say that other things aren't going on between now and then.

Mr. SHUSTER. Right. Yesterday in Los Angeles, Dr. Jones from the USGS said that a major earthquake in the Los Angeles, southern California, would cut off people's ability to drive out of that area unlike in North Ridge, I guess, when the earthquake was in '93 or '94. People drove 5 minutes, 10 minutes, and they could get water and things they needed. But southern California, it would be completely cut off, so you'd have millions of people trapped there.

A significant earthquake in this region, what would the scenario be? Would you cut people off from getting out, or would they be able to get out of the regions?

Mr. SCHWEIG. I think it's still necessary to do some more assessments on that. But I think even right now we know that some areas will be cut off. There are only a couple of the bridges crossing the Mississippi River. The highway bridges are prepared for the large catastrophic earthquake we're talking about. I believe most of the railroad bridges are not.

And then there's a problem. We were looking at a study a couple of weeks ago here that many bridges have been built that, smaller bridges with overpasses, built to modern standards and may themselves survive; but the approaches to those bridges may not survive. So they'll stand up, but you won't be able to get to them.

So I think that's a major issue in this part of the country that needs to be assessed further.

Mr. SHUSTER. In southern California, the San Andreas fault, virtually every highway, pipeline, rail line goes across it. So if you get the big one out there, there's only one way out, and that's north of Los Angeles.

The scenario here would be, I saw you have different sort of regions, different scenarios that would seem to me, and this is a question, but it would seem to me that you're not going to be cut off as you would in southern California. Is that——

Mr. SCHWEIG. Well, I think there's a good chance that you would be cut off in the sense that, at least in isolated communities, and I'm not saying anything about how big those communities are. But it's certainly possible that approaches in all directions to certain communities could be down. You can think of communities, you know, in southern Illinois that have the Ohio River on one side and the Mississippi on the other and then just one access out after that.

There's a lot of situations like that throughout the region that are somewhat analogous to what you have in Los Angeles.

Mr. SHUSTER. Do you have an estimate of how many people you might have to support for three weeks in the region?

Mr. SCHWEIG. I don't, no.

Mr. SHUSTER. Anybody? Mr. Wilkinson, you talked about public awareness, and I think that that was a problem in Katrina. A lot of people didn't heed the warnings. They said, ″Oh, we've been through this before. It's not that bad.″

What do you think public awareness is concerning the New Madrid fault line and the potential? Are people educated? Are they well aware of it, or is it still a long ways to go?

Mr. WILKINSON. Well, I think they're anecdotally where, you know, the 1811–1812, they talk about the river running backwards and some of the things that are, you know, sort of grandiose. But as far as the details and expectations of what would happen, I don't think they're aware as what they need to be.

We've been holding these earthquake town hall meetings, and we try to get a sense of the concerns that communities have with respect to earthquakes, and it's clear that more needs to be done you know, from our elected officials all the way down in understanding what we're up against.

You know, we've got an active program with our—we have a working group with our public information officers to help get information out to our schools, to our communities, working through our State earthquake program managers.

It's—as I mentioned in my presentation, we have these four goal areas that drive my organization. My board of Directors made public outreach and education our number one goal because that's really what's going to help improve loss reduction and preparedness if we really understand what we're up against.

Mr. SHUSTER. Is the media engaged, local media here, do you think?

Mr. WILKINSON. You know, I hate to say it, but hazards compete with each other, and the earthquake program nationally, as well as in the region, has not been a priority. It's been low. After Katrina, I had media that I've never seen before showing up on my doorstep

right there in the Memphis area where I'm headquartered saying, ″Well, we didn't even know you were here.″ I was thankful they found us. They seeked us out.

So there's a switch. There's a lot more focus happening and sort of perpetuating itself. I'm seeing a lot more interest from all sectors of society.

Mr. SHUSTER. Mr. Pawlowski, from FEMA's viewpoint, I think that New Orleans was the number one fear we had at FEMA on the national level in the Category 5, 4–5 hurricane, would overflow, that the levees wouldn't hold and would flood the city. Where does the New Madrid sort of fall on that scale of priorities, if you will?

Mr. PAWLOWSKI. New Madrid is at the top right now that we're concentrating our Catastrophic Disaster Readiness Program on New Madrid. That is our primary objective. We have concerns because of the fact of expectations. How fast can we provide assistance to meet the lifesaving requirements and property saving requirements for the public?

Realistically, an event such as New Madrid, you are going to have areas that are isolated, to address your concern. And how fast can we get in based upon the critical infrastructure being immobilized to move, to take care of special needs, medical evacuation, temporary housing and shelter of the people in the area until we can provide additional assistance?

It's going to be a monumental challenge. That's why we are working at it on a coordinated basis to bring as many partners together to address this, not just the government, but the private sector as well as local government, State government, and the Federal Government in a partnership.

Mr. SHUSTER. One last question. The Mississippi River. If we have a, say, 7.7, 8 earthquake. The Mississippi is important to the national economy. Is there going to be a period of time that you're not going to be able to navigate on the Mississippi, and how long do your models predict that to be?

Mr. WILKINSON. Well, I can answer part of that, and then Buddy Schweig can answer the rest of it. You know, as he pointed out, a lot of the bridges and infrastructure that cross the river weren't built for seismic. They're going to most likely be in the river.

Landsliding issues putting a lot of debris, trees, vegetation into the river, that's going to cause it to be unnavigable.

Charleston, Missouri; Wickliffe, Kentucky; and Cairo that we're looking at in the rural area, that was picked for two reasons. One, because they're rural, they have unique situations that need to be looked at in dealing with rural communities.

Secondly, it's the crossroads of the Ohio and the Mississippi Rivers. You've got major interstate systems going through there. We've got rail, industry. Everything that could go wrong as far as infrastructure is right there. So we're really trying to get a sense of what that impact would be because, from the commerce point of view, every day is millions of dollars lost, whether you're talking about the trucking, waterway, air.

And trying to reroute traffic or, in the case of river traffic, you don't reroute it. It's stuck. What can we do to address that? I mean, we don't expect things to move for some time because you don't just

pick a bridge up out of the river. So it could be, you know, months, years.

Mr. SHUSTER. And is it debris is going to be the main reason? I saw some of the those photographs where the banks spill over, and so you've only got very shallow water. Is that part of the problem?

Mr. WILKINSON. Debris is part of it, including bridges and infrastructure, pipelines that are in there. A big part of the exercise in '07 is looking at Spills of National Significance, and we've got major pipelines carrying oil and gas under the rivers. You know, there's no reason to think that if we rupture those that, literally, the rivers could be on fire.

So, you know, how we deal with those sorts of things are being folded into the scenario in the catastrophic planning and in trying to get a better picture of how we address this.

Mrs. EMERSON. Mr. Chairman, may I also respond to you if I could? And I do want to say that the bridge between Charleston, Wickliffe, that area would not be—would be gone. It's probably gone now, but we can't afford any new bridges across the Mississippi at least right now, I guess.

But just so you know, we have I70, I57, I40 that, in that whole area of very, very major highways. We have one seismically-designed bridge between St. Louis and Memphis. That's our new Bill Emerson bridge in Cape Girardeau, Missouri.

And, you know, obviously, a real question is what other kind of bridge would handle a 7 event other than the Emerson bridge, which we know will.

We also have six major pipelines from Houston and the gulf coast carrying fuel to the entire Midwest. River transportation would, I would assume, and I think you all could probably attest to this, that river transportation would be disrupted for weeks if not months because the bridges are going to be down. You've got to haul the bridges out. Obviously, you've got your river banks falling.

I mean, we had river barges—well, we had the barge industry and transportation up the Mississippi, or down the Mississippi for us, from New Orleans totally disrupted for several days after Hurricane Katrina, which had a huge impact negative ripple effect on our agricultural commodities, I mean, our agricultural economy because we couldn't send our recently harvested corn and other grains down the river. And, you know, just think of that was just, I mean, 5 to 8 days.

So I guess I just want to be certain that our study exercise is going to take all of this stuff into account. And, you know, the Missouri River, the Mississippi River, I mean, it's just really very critical to the economy of our region, and, really, of the whole country.

Mr. PAWLOWSKI. We're going to be looking at different scenarios, and we are going to be looking at the total infrastructure, as I said. And the points that you brought out are some of the, one of many points that we will be looking at and different concerns because whatever happens here will not only have an impact here, it will affect the whole nation. And that is our concern. That is why this is a priority planning event for us.

Mrs. EMERSON. Thank you.

Mr. SHUSTER. Thank you three gentlemen for appearing before us today. You certainly have shed light on the situation, and we need to make sure that we're—and I have been and need to urge other members of Congress to get out and talk to the folks in the regions around the country to learn about the various disasters that could occur.

Prior to my chairmanship of this committee, I didn't realize there was such a thing as the New Madrid fault line and the seriousness of it. So it's something that we need to—obviously, public awareness here is critical, but across the Nation.

So, again, thank you very much. The committee now calls before it the second panel for today's hearing, which is comprised of two officials. We'll take just a short, probably less than five-minute break so you guys get situated. So the committee stands in recess.

[Recess.]

Mr. SHUSTER. Committee will come to order. We'll have our second panel now today. Today joining us is Colonel Ron Reynolds, Director of the Missouri State Emergency Management Agency, and Mr. William Burke, Director of Illinois Emergency Management Agency and Chairman of the Central United States Earthquake Consortium.

Since your written testimony has been made part of the record, the subcommittee will request that all witnesses limit their oral testimony to 5 minutes. There will be time for questions after you have given your prepared remarks.

TESTIMONY OF RONALD REYNOLDS, DIRECTOR, MISSOURI STATE EMERGENCY MANAGEMENT AGENCY; AND WILLIAM C. BURKE, DIRECTOR, ILLINOIS EMERGENCY MANAGEMENT AGENCY

Mr. SHUSTER. I want to start off, probably the way I'll end up today is stressing the importance of having folks like you come before your Members of Congress, whether they're Senate or the House, to educate them on your needs.

Right now in Washington there's going to be a great debate, and it looks like the administration, the White House, and the Capitol are going to be different sides of the issue as to where we go after Katrina with FEMA and DHS. And it's absolutely critical that State and local voice is heard in Washington, and you need to engage your Members of Congress. If you don't, if something comes out of it that you're not pleased with, if you're not engaged, you can only blame yourselves because I think that as we move forward, you're the largest end user customer of FEMA, and we need to hear from you. And I have some concern that the States are not being heard as they should be as we go through this debate.

So, again, I'll encourage you to talk to your Senators, your Congressmen, Congresswomen around, around your States to educate them because Members of Congress, there are—the way Congress is set up, we sort of become knowledgeable in different areas. There are not many members of Congress that understand emergency management.

And prior to me becoming Chairman of the subcommittee, I had little knowledge, so I've learned a lot. But I've learned it from the

folks that are out in field, the first responders at the local level and the State emergency management people.

So if I'm going on and on about this, it's that important that you two gentleman understand that as we go forward.

So first, Colonel Reynolds, would you proceed?

Mr. Reynolds. Can I defer to my colleague from Illinois?

Mr. SHUSTER. Sure. Absolutely. Is it Burke or Burke?

Mr. Burke. It's Burke.

Mr. SHUSTER. Burke, OK. All right, Mr. Burke.

Mr. BURKE. Thank you, Mr. Chairman, members of the Committee. It's really my pleasure to come before you and talk about emergency management in Illinois and especially about the subject of the New Madrid earthquake fault. Maybe in questions, but perhaps in my remarks, also, I'll make some comments about the issue of DHS/FEMA, not from the standpoint of FEMA being standalone or should it be in DHS, but the importance that, that based on its missions, of course, that it has the proper structure and also the proper interoperability with the whole overall DHS structure, and that includes the military since there was mention of the military stepping in.

Before I get into kind of how we're approaching things in Illinois, I guess I'll continue down that track that the military is a great organization. I, too, am a retired Colonel, lieutenant Colonel in the military, but I, for one, would tell you that, unless there is the proper structures in place at the local and State level, that the military can't come in and start from zero and be a rescuer.

The military needs to be considered a resource that's available at the Federal level just like any other resource that's available and come in and become part of the unified command structure within the State and understand what has occurred and what are the priorities that the State wants to address and utilize their resource and expertise within that framework.

And in order to do that, they have to be an integral part of the unified command at the Federal level, whether that unified command is within the Homeland Security operations center or one of the other centers.

But I think one of the things that the members of Congress and the Senate need to be impressing upon DHS and the whole Federal structure is that, while their specific expertise can emanate from a particular operation center, that there has to be liaisons or the decision-makers in one central location so that the information that is being synthesized and the operational and logistic needs that they're going to be meeting, they're being met from a standpoint of, you know, informed knowledge; and that people are not trying to second-guess, and they understand what are the barriers or the problems that might occur based on what some other agency that has to assist them in that process and the coordination and also the linkage down to the States on what's going to occur.

I'll move on. In Illinois, we're taking the issue of earthquake preparedness very serious. While we, like many States, have a all-hazard approach, we have decided that earthquake has some unique aspects, and so I do have an earthquake preparedness officer that's working specifically with the, about 37 counties in southern Illinois

on the issue of earthquake and looking at things like communication, transportation issue, and mass care.

Fortunately for us in Illinois, kind of how we're structured is emergency management is not just my agency. We have a system, is the way I try to describe it, and it includes, you could say it's our Homeland Security System or you could say it's our emergency management system. Because we feel that we are getting two for one.

While we have utilized the Homeland Security dollars within the guidelines established by DHS, what we have done is create a capability around a strategy for the State of Illinois.

And since we have the city of Chicago, and that being a prime focal point for terrorism, what we've done is we have created a capability that what the city of Chicago has, in a smaller basis, that same capability is available in any locale within the State of Illinois.

We created 19 regions where—and we created, excuse me, not only interoperability, but mutual aid across all the First Responder disciplines. We have mutual aid with about 40,000 firemen, all the fire departments. We have mutual aid with about 30,000 law enforcement. We have all the public health agencies in the State with a mutual aid agreement, and we have all of the certified emergency management organizations in a mutual aid agreement. And then we have an independent Illinois Medical Emergency Response System, 1,200 doctors and nurses that are available.

When we declare a State disaster, while they have agreements, community, that are outside of the State, if we declare a State disaster, all these assets, if we ask for them, become a State asset to help us address a disaster.

We know it works. We sent 900 firemen and 105 pieces of equipment to Louisiana, 300 police officers. Fifty of our medical emergency people ran a field hospital in the Maravich Center and treated five, six thousand people. And that same system is what we would utilize within Illinois.

We have—because communication is so important, we have communication, mobile communication equipment that's satellite capable but would also allow for temporary cell phone and data transmission that we're putting in 13 different locations around the State, and then also 10 command vehicles to help us have command and control.

Next month I'm having my earthquake planner. We had an earthquake conference last year, and we had, in 2003 with NORTHCOM, an earthquake tabletop. But next month in my Region 8 in southern Illinois, on March 2nd and 3rd, we're going to do an earthquake conference; and then in Region 11 on the 7th and 8th of March; and Region 9, the 15th and 16th of March. And the issues that we're going over is transportation, mass care, and evacuation.

Since Katrina we're seriously looking at being able to establish sites, preidentified sites around the State, and especially in the earthquake area, but all around the State that we would use for mass shelter and mass care, plus also trying to identify sites for prestaging of equipment.

And the final thing I'll say, and then I'll be open to your questions. They mentioned about trying to identify what are some of the damages that would occur if we had an earthquake. We are working with the Mid America Earthquake Center, which is headquartered in the University of Illinois, but it's made up of about 12 universities from around the country that are working on various aspects of earthquake.

And they've developed an information model that also is compatible with hazards. And what I'm having them do in Illinois is do a risk assessment model for me where they're going to also add in the GIS data for local communities, and based on a certain seismic event, tell me what kind of damage I should expect in that community in terms of damage to the infrastructure.

But because they also are doing sociological and economic impact studies, provide data that would allow us to be able to interact with the local community and really tell them what they should expect. And this, we believe, will allow communities——

You know, it's more than about having a plan. It's about is your plan realistic? And, you know, that's even before you get into exercising and things of that nature. And, you know, does the resources necessary to implement that plan, do they marry up?

And so we feel that this will allow us to really more seriously get the attention of local communities, but also provide us data where we can start to work with private businesses about their emergency plans and what the impact potentially of an event might be and get away from is it going to be 50 years from now or 10 years from now? But we can then systematically, based on funding and other priorities, start to work toward building, you know, capabilities to mitigate against that event.

Subject to your questions, that's all I have right at the moment.

Mr. SHUSTER. Thank you, Mr. Burke.

Mr. Reynolds.

Mr. REYNOLDS. Mr. Chairman, thank you very much for allowing me to come here today, and the members. It gives us an opportunity to let you know where we stand and the direction we'd like to go.

Missouri State Emergency Management Operation Plan was developed in accordance with the FEMA State and local guidelines of 1996. It was in an all-hazards. We followed the National Incident Management System, NIMS, and the National Response Plan. During a catastrophic event, our incident commander would be our governor.

After Katrina, we took a look at our all-hazard plan, and we realized that, as far as the earthquake portion of the catastrophic event, we needed to take and make some changes. So what we did, we developed some working groups to look at several different areas, and I'll go over those. Direction and control, mass care and sheltering, critical sources and logistics, evacuations, health and medical, interoperability communication, hazardous material, donation management, and law enforcement, and special need population.

On those working groups, our subject met experts from the Federal level, State and local and nongovernmental representatives. Our volunteer organizations are very much involved on our work-

ing groups. What we're looking at is those things that need an immediate change, those things that we will exercise leading up to the SONS exercise.

One of the things that we're doing, also, is going around and trying to get input from the local jurisdiction. There's about 47 counties in the State. A little over less than half of our State could be impacted by a New Madrid 7.7 earthquake. We've been able to get information, the desires, concerns, and let them know the planning procedures that the State is planning.

We're also working very closely with our bordering States to the west. We feel very strongly that's where most of our support would come from, Iowa, Nebraska, and Kansas. So that's what we're looking at as far as prestaging things. Some of the things and evacuations may be evacuated all the way to Iowa, Kansas, so we are working and talking to those States about, you know, sheltering needs that we would have.

Earthquake, it's not like a hurricane. You know, you have no notice. It just happens. What we're looking at now is an automatic respond concept. It was something our National Guard had in their plan where, if it's a 6.4 or higher, we automatically, whether we get a phone call, once we know that's what it is, we are supposed to report to our EOC, stand that up, and we start coordinating with the local, and we ask—if they've been able to contact us.

Now, if they don't contact our EOC, we feel that probably there is, you know, communication breakdowns. A lot of the tires will go down, several tires. So we have an automatic response plan that we'll be initiating across the entire States.

Certain trigger points. One of the first things we will do is coordinate with the National Guard and our Missouri Department of Transportation to see what highways are available to, you know, in and out of the area.

We'll also look at the bridges, you know, if they can be used or if they're ones we need to get someone on the ground. We have fixed wing as well as rotary wing that will be used for this.

One of the things we're doing to get some input from our local jurisdiction, the 47 counties, we sent out a web-based survey to get input. And we wanted to know as far as the things that could help in the area, capacities that they can store supplies, you know, the accessibility in the building itself. We are asking that type of input. You know, we want some items that will cost money to be stored in the local communities and then have other areas outside the impacted area to make sure that we have areas that we have to evacuate, move people out of the area.

One of the things that we use very much is we have area coordinators. We have nine regions across the State, nine troop areas, and we have coordinators who will work with the local jurisdiction as far as their plans. We're training in the things that we need to get information on.

One of the things that we plan on using quite heavily is a structural assessment and eventual evaluation. There is a group of about 1,000 professional engineers and architects who volunteer their services and would be available to look at the structures, you know, after the earthquake. That helps us to know if those build-

ings would be able to keep people in them, or would you have to take and evacuate because they could not go back in them?

So we actually exercise with these folks. You know, we have a list of phone numbers. We activate their phone calls, and we make sure that they're still active. We're still growing that number. You know, we've used those before in hurricanes—not hurricanes, but tornados, and it was quite effective.

One of the other things that we use and we will continue, and that's our Community Emergency Response Teams, CERT teams. They're trained in first aid, triage, and light search and rescue. We have over 6,000 of those across the State. We're about fifth in the Nation as far as CERT teams in the country.

We talked about prepositioning earlier. The conversation was what we're looking at doing, and it will cost money, is prepositioning some items in the Midwest. If you look along the gulf coast, you've got items, critical items that's prepositioned there. We really think that something needs to be looked at with New Madrid. We don't have the three or four days when you have a hurricane coming to shore. With an earthquake, again, it just happens.

So we would encourage at any level, and someone listen to this, you know. We've talked to FEMA and will continue to talk to them because I think we're going to submit a formal request because we think it just makes sense to have items within our State within close proximity, if not in our State, where we could get those in very short notice.

Subject to your questions, that's all I have.

Mr. SHUSTER.Thank you very much, Colonel. As I mentioned earlier, I served on the Katrina committee, and there were really five general reform principles, and I just want to run over them and then try to get some of your feedback on what your thoughts are.

First was that catastrophic disasters require early Presidential involvement to engage Federal resources.

Second, large disasters require DOD support, and we're talking catastrophic disasters.

Three, disaster preparedness functions need to be closely integrated and managed with response functions. And today preparedness and response have been split at DHS.

Four, FEMA's essential response capabilities must be restored and enhanced, professional work force, a 21st century logistics capacity as well as communications that can survive and are interoperable.

And five, tension between the Nation's all-hazards emergency management system. And terrorism preparedness must be resolved.

A couple of those, the first one, the Presidential engagement in a catastrophic event; and I wanted to ask you, when you have a disaster in Illinois or Missouri, do you have a direct access to your Governor? There's nobody in between you? You're going to the Governor?

Mr. BURKE. Yes, sir.

Mr. SHUSTER. That's in both cases?

Mr. BURKE. Yes, sir.

Mr. SHUSTER. Which I think we saw in Katrina, that wasn't—that didn't happen the way it should have. Mr. Burke, you mentioned about DOD. I think we're in the same accord. DOD, although they did a great job in New Orleans, it still takes them time to move such a large animal, so to speak.

I think one of the real success stories down there were the EMACs and Florida. The National Guard of Florida came right up the coast right behind Katrina, so there were 6,500 Florida National Guardsmen in Mississippi as soon as the storm cleared out.

So what are your thoughts? Can you explain a little bit on DOD? I think they've got to be part of the solution.

Mr. BURKE. I don't want you to misunderstand, Congressman. Certainly, utilization of DOD should be absolutely considered in a major disaster. However, this thought or trend that seems to be out there saying that they should automatically come in and like take over, I certainly, as an Emergency Management Director, don't subscribe to that, and I think it's potentially asking for more chaos. As I indicated that the system is a bottom-up system, and DOD should be considered a resource.

And if there are failings at the lower level—and the reason we talk about unified command, that means that, like in my State, FEMA comes into—even for Katrina, while we were, you know, as part of EMAC, supporting specifically Louisiana quite a bit, but also Mississippi, well, a representative from regional FEMA came into my EOC to liaison and understand exactly what was taking place and what we were, you know, confronting.

So that if I asked them for some kind of assistance for information or something from the Federal side, they understood, you know, very well what it was, and then they would feed it back to their regional people, and I'd leave the answer to come back to me, you know, from that individual.

So all I'm saying is that if the military comes in, as far as I'm concerned, my Governor, we have a tag, and the National Guard is an integral part of our emergency preparedness operation. When we activate the EOC, there is a liaison that sits there, and any military assets we need, we give that mission to him. They fill the mission, and they control, you know, how they're going to fill the mission, but they have all the information as to if they need law enforcement assistance and routes or if they need medical emergency assistance. We know that because we collaborate. You know, everybody is there with all the information, so when it's passed on, they have that.

An example is I mentioned sending 900 firemen and 100-andsome pieces of equipment. This was by truck convoy. But the reason they were able to do that is, I mentioned mutual aid. These firemen not only have interoperable equipment, but they train together. The special teams train together, even though they come from disparate fire departments. They were from, I think, 105 different fire departments, like two, three, four people. But the command structure is because it was together.

So for the military, they need to be prepared to not think that they are the single rescuer but that they are a part of the resources that are going to, you know, come and help us get the situation under control and get to the recovery stage.

Mr. SHUSTER. Mr. Reynolds, or Colonel Reynolds, you were fairly critical of the FEMA when it came to all-hazards approach. I think you said somewhere in there something to the effect that they paid lip service to it. Can you talk a little bit more about that.

Mr. REYNOLDS. Well, what I would say is it wasn't FEMA. It would be the Homeland Security, would say, all-hazards.

Mr. SHUSTER. ODP.

Mr. REYNOLDS. Right. I mean, the definition, you know, it sounds, you know, OK, it should cover terrorists as well as man-made. Well, a good many opportunities, you know, I think what we could have had training or had something done using those dollars, that was not allowed because it didn't have a terrorist scenario with it. So I think those things are changing, and I think it's about time because I think we can better spend our dollars.

Mr. SHUSTER. That's changing, in your view, since Katrina.

Mr. REYNOLDS. That's right, sir.

Mr. SHUSTER. OK. Mrs. Emerson.

Mr. REYNOLDS. One thing I'd like to say, if I could.

Mr. SHUSTER. Sure.

Mr. REYNOLDS. In reference to, you know, what my colleague from Illinois. As far as the military, the military, they definitely have a role, but that role should be well coordinated with the State. You know, our Governor and our Adjutant General, they work hand in hand, we work hand in hand. And to say that we're going to send in NORTHCOM without a request in Missouri, we don't think that would ever be the case.

Mr. SHUSTER. Mrs. Emerson.

Mrs. EMERSON. Thank you, Mr. Chairman, Colonel Reynolds. In case of a catastrophic earthquake, do you at the State, as Director of the State Emergency Management Agency, feel like you have the one critical phone number that you need to call for more help, the one critical phone number to a, a department, an agency that would be responsive? Do you have that number right now?

Mr. REYNOLDS. And you're talking about outside the State.

Mrs. EMERSON. Yes, sir.

Mr. REYNOLDS. I do. And I have a very good working relationship with our Region 7 FEMA director, Mr. Dick Hainje. And we talk, you know, and I can tell you our relationship is, when something happens on the news, if it's something in Missouri he thinks is going to impact me, I get a phone call from him, or I can call him for something. So I do have that point of contact.

Mrs. EMERSON. You know, and to you, Mr. Burke, I mean really to both of you, the scary thing about an earthquake as compared to a hurricane is you don't quite know exactly what to anticipate. You know, I don't suppose that we even have a map with critical assets locations as well as transportation infrastructure that would be standing.

I mean, we don't even really know what would be standing at this point in time after a major earthquake, do we? Other than, obviously, I know that my new courthouse in Cape Girardeau, which is being built to earthquake specifications and the Emerson bridge, but I mean, we don't know that stuff yet, do we?

Mr. BURKE. Well, in Illinois—I'm sorry, Ms. Congresswoman.

Mrs. EMERSON. Yes.

Mr. BURKE. In Illinois, our Department of Transportation, as far as transportation, they've been retrofitting and looking at bridges for the last ten years.

The question specifically of what would still be standing is, you know, I don't want to uncategorically say that the bridges that have been retrofitted will absolutely be standing, but they feel, based on the steps that were taken—they've put cables so that spans won't drop, and they've actually wrapped piers so that the concrete and stuff won't crumble and add anchoring systems.

And so we, much like my counterpart, we have the engineers, volunteer engineers, but engineers from IDOT, they already have an inspection plan that they would implement to actually tell us what transportation systems would take, you know, what kind of loads.

If, in fact, a structure is still up, we would expect in very short order to be able to determine, like could we have one lane of traffic as opposed to four. And so, I mean, we certainly are looking at that and understand that to be something that's very important.

I mentioned the May Center, and I don't want to overstate their capability, but they are really now starting—they, meaning the consortium of the university, has come forth with outcomes that I think States can use and even independent universities or other universities in some of the CUSEC States are starting to do earthquake research.

The reason I did this mitigation contract with the May Center—which was funded by FEMA, mind you, after we told them what they were going to do and the capability of what could come out of it. As I mentioned, we hope to use this information because it's supposed to be able to tell us, once we put the GIS in there, it's a software simulation that, say, at 6.8 tell you what kind of damage would occur based on the geographic information in the system. So we should know what kind of damage to buildings, you know, also, what kind of economic impact for that particular community.

And as I mentioned, we want to use that so that communities really look at in terms of the damage that may occur, what is it that they need to be doing to kind of take care of themselves, say, even until we come, but for us to also understand at the State level, you know, how quickly even we may need to get there.

But we're looking at like, say, the State buying and prepositioning certain aspects and perish—nonperishables. We already prepositioned some medical supplies, but we may actually increase that so that in that community, we have, or within a region, we have a better response capability.

Right now, absent transportation systems totally breaking down, we can take the same capability that exists in the city of Chicago to anyplace in our State in 60 minutes. And, you know, that may be hampered. But we want to also look at, if we've got to bring in some of our stuff by air, you know, what potentially would be the locations for us to do that, you know, a helicopter. I mean this, just, like you say, is something that is unexpected.

So we're trying to, I guess, mind map as much as we can and try to think through what are some of the unexpected things we're going to have to confront.

Mrs. EMERSON. Thanks. Colonel Reynolds, let me just ask you a quick question. You mentioned in your opening remarks, we have 47 critical counties in the State of Missouri that would be impacted and that you had also sent a web-based survey to all those first responders.

Do we have communications equipment—or let me say it a different way. Does the first responder community in each of those 47 counties have communications equipment that can talk to you and vice-versa under any kind of a situation? And, obviously, Web-based probably is not going to be applicable at that point. Is there some way for us to talk on some interoperable system to everybody in the case of an emergency?

Mr. REYNOLDS. Right now what we have in place, ma'am, is a, there's, I think it's the number, I think it's around 37, 38 satellite phones throughout that area. We'll rely heavily on that. And we understand that's not a cure-all, you know, but right now we think that is our best opportunity.

Highway Patrol is the lead for it, interoperability communications in the State. What they're looking at is some different radios, and I'm not a radio person so I can't tell you those, but they're looking at those. Once, you know, we get those on board, you know, that would probably be, our probably the most surest way of communicating. But right now satellite phones is what we rely upon.

Mrs. EMERSON. So is that one per county.

Mr. REYNOLDS. I don't have the breakdown on that, ma'am. I can get that and get it to you.

Mrs. EMERSON. OK. I was just wondering because what happens if that one person or the one place in the county that that phone is housed, if you will, something happens to that person or that building?

Mr. REYNOLDS. I understand completely.

Mrs. EMERSON. So redundancy, I guess, is really critical.

Mr. REYNOLDS. Again, you know, there's a cost for every——

Mrs. EMERSON. I was just going to ask you.

Mr. REYNOLDS. I would like to think that we would be able to do that, but it's a very good situation, and we probably need to have more radios there because you don't have redundancy if there's one in the county or one in the city.

Mrs. EMERSON. Well, hopefully, once you all get your assessments completely done, you know, then we'll all lobby the State legislatures from both of our States to provide you all with the funds that you need to be prepared. That's the only thing we can do, I guess.

Mr. BURKE. I would have to comment because, as a matter of fact, my colleague's, some of his staff was over in my EOC discussing some of this with my folks. I'm sure they're going to make some of these recommendations back to Missouri.

What we did is we put—we offered 4,000 Starcom 21 radios to every emergency management or, actually, every first responder, including hospital organizations, in the State. Twenty-three accepted them. You know, a few organizations didn't.

But what that does is that gives us 800 megahertz radio capability by satellite so that they can at least communicate with our EOC. Now, within their own city or town, they'd have to use what

system they have. But at least we would have, at a central point, information where they could feed into our EOC.

I think that's something that probably all—I don't want to say all, but many States in the country, whether they've implemented it right at this point, are going to be looking at because that's like the kind of bottom line rudimentary system, 800 megahertz, that you would use if all else failed or in the interim while you were waiting.

In Illinois, one of the things we were able to do for Katrina, we have some mobile emergency communication equipment that will give you voice and data, and we did set that up down in Baton Rouge. But that, you know, you've got to transport that and get it——

Mrs. EMERSON. Sure.

Mr. BURKE. But in the interim, you know, we would look to 800 megahertz. But we're trying to make sure that all of the first responders and hospital organizations have at least one radio. Now we're providing one. They can buy more for, if they want to spread them around their organization if they think their current infrastructure is not enough.

Mrs. EMERSON. Thank you. Thank you, Mr. Chairman.

Mr. REYNOLDS. One thing. Amateur radios, ham radios, and we have a good many of those, and they actually exercise. They're volunteers throughout the regions, and they will use those. So I did forget about those. But, yeah, the ham radios, that is an old system, but it still works.

Mrs. EMERSON. Excellent. Thank you.

Mr. SHUSTER. My next question to ask you—first of all, how long have the two of you been involved with emergency management so I gauge how I ask this next question? You've been involved for——

Mr. BURKE. Three years. I've been the Director for 3years.

Mr. SHUSTER. Before that, did you have experience within emergency management.

Mr. BURKE. My military experience, but I was the regional administrator for general services, and I logistically supported a number of Presidential disasters.

Mr. SHUSTER. Mr. Reynolds.

Mr. REYNOLDS. Just a little over a year and prior military.

Mr. SHUSTER. OK. My question that I've been asking folks, but you guys don't have the—I was going to say 10 years ago, how did you think FEMA reacted, and how was it operated? So I guess my question, and I think Mr. Reynolds you've already answered you've seen a change since Katrina in FEMA.

What about you, Mr. Burke? In your 3 years have you seen, from FEMA—you would have started in emergency management just as FEMA came into DHS. What's your sense of how it's worked?

Mr. BURKE. My regional relationship, I think, is excellent, and my regional director is, you know, a very, very talented guy. I have no complaints about how that relationship has worked with them.

I would certainly say that the Federal response—and I won't put it on one organization—they asked us to be NIMS compliant, and it has certain principles; and they asked us to use unified command, and it has certainly principles. I think it's imperative for the

system to work that they also use unified command. And if they do that, I think that coordination will help us all to perform better.

Mr. SHUSTER. Do you have any more questions? I appreciate you being here today with us and educating us, and Colonel Reynolds, go ahead.

Mr. REYNOLDS. One thing that's not been discussed today, and we've talked, you know, about the four different regions of FEMA that kind of, it has operations control over the CUSEC States. Should there be a point, you know, a massive earthquake, there's a lot of competing resources, you know, from all the districts, you know, from all the regions.

I think as a Nation, we need to look at that, and it concerns me because I'm not sure if Region 5, 7 is competing, Region 3 to 5 competing. Tough decisions are going to have to be made for critical assets and resources.

Mr. SHUSTER. I think that's why it's so imperative that we have an exercise to be able to, if we have an 8, an earthquake 8 point on the Richter scale, what's going to happen? Where do things come from? Do we immediately call DOD in so they're on the move as soon as that hits because everybody has been overwhelmed.

So I think you're absolutely correct, and I think that that exercise goes a long way. I think Mr. Wilkinson said earlier there's other smaller exercises that are going on to try to piece that together, but that major exercise is critical, which we saw down in New Orleans, that Hurricane Pam exercise. It told us what was going to happen. Fortunately, the devastation, the loss of life wasn't as great as Pam said it was. But you're absolutely correct.

And I appreciate you being here today, and I'll say again, as I started off, it's absolutely critical that you engage your Members of Congress in the Senate or in the House to bring them up to speed on what your thoughts are on FEMA because if you don't, you're going to get something coming out of Washington that may not please you, may not work as well for you. So engage them. Let them know.

And structure is important. I think Mr. Burke said earlier, somebody said earlier, structure is important, whether it's in Homeland Security or outside. I don't know if that's as important at making sure that FEMA is not——

Mr. BURKE. Functions.

Mr. SHUSTER. Exactly. And I think Secretary Chertoff points out, rightly so, that the Coast Guard did a great job down in Katrina, but the Coast Guard, while it's housed in DHS, it's almost an autonomous, it's walled off from the competing for funds and manpower and those things. So the Coast Guard would have functioned well in DHS or outside of DHS because of its walled-off status.

So, again, thank you all very much for being here. Appreciate you sharing with us. The committee now calls before it its third panel, our esteemed colleague from the Senate, Senator Jim Talent, who, working with Congresswoman Emerson, has been leading the effort for a major preparedness exercise in the New Madrid Seismatic Zone. That would include State and local entities.

Mr. SHUSTER. Senator Talent, are you ready to launch?

TESTIMONY OF THE HON. JAMES TALENT, FORMER U.S. SENATOR FROM THE STATE OF MISSOURI

Senator TALENT. Sure. And I know your time is short, Mr. Chairman, and I have a statement, which I'm going to submit for the record, and with your permission I'll just offer some observations, I think, in addition to that statements. And I want to focus a little bit on the request that Congresswoman Emerson and I have made for this exercise because I think the various investigations and the results that have been published and that we've seen show, again, the need for an exercise of that kind.

And let me just make the point, particularly with regard to New Madrid, when we're dealing with so many jurisdictions and so many different States, it's essential that we do the smaller exercises that are necessary to—for us to know what, to know what capacity we have, where we have adequate search capacity, where we have infrastructure that is earthquake-ready, all the things that we need to know, and then to do the bigger exercise. And to do it, I think, confronting the real issue. Do a worst-case kind of scenario up and down that river and up and down that fault so that we know what it is we're confronting, and the problems are problems that come up in a dry run.

And let me just point out a couple areas where I feel that would really help deal with some of the problems that we saw in these investigations.

The first is the whole chain of command/leadership issue, which I think all of us had a gut sense was a problem with regard to Katrina. And it's easy to point fingers here and there.

I don't know whether the Incident Command System and the structure that's set up through that is adequate. I think it would be good to test it with this kind of a dry run. It is essential that everybody up and down the system, those at the top and the players near the bottom or on the ground, know who is in charge of various responsibilities, know what decisions they are supposed to be making, and then I would add this, feel comfortable or reasonably comfortable making those kinds of decisions.

You know, we don't send a general out in the field to command a division in battle without having put him or her through a number of scenarios where he's had to deal with the kinds of things that are likely to come up because we want him to understand and anticipate the decisions he has to make, and we want him to feel as comfortable as possible in that context.

And yet we have been in situations in the past where we've had political appointees or politically elected officers, and even in some cases people who are professionals in the area, tossed into situations where they know they have to make very, very difficult decisions. They've not been in that—you know, they've not been in any kind of a dry run or scenario like that before. And the natural instinct of human nature at that point is to temporize, is to not be aggressive in reaching out and making decisions because you're unfamiliar. You know a lot turns on the decision that you make.

Now, sometimes you get an actor who is such a natural leader, like Rudy Giuliani is, that, you know, he gets in that situation, and he just reaches out and decides it and does it. But, you know, I think it's human nature to sort of be a little bit tentative in those

kinds of decisions. And I think I just ask everybody to examine whether that isn't what happened in some of these places with Katrina.

Well, if we have this kind of a dry run that Congresswoman Emerson and I are talking about, and of course, we want it for the New Madrid situation, but other regions should identify the worst-case scenarios in their situation as well.

Not only is it going to give the, you know, the first responders the opportunity to run through what it is they're going to need, but it's going to give the decision-makers the opportunity to do that. They'll see the other decision-makers who are involved in this. They'll have presented to them the kinds of decisions that they have to make.

So if there aren't enough helicopters, they've thought about, well, where should the helicopters go first? And if there's an issue with search capability or interoperability, they've at least confronted those issues in some kind of a context.

So I think the whole leadership issue, which is, I think, underlying a lot of the problems we have, we can help resolve with this kind of a dry run. It's especially important in earthquake context because you have no warning.

I mean, some of this stuff, and this is an issue we all wonder about with Katrina, and the reports may differ, we could see that coming. At least you had several days where people should have been able to prepare. If we have an earthquake here, Mr. Chairman, as you know, you don't have time to prepare. That just hits. I mean, under some circumstances, you might get some idea if you have some preliminary type of quakes, but you certainly, you certainly can't count on that.

Another issue that we have been concerned about and that my testimony deals with is communications. And we're all concerned about the problem because we have, every different first responder department has different kinds of radios, analog, digital, and how do they communicate with each other?

Again, what we could do with a dry run or an exercise like this is explore what's happened in other States where they have set up interoperability type systems over the Internet, Internet protocol-type systems that permit people with different radios to communicate with each other by, in essence, going through this Internet protocol, which is a kind of switchboard.

That can be set up on a State-by-State basis and then a regional basis. The Department of Commerce is exploring that on a Federal level, and I want to push in that area. And I just would urge the subcommittee to look at what we can do to help deal with this interoperability of communications issue short of going out and buying everybody a new radio system that's interoperable.

I mean, that would be great, but the cost estimates I've seen are like $17- to $50 billion. And that's a lot of money to spend, and it's not going to happen overnight. So we've got to look at what we can do in terms of mutual aid bands and this sort of thing to help people communicate absent that.

I have some other points of a more minor nature I make regarding logistics, etc., in my statement, but really what I've seen from the reports just reinforces my sense that what we need to do here

and in other places is do the best we can to set this system up, analyze what our weaknesses are with regard to individual first responders or cities or localities, and then put together the kind of exercise that Congresswoman Emerson and I have asked for so that we can deal with these problems and anticipate as many of them as we can.

And, again, I will just relate to the military context. I'm on the Armed Services Committee, have been now for 12 years, and we would never throw military officers who are trained to make these kinds of decisions, we would never throw them in these circumstances without trying to anticipate and re-create these decision-making matrixes for them as much as we can. And we should not put our top leaders or our leaders on the ground in that circumstance, either, without having these exercises.

Mr. SHUSTER. Well, I think you hit the nail on the head. The exercise that we're talking about, the New Madrid exercise is critical. If we would have learned the lessons and had probably more experienced leadership at DHS at the time of Katrina, we would have taken those lessons and been prepared to push forward.

I think that not only can you have these major exercises, but I think what we've done in Homeland Security with FEMA is not having four pillars of emergency management, of preparedness, response, recovery, and mitigation. They've all got to be working together. We have two teams. You've got a practice team and a game team. If they're not one and the same, on game day they're not going to work together.

So I just have one question for you: If you've come to a conclusion or what your thoughts are on, do you think it's better if we leave FEMA in DHS or take it out? What are your general thoughts on that?

Senator TALENT. I always appreciated—I'll answer that question, Mr. Chairman, against the background of my experience with FEMA. And my first year in the Congress was in 1993 when we had the terrible floods of 1993, and my district suffered the biggest commercial disaster in that flood. I had a whole north half of one of my counties was under water. And I appreciated FEMA's response at all levels.

And I thought—the first time that I saw FEMA fail on a fundamental level was after it had been incorporated into the Department of Homeland Security. So speaking for myself, I'm going to exercise the benefit of the doubt in favor of going back to a scenario where they're outside.

Now, I know that works against the bureaucratic logic of having everybody in the same organization so they can work together. But I just don't know whether you can get an organization that is so big that it becomes more difficult to do that. That's how I would approach it.

But I'm open, and I don't know that we've reached a definitive conclusion, and if the Committee and the other committees of jurisdiction study it and reach the opposite conclusion, I'm not going to fight you to the death.

Mr. SHUSTER. I couldn't agree with you more. It's against the bureaucratic logic, but I think sometimes we need to get ourselves into more of a corporate or business logic. If you look at many of

our companies, they look at their core competencies and say, ″OK, we're building cars. We're not going to build tires. So let's put that into another company.″

And I think that's a situation where the core competencies of DHS should be terrorism prevention as law enforcement is really what they are. They're not an emergency response organization. So I appreciate your views on that.

Senator TALENT. Yeah, I think—I mean, it's pretty hard not to conclude, if you look at the experience that when FEMA was more or less on its own, it had a higher profile, a higher visibility, and probably got more attention across the board, and I never had a problem with how FEMA operated.

Now, in fairness, the Katrina thing was, disaster was, of course, bigger than they ever had to deal with, so we have to judge that as well. I just think—and I will add this, Mr. Chairman, the exact bureaucratic setup is probably less important than these other—I mean, probably either one will work if we do the other things that we need to do.

Mr. SHUSTER. Well, I don't know if you were here when I made the earlier statement. The Secretary points out, quite frequently, how well the Coast Guard responded. But the Coast Guard, although its within DHS, is really walled off from the competition, the funding. It's all appropriated and authorized, and they don't have to fight those battles of terrorism prevention versus emergency response. So, with that, Congresswoman Emerson.

Mrs. EMERSON. Thank you, Chairman. I will admit to agreeing with both of you on the issue of separating FEMA out. Anyway, Senator Talent, I just want to thank you so much for taking the lead in the United States Senate on the whole issue of what this region needs to do to prepare for an earthquake. And you're doing a great job, and I appreciate it more than you know.

My one question to you is—excuse me—if you had to prioritize, what single asset would be the most critical in response to a humanitarian crisis, whether it's earthquake-related one or widespread flooding, what would you identify as the critical component?

Senator TALENT. I'll give you a caveat. I have an answer to that, but I'm going to give you a caveat. I'm a big believer that in something like this, you don't—you want to believe what you see as you prepare rather than going in deciding you're going to see what you believe according to your preconceptions.

And the whole point of these exercises and the rest of it is so that we can see what the situation is, and that might very well change the answer I'm going to give you. OK?

But I think it's this whole communications situation, addressing it in some way, shape, or form. We have such good people involved in the first responder organizations. I mean, I am sure you all have seen this as you go out and about. I mean, if you're going to be a firefighter or a public health authority or a law enforcement person or in the National Guard or any of these areas, you probably have a vocation of wanting to help people in these circumstances.

They're ingenious. They have, most of them, a tradition of mutual aid and protection. If they can communicate with each other on the ground, it can make up for a lot of sins. I mean, they can jerry-rig things quickly if they can talk to each other.

So my feeling is that I don't know going in, without having these exercises, where the greatest need is, but if they can talk to each other, they may be able to jerry-rig a solution no matter where the need is. That's the reason I specifically mention interoperability. Where we can, we get the new equipment so they can talk directly; but where they can't, we have to have and concentrate on other solutions. That would be my answer subject to what we might find out in an exercise.

Mrs. EMERSON. I appreciate that. Thank you. Thank you, Mr. Chairman.

Mr. SHUSTER. Senator, do you have anything else to add?

Senator TALENT. No. Just to thank you, Mr. Chairman, for your interest in this whole subject and also for your interest in what we're struggling with here in the New Madrid fault, and I hope you will take back and talk to the other colleagues and tell them that this is a very significant potential disaster. There's no other way to put it.

And we don't know when that fault is going to go off. We know that eventually it's going to. And, you know, if it happens and we're not ready, it will be the absolute perfect storm. All these different States and jurisdictions, we have rivers in this context, I mean, it just—we have to be prepared.

I can't think of a potential disaster around the country that could be worse than this, so I appreciate your interest and hope you will communicate to the other colleagues about it.

Mr. SHUSTER. Well, I certainly will. Thank you for being here today, and I thank you for your leadership on bringing this to light. Additionally, I want to thank the other witnesses for being here today. Your discussion has been very informative and helpful.

And I would ask unanimous consent that the record of today's hearing remain open until such time as all the witnesses have provided answers to any questions that may be submitted in writing and unanimous consent that during such time as the record remains open, additional comments offered by individuals or groups may be included in the record of today's hearing. Without objection, so ordered.

If no one else has anything to add, then the subcommittee stands adjourned.

[Whereupon, at 11:15 a.m., the subcommittee was adjourned.]

William C. Burke/dr-Last printed 2/23/2006 3:26 PM

Talking Points: for IEMA Director, William C. Burke – February 24, 2006
Illinois Emergency Management Agency (IEMA)

History & Observations: Minor earthquakes occur in Illinois occasionally, and damaging quakes are much less frequent. In June 2004 a magnitude 4.2 earthquake occurred 70 miles w. southwest form Chicago and in June 1987 a magnitude 5.0 earthquake shook southeastern Illinois, causing minor damage in the Lawrenceville and Olney areas. In October 1895 (Halloween), an earthquake, centered just south of Illinois in Charleston, MO, had an estimated magnitude of 6.8 on the Richter scale. It was felt as far away as Pittsburgh, PA, New Orleans, LA and Topeka, KS. What follows is our response In the event of a catastrophic earthquake and to answer the question *"How Do We Ensure a Robust Federal Response to a Catastrophic Earthquake in the New Madrid Region?"*

The Illinois Emergency Management Agency (IEMA) is responsible for the coordination, management and administration of the state's emergency management and homeland security resources. IEMA operates a 24-hour communications center, a new state of the art State Emergency Operations Center (SEOC), and 24 agency worksites throughout Illinois. IEMA's Division of Nuclear Safety (DNS) monitors 11 nuclear power reactors at six nuclear power stations licensed to generate electricity in Illinois; inspects and escorts spent nuclear fuel shipments; and ensures public safety through inspection, licensing, accreditation and certification of medical professionals, radiation-producing equipment and facilities.

Potential Issues

- Pre Event
  - Earthquake Preparedness Planning, Public Awareness & Education
  - Mitigation (building codes, seismic standards in Regions in Illinois)
- Post Event
  - Earthquake safety (inspections, critical infrastructure)
  - Road routes and bridges
  - Communications to maintain command and control

- Disaster issues of quantitative estimates (casualties & economic impacts), functional loss (facilities & services) and secondary disasters (e.g. urban/rural fires, hazardous materials release and spills)

Illinois Capabilities

- IEMA is a multidisciplinary entity made up of responders from different jurisdictions and disciplines throughout Illinois (e.g. federal stakeholders, representatives of state, local and tribal incident management and responder organizations) for preparedness of the impact of a multi-state event.
- Illinois has IEMA Earthquake Response Plan. Our IEMA point of contact earthquake coordinator, Keith Chambers at 217-557-4771.
- Active Member of the Central United States Earthquake Consortium (CUSEC), Illinois also has a Earthquake Program Manager. Illinois's IDOT representative is the vice-Chairman of the CUSEC Transportation Task Force. We have a contract with the Mid-America Earthquake Center (MAE) to do hazard risk assessments in Southern Illinois (e.g. GIS data, social science research data and economic data) using an information systems model developed by MAE (a comprehensive Seismic Risk and Vulnerability Study for Illinois).
- All IEMA employees are NIMS compliant by the National Incident Management System (NIMS), standard command and management structure in incident management, mutual aid and resource management. Illinois has received full EMAP Accreditation through IEMA by the Emergency Management Accreditation Program, national standards in emergency preparedness.
- IEMA communications consist of low band radios, VHF encryption and digital capable, UHF Federal Band encryption/digital capable, high frequency single side band radios used to communicate with State system and Federal Government, line phone systems and fax lines with capabilities to connect to cell phones, satellite and radio portable tower(s).
- Earthquake Seminars are being conducted in each of the IEMA Regions in Southern Illinois (Region 8 – March 2-3 in Fairview Heights, Region 11 – March 7-8 in Marion, IL and Region 9 – March 15-16 in Effingham). Transportation, Mass Care and Evacuation.

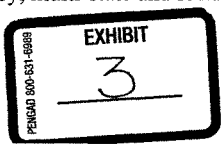
DHS/FEMA Catastrophic Disaster Readiness Program 2006
New Madrid Seismic Zone
Subcommittee On Economic Development, Public Buildings And Emergency Management

Michel S. Pawlowski
DHS/FEMA Incident Response Section Chief
Response Division

Good morning Mr. Chairman and members of the Committee. On behalf of the Federal Emergency Management Agency (FEMA) and the Department of Homeland Security (DHS), I would like to thank you for the opportunity to brief you on the Catastrophic Disaster Readiness Program (CDRP) for the New Madrid Seismic Zone (NMSZ). My name is Michel S. Pawlowski, and I am the Incident Response Section Chief, Operations Branch, Response Division, FEMA Headquarters, Washington, D.C.

In the winter of 1811-1812 and again in 1895, the central Mississippi Valley near New Madrid, Missouri, was struck by some of the most powerful earthquakes in US history. Even today, this region of the central United States has more earthquakes than any other part of the Nation east of the Rocky Mountains. We have a significant concern that there is the potential for a catastrophic earthquake equivalent to those in the 1800s centered on the NMSZ, a region about 50-miles wide and 150-miles long from Alabama through Illinois. A catastrophic earthquake in the central United States along the NMSZ could pose unprecedented problems and challenges.

I would like to begin by stating that DHS/FEMA has taken the lead on the CDRP for the NMSZ. This project is a cooperative multi-federal agency, multi-state and local



government, private sector and tribal nation effort that incorporate examination of effects on the critical infrastructure. This is a large scale project involving the synchronization of efforts of a number of entities and their activities. FEMA's goal is to apply the results of the CDRP for the NMSZ to earthquake planning efforts in other parts of the country. The Response Division at FEMA is addressing and coordinating interagency and intergovernmental efforts in such areas as command and control; search and rescue; evacuation; emergency sheltering; transportation; special needs populations; temporary medical care; access control and reentry to impacted areas; commodity pre-staging and distribution; donations and volunteer management; external affairs; debris removal; hazardous materials; and any other identified Regional, State, local, or Tribal Nation concerns. FEMA's Recovery Division is developing guidelines to assist host communities in planning for accommodating large numbers of evacuees, mass care, and temporary housing, and other long-term issues. Obviously in developing these guidelines we will apply the lessons learned in the last year and will be looking at the 125 recommendations made by the White House yesterday. Our approach and assumption for this readiness effort is focused on a no-notice event, such as a major earthquake. But the results of this initiative can also be applied to a no-notice terrorism event. Our planning venues will present a wide range of intelligence sharing, commodity pre-staging, resource deployment, special needs evacuation, transportation and routing, commodity tracking (total asset visibility), extended shelter and housing challenges, and address the critical infrastructure. This is a business, industry and government partnership with many players involved from the Federal, State, Local, Tribal Nation and private sector.

It is important to point out that this involves coordination and integration of several ongoing Federal catastrophic disaster planning efforts that are already initiated and coordinated with the States and include the following: the Central United States Earthquake Consortium (CUSEC); the Spills of National Significance 2007 (SONS07) Exercise, an interagency effort involving components of DHS (FEMA, U.S. Coast Guard (USCG), National Infrastructure Simulation and Analysis Center (NISAC))Environmental Protection Agency (EPA), U.S. Department of Transportation (DOT), ; the U.S. Army Corps of Engineers (USACE), Department of Defense Northern Command (NORTHCOM) 5th Army North (ANORTH), and the American Petroleum Institute. . Other partners such as the DHS Preparedness Directorate are being included as we move forward.

To assure overall coordination of this project, an Interagency/Intergovernmental Steering Committee is in the process of being formed and expected to be in place by late February. A project of this magnitude requires synchronization of activities. Requirements include maintaining a web-based portal for maintenance of all active and in-process planning and response documents in a central library location; communications and coordination with agencies, states, localities, non-government organizations (NGOs), CUSEC and others; and coordination of all reports, project timelines and deliverables, including development of a document tracking and archiving system (web-based). This will include coordination of multiple work teams. The project will be managed by FEMA's Response Division in coordination with FEMA's Recovery Division.

The uniqueness of the NMSZ poses many challenges for the CDRP project. FEMA initiated coordination on this project with Regions, States and CUSEC in December 2005 at a CUSEC meeting in Gatlinburg, Tennessee. On February 10, 2006, we initiated the first of several FEMA Regional Interagency Steering Committee (RISC) meetings to coordinate this project with the Federal agencies and States in FEMA's Region IV, headquartered in Atlanta, Georgia. The project involves a footprint of eight States that are directly involved (Alabama, Mississippi, Tennessee, Kentucky, Illinois, Indiana, Arkansas, and Missouri) and four FEMA Regions (Region IV – Atlanta, Georgia, Region V – Chicago, Illinois, Region VI – Denton, Texas, and Region VII – Kansas City, Missouri).

Our planning will examine extreme weather conditions such as flooding, snow and ice that could exacerbate problems in serving affected populations. There are a variety of potential economic impacts from an event in the NMSZ that require a strong business, industry and government partnership including critical infrastructure protection; coordination with tribal nations; mass evacuation; and hosting plans of evacuees for a no-notice event.

We know there is a historical precedent for a catastrophic event in the NMSZ. The consequences of an earthquake in the NMSZ similar to those that occurred in 1811, 1812 and 1895 would have a wide-ranging impact on the Nation's economy. A mere 10-day disruption to the local economies of the areas structurally damaged by the 1895 quake (e.g. due to fallen power lines) would have an estimated $50 billion impact, with 2/3 of this impact occurring outside of the affected region. Commodity flows (pipeline, rail, highway, barge) through the impacted area likely will be disrupted for a much longer

period: infrastructure for alternative modes of transportation will likely be damaged as well; alternative modes, even if available, will be resource constrained. Economic sectors impacted would include fuel (oil) for the upper Midwest ; coal supplies to generation plants in the Southeast and Midwest; food exports ; availability of critical transportation facilities (e.g. Memphis, Tennessee FEDEX Super Hub); and availability of routes for bringing in emergency services personnel from outside the area.

Our overall readiness goals for the NMSZ include the review, development, and revision of existing Federal/State/local plans and procedures to address areas for improvement; development of DHS/FEMA, DHS/Preparedness, and Interagency NMSZ-specific emergency operations plans and procedures to manage such a catastrophic event under the National Response Plan (NRP); development of coordinated guidelines for State and local governments to help them prepare mass evacuation and hosting plans; providing training in catastrophic disaster readiness; create a catastrophic disaster readiness toolbox which can serve as a template for catastrophic disaster planning across the nation; development of relationships and contacts; and creating an environment for **continued planning**. Our ultimate objective is an internal/external DHS multi-agency, multi-governmental synchronized/coordinated effort to address a NMSZ event. Exercises will be a key part of the CDRP.

How do we plan to accomplish our stated goals? Our planning process has already been initiated with the collection of previous plans, studies and reports. We will work with the States to secure locations for workshops; define revised response plan formats; and develop and produce support materials. We will develop scenarios using the FEMA Hazards US Multi-Hazard (HAZUS-MH) hazard loss estimation methodology

and other scientific input from the Mid-America Earthquake Center, the United States Geological Survey, and NISAC. We will conduct coordinated workshops with our partners and produce and distribute the results to our partners. We will utilize the Homeland Security Information Network (HSIN) web portal for information sharing and work product tracking, guidance development, etc.

The FEMA HAZUS-MH allows us to:

- IDENTIFY – vulnerable areas that may require planning considerations (e.g. land use or building code requirements);
- ASSESS – the level of readiness and preparedness to deal with a disaster before the disaster occurs;
- ESTIMATE – potential losses from specific hazard events, including pre-event, near real-time, and post-event report capability;
- DECIDE – on how to allocate resources for the most effective and efficient response and recovery; and,

PRIORITIZE – the mitigation measures that need to be implemented to reduce the risk of future losses.

The FEMA HAZUS-MH contains nationwide databases, including data in the NMSZ on:

- DEMOGRAPHICS – Population, employment, housing;
- BUILDING STOCK – Residential, commercial, industrial;
- ESSENTIAL FACILITIES – Hospitals, schools, police stations, fire stations;
- TRANSPORTATION – Highways, bridges, railways, tunnels, airports, ports & harbors, ferry facilities;

- UTILITIES – Waste water, potable water, oil, gas, electric power, communication facilities; and
- HIGH POTENTIAL LOSS FACILITIES – Dams & levees, nuclear facilities, hazardous materials sites, military installations.

We will conduct this initiative through a series of multi-level workshops: initial functional area-specific workshops; city/geographic area workshops in both urban and rural areas:

Urban

- St. Louis, MO
- Memphis, TN

Rural

- Cairo, IL
- Wickliff, KY
- Charleston, MO

and a final integration workshop.

Potential functional areas to be addressed at these workshops include the following: command and control; saving lives; search and rescue; temporary medical care; evacuation including medical/special needs; transportation/staging and distribution of critical resources; sheltering; hosting; schools; access control and reentry; power, water and ice distribution; volunteer and donations management; hazardous materials; external affairs; business, industry and government partnerships; private sector coordination; and critical infrastructure. Other functional areas will be addressed based

upon evaluations of existing State and local plans and interagency/intergovernmental collaboration.

Through this process, we will conduct **Pre-event analysis**: examine infrastructure disruptions; economic consequences; interdependence consequences disruptions (e.g. supply chain disruptions); conduct **Planning and Preparation:** plan for equipment/manpower utilization (including pre-positioning for predictable events); development and integration of Emergency Response Plans. This will enable us to have in place a capability for **Execution of Planning and Preparation:** execution of defined, pre-coordinated and synchronized actions on region wide Emergency Responses Plans. This will also enable us to conduct rapid **Post-Event Analyses:** refine consequence estimates based upon field information; identify priorities for restoration and recovery; identify infrastructure asset protection priorities in accordance with the DHS National Asset Database (NADB); and reallocate equipment/manpower to meet needs as they develop for accelerated **Post-Event Recovery and Restoration.**

We will conduct an overall assessment of an earthquake event in the area; examine the physical damage on building stock, transportation systems, infrastructure systems, and critical facilities. We will also examine the social vulnerability and identify the social and economic consequences both short and long term from a catastrophic earthquake.

SHORT TERM:

Housing – Emergency sheltering and mass care

Economic Loss – Direct damage, price increases, business interruption, supply disruption

Health – Casualties, fatalities, health care disruption

Social Disruption – Emergency supplies, family separation

Debris Removal – Emergency access, removal and disposition

Government – Continuity and re-establishment of government services

Critical Infrastructure-needs for protection, emergency power, and telecommunications

LONG TERM:

Housing – Relocation, displacement

Economic Loss – Fiscal impacts, business failure, job loss, reconstruction

Health – Psychological distress, chronic injury, re-establishment of healthcare infrastructure.

Social Disruption – Family stress, neighborhood disruption

Governments – Restoration of infrastructure and public facilities

We have established a schedule for completing the CDRP initiative. In the first quarter of FY 2006, we established initial coordination with the FEMA Regions and States. By the end of the second quarter of FY 2006, we will establish our steering committee, develop objectives with the stakeholders, and initiate the conduct of the historical research to support this project. Also, by the end of the second quarter we plan to conduct our overall Integration Workshop. During the third quarter of FY 2006, we will establish the workshop design team, and develop specific scenarios and objectives. In the fourth quarter of FY 2006, we will conduct pre-workshop meetings and initiate regional functional workshops at the city level. As part of the project we will participate

in the SONS 07 Exercise. The first draft of the NMSZ functional area plans will be completed in FY 2007.

Mr. Chairman, thank you for the opportunity to appear before you today. I am happy to answer any questions that you and Members of the Subcommittee may have...

Talking Points:

U.S. House of Representatives Committee on Transportation & Infrastructure

Subcommittee on Economic Development, Public Buildings, and Emergency Management

Feb 24, 2006

Catastrophic Planning:

Funding and staff will always be an issue when States are "asked" (required in order to receive federal funding) to expand existing programs and/or add new ones. Historically, FEMA and the States have taken an "all-hazards" approach to incident planning, and with a few exceptions (notably Hurricanes Katrina and Rita) this approach has worked quite well.

The Missouri State Emergency Operations Plan was developed in accordance with the FEMA State and Local Guide (SLG) 101 (Guide for All-Hazard Emergency Operations Planning – Sept 1996). Additionally, we have ensured that during annual updates the SEOP has met the changing requirements of the State and the additional requirements associated with the National Incident Management System (NIMS) and the National Response Plan (NRP).

We have just completed a review of our existing SEOP in conjunction with the U.S. Department of Homeland Security Nationwide Plan Review. This was a most productive and enlightening experience. While our SEOP meets ALL of the existing guidelines established by SLG 101, it does not have the level of detail outlined in the checklist used by the peer review team. FEMA must update the SLG 101 to reflect the level of detail desired in a State and/or local emergency operations plan.

The event that would have the most catastrophic impact on the State of Missouri would be a natural disaster, an earthquake along the New Madrid Seismic Zone. Scientists and other experts from the Central United States Earthquake Consortium (CUSEC) have predicted that there is a 25 – 40 % chance of a magnitude 6.0 or greater earthquake within the next 50 years and about a 7 – 10 % chance of a repeat of the 1811 – 1812 earthquakes (approx magnitude 7.5) in the same time period.

As a result of lessons learned from the Gulf Coast hurricanes, a catastrophic event planning group was formed to develop and test plans for the response to and recovery from a catastrophic earthquake along the New Madrid Seismic Zone. This group is composed of subject matter experts from Federal, State, Local, and Non-Governmental Organizations.

Lack of DHS Funding for the "All Hazards Approach" to Emergency Planning

The following was submitted to the Department of Homeland Security, Office of Domestic Preparedness in November 2005. This request was denied because the scenario did not include a "terrorism element." This was just another case of "ODP double-speak," ODP professes, "all hazards planning" throughout the FY2005 grant guidance but refuses to fund the "all hazards approach." We have asked permission on this same subject in early summer 2005, but were also turned down for the same reason. We thought that after all the Katrina related problems were brought to light our request would be approved would be approved

The State of Missouri requested permission to use FY2005 State Homeland Security Program grant funds to support Missouri's participation in the scheduled exercise to be conducted in the spring of 2007 called the U.S. Coast Guard Spill of National Significance (SONS) exercise. The scenario revolves around a large-scale earthquake incident within the New Madrid fault system. This scenario falls within the scope of one of the fifteen National Planning Scenarios addressed in Homeland Security Presidential Directive #8, within the FY2005 Homeland Security Grant Program guidance. The Department of Homeland Security is one of the major participants in the SONS exercise planning development.

Funds will be used for Missouri's participation in all aspect of the exercise (preplanning, conduct/participation and, after-action reporting. Additionally the state will need to review and update earthquake plans and contract with specialists in the earthquake arena to validate our planning process. The information provided below provides a brief overview of the exercise. Initial planning for this exercise started November 9, 2005 in St. Louis, Missouri.

This is a monumental under-taking that will include over 50 counties within the state of Missouri and numerous state agencies, federal agencies and other states that fall within the New Madrid Fault Zone. In light of current catastrophic events it is imperative that the State of Missouri continues not only participation in this exercise program, but continuation in the planning process for what is considered not only Missouri's "worst-case events but for all the other states in the Central Region.

SONS 2007 Exercise:

The Department of Homeland Security, U.S. Coast Guard, U.S. Environmental Protection Agency, Federal Emergency Management Agency, Central U.S. Earthquake Consortium (CUSEC), the American Petroleum Institute, the U.S. Army Corps of Engineers, and the Pipeline and Hazardous Materials Safety Administration/Department of Transportation are lead planners for developing the next SONS exercise in calendar year 2007 for the central United States.

In the event of a large-scale earthquake incident within the New Madrid fault system, located within the Mississippi River Valley, numerous emergency response issues would come into play. These include oil and hazardous substance releases from numerous pipelines, facilities, and barges; bridge failures; impacts to road, rail, and water transportation; potential flooding from levee failures; urban search and rescue; and population protection. Additionally, there are many overlapping authorities, jurisdictions, and competing response priorities, which highlight the need to use the National Response Plan (NRP) to streamline and coordinate federal response to the emergency. The Spill of National Significance 2007 Exercise (SONS 07) is being designed to improve the nation's preparedness for such a scenario.

Planning & Training Requirements:

The U.S. Department of Homeland Security and the Federal Emergency Management Agency continue to place an increasing number of "recommendations" (requirements) on state and local governments. It is becoming increasingly difficult to meet these new requirements and still conduct our day-to-day emergency management operations.

Some of the new requirements include:

> Compliance with the National Incident Management System (NIMS) and the National Response Plan (NRP).
>
> Training associated with the National Incident Management System (NIMS) and the National Response Plan (NRP).
>
> Catastrophic event planning.
>
> Participation in the National Incident Management Capability Assessment Tool.

Some of the pre-existing requirements include:

> Development and maintenance of state and local all-hazard emergency operations plans.
>
> Development and maintenance of state and local hazard mitigation plans.
>
> Development and participation in regional, state, and local exercises.
>
> Development and submission of various grant proposals.

All of these are, in one form or another, tied to funding. When volunteers administer local emergency management programs, it falls upon the state to provide assistance in meeting these requirements. With reduced budgets and staffing, the situation will quickly change from "When do you want this done?" to "What don't you want done?". That is not a choice that any of us want to make when it comes to life-safety issues.

Impact of Proposed Reduction in Emergency Management Performance Grant (EMPG) Funds:

If this cut is realized Missouri will be required to reduce our Emergency Management Performance Grant (EMPG) budget by approximately 8%. This would create a hardship on the agency, since the Missouri Emergency Management Agency (SEMA) is also the State Administering Agency for Homeland Security funding.

The SEMA in Missouri has 34 fulltime funded EMPG employees. We have had to use existing SEMA employees to manage Homeland Security funds in addition to their already heavy workload. Homeland Security funds provide administrative funds, but not for existing Public Safety Employees, so EMPG funded employees were given additional duties as assigned.

Employees in the Training, Fiscal, Planning, Operations sections, as well as our Director, and Deputy director have all had to work on homeland security issues as well as their current duties. This will require us to reduce our staff by at least four employees or cut the funding to Local Emergency management Agencies that participate in EMPG program.

This budget proposal will devastate state and local emergency management programs, and consequently the emergency response system. Without adequate numbers of state and local personnel to operate the emergency management system, the infrastructure used to prevent, prepare for, respond to and recover from all disasters and emergencies will be greatly reduced.

DHS timelines for the FY2006 grant submission:

Guideline for the FY2006 grant application was provided to the states in the online Grant Management System (GMS) after 7:00 pm on Friday, December 2, 2005. States were then given until March 2, 2006 to submit their applications. Under the previous rules for grant applications this was no problem and the expectations were practical. It should be noted that with the FY06 grant program guidance was over a thousand pages that had to be reviewed.

The FY2006 grant process is an entirely new program; it is based upon a baseline allocation, a risk-based allocation and a need-based allocation. States only have input on the needs based portion of the application. We are required to address the Interim National Preparedness Goal, seven National Priorities and eight target priority target capabilities. This required the states to conduct a Capability Review, a Program Capability and Enhancement Plan and an Investment Justification Plan, all within a ninety-day period. This required a "re-education of all personnel involved in process concerning Target Capabilities Lists, the National Goal and the National Priorities and the grant writing process. The short timelines are constantly a source of irritation between the states and DHS, they continue to call us "stakeholders," but refuse to listen to our inputs.

Grant evaluation criteria offered to the states in the grant guidance were limited to one paragraph on page 60/61. G&T Information Bulletin, No. 202, dated February 8, 2006 provided 15 additional pages of guidance to the states, four pages contained additional criteria for the evaluation process. While we appreciate the information but our over-bearing questions is, "why wasn't this provided with the grant application guidance on December 2, 2006 or at least with the DHS Technical Assistance provided to the State of Missouri on December 15, 2005?" This very important guidance is being provided to the states only 20 calendar days prior to submission to DHS is irresponsible.

The states are expected to stay within timelines but how can they do so without all the applicable information. Any successful grant writer will tell you that the grant is written to the evaluation criteria. Everything that has been developed over the last thirty days will have to be "flushed out" against the criteria. We will get it done, but you can only hammer people so long before they quit (this includes your professionals and volunteers at the state and local level), with this additional guidance the states should be given more time to submit applications.

Conclusion:

If the U.S. Department of Homeland Security and/or FEMA intend to place additional planning or operational requirements on the states, they must ensure that their funding programs complement those requirements and not hinder them.

STATEMENT OF
EUGENE SCHWEIG, GEOLOGIST
U.S. GEOLOGICAL SURVEY
U.S. DEPARTMENT OF THE INTERIOR
BEFORE THE
COMMITTEE ON TRANSPORTATION AND INFRASTRUCTURE
SUBCOMMITTEE ON ECONOMIC DEVELOPMENT, PUBLIC BUILDINGS, AND EMERGENCY MANAGEMENT
U.S. HOUSE OF REPRESENTATIVES
FEBRUARY 24, 2006

Thank you for this opportunity to appear before you and testify on the likelihood and potential effects of a worst-case catastrophic earthquake in the New Madrid region. Earthquakes in the central and eastern United States are less common than in California or Alaska, but the hazard they pose is by some measures equally as significant. This is because central and eastern U.S. earthquakes affect much larger areas than earthquakes of comparable-size in the west and because most of the buildings and infrastructure in the central and eastern U.S. were built without consideration of seismic shaking. In the winter of 1811 and 1812 three major earthquakes struck the lower Mississippi Valley, profoundly affecting the region and felt even along the eastern seaboard. Thousands of aftershocks followed and continued for decades. If those events were to recur today, significant structural damage to buildings would occur in at least eight states. Additionally, more frequent, modest earthquakes can be locally devastating.

Hurricane Katrina was a stark reminder of the long-lasting impact that catastrophic natural hazard events can have on this nation. The lessons of Katrina come in the wake of those from the devastating earthquake and tsunami off the coast of northern Sumatra in

December 2004, underscoring the risk posed by infrequent but nevertheless very real events. Last fall, rescue efforts following the Pakistan earthquake, which killed over 80,000 people in mountainous regions north of Islamabad, were hampered by earthquake-triggered landslides that left key roads impassable, a reminder of the hazard posed by secondary effects of such events.

At the U.S. Geological Survey (USGS), we strive to deliver the information and tools that emergency managers, public officials and citizens need to prevent natural hazards from becoming disasters. The USGS has the lead Federal responsibility under the Stafford Act (P.L. 93-288) to provide notification – including forecasts and warnings where possible – for earthquakes, volcanoes and landslides. The USGS is a partner in the National Earthquake Hazard Reduction Program (NEHRP), working with the Federal Emergency Management Agency (FEMA), National Institute of Standards and Technology, National Science Foundation, and state and local governments. Catastrophic geologic hazard events including earthquakes, volcanoes, and tsunamis pose a significant threat to this Nation. In developing the Advanced National Seismic System (ANSS), USGS identified 26 urban areas with moderate to high seismic hazard. Part of the ANSS development has focused on instrumenting these urban areas, to provide information for emergency responders, engineering performance studies, and long-term earthquake hazard assessments. Steps such as these can reduce the impact of geologic events and keep them from becoming disasters.

The USGS Earthquake Hazards Program provides the scientific information and knowledge necessary to reduce deaths, injuries, and economic losses from earthquakes by providing timely notifications of earthquake locations, size, and potential damage; regional and national assessments of earthquake hazards; and increased understanding of the cause of earthquakes and their effects. National and regional seismic hazard maps depict earthquake shaking hazards and are used for creating and updating the seismic design provisions of building codes used in the United States. The USGS has recently begun developing higher-resolution maps and other products that focus on the most vulnerable urban areas; in the central and eastern U.S. these include Memphis, St. Louis, Evansville, and Charleston. Comparable USGS efforts are also underway in the San Francisco Bay and Seattle areas.

A Catastrophic New Madrid Earthquake Scenario

In the winter of 1811 and 1812, three earthquakes with moment magnitudes between 7.5 and 8.0 struck the lower Mississippi Valley over a two-month period. Although few people lived in the region at the time, the effects on the landscape remain clear 200 years later. Studies of the geologic record show that similar sequences of major earthquakes have happened previously, at least twice before about 1450 and 900 AD.

An earthquake with moment magnitude of 7.5 or greater would cause significant structural damage to buildings would occur in at least eight states. Lifelines crossing the region, including highways, bridges, and oil and gas pipelines leading to the northeastern

U.S. would be severely damaged, particularly in the Mississippi Valley. If the earthquakes were to occur when the Ohio and Mississippi Rivers were high, loss of levees is likely along with flooding of low-lying communities. The City of Memphis, with over 1 million people in its metropolitan area, would be the most affected urban center. Memphis has an aging infrastructure and many of its large buildings, including unreinforced schools and fire and police stations, are particularly fragile when subjected to severe ground shaking. Very few buildings were built using modern building codes that have some provision for seismic-resistant design.

Landslides occurred along the bluffs from Mississippi to Kentucky in connection with the 1811 and 1812 Mississippi Valley earthquake events. Today a repeat event could be expected to result in a similar scenario for downtown Memphis. At least one highway and one railroad bridge crossing the Mississippi River are unlikely to survive a major New Madrid earthquake and many old overpasses would likely collapse. A significant hazard in the New Madrid region is a type of soil failure called liquefaction, which in 1811 and 1812 affected a region from south of Memphis to St. Louis. Liquefaction causes soil to flow and form deep cracks that may make roadways in the Mississippi Valley of Arkansas and Missouri (such as I-55) impassible. The liquefaction can cause flooding of fields and roads with water, sand, and mud, disrupting agriculture for an extended period of time. Liquefaction and failure of levees and riverbanks could make the Mississippi River unnavigable - possibly for many weeks. Although Memphis is likely to be the focus of major damage in the region, St. Louis, Little Rock and many small and medium-sized cities would also sustain damage.

One characteristic of New Madrid earthquakes is particularly important to highlight. In 1811 and 1812 there was a sequence of large earthquakes within a three month period as opposed to a single large earthquake event. Geologic evidence suggests that such sequences of major earthquakes are characteristic of the region. This means that during recovery efforts, earthquakes as strong as the first shock can be expected to occur following the initial shock and must be considered when deciding where to shelter people and when to start rebuilding.

The USGS estimates that there is about a 10% chance of a major New Madrid earthquake occurring in the next 50 years. Additionally, the occurrence of a moderate-sized earthquake located in close proximity to urban centers like Memphis or St. Louis could be equally devastating locally. The USGS estimates the chances of a magnitude 6.0 or larger earthquake occurring in the New Madrid region in the next 50 years is 25-40%. Results from a recent regional-scale loss estimation study by FEMA suggest immediate losses from just one M7.7 New Madrid earthquake would total between $68 and $77 billion. However, additional studies will be required to assess potential losses from multiple earthquakes and to provide such assessments at scales appropriate for mitigation and response planning within the most vulnerable urban areas.

Preventing Disasters

Society's actions before natural hazard events will determine the magnitude of the losses. Science can tell us the likely consequences of a repeat New Madrid earthquake sequence. That information can be used to reduce the vulnerability of lifelines, retrofit critical structures, improve monitoring systems, develop scenarios, and educate our citizens.

- **Lifelines**. We can reduce the vulnerability of our lifelines by adopting fault-crossing technologies that allow the fault to move without rupturing the pipelines and other transportation systems, such as was used to prevent damage to the Alaska Pipeline during the 7.9 magnitude 2002 Denali earthquake. Although much of the Mississippi Valley is rural, many major pipelines traverse the region carrying needed resources to more populated urban centers nationwide.
- **Retrofitting**. Throughout the New Madrid seismic zone, there are numerous unreinforced masonry buildings that are particularly vulnerable to earthquake shaking. Recent seismic retrofits of two major highway bridges in Memphis and Cape Girardeau, including installation of seismic instrumentation to provide performance data, represent important steps in reducing our vulnerability.
- **Rapid information systems.** Modern seismic monitoring systems can provide information about the strong shaking and probable damage within minutes to support decisions by emergency responders. In some cases, information about the probability of shaking can be delivered before the shaking begins. The USGS supports networks operated by the University of Memphis and St. Louis University, which augment the national network and are crucial components of the Advanced National Seismic System (ANSS) being developed to provide more robust and reliable earthquake

reporting for urban areas. In the New Madrid region robust, real-time, automated earthquake notification now is standard and products that have proven invaluable in western US earthquake responses are being tested (e.g., 'ShakeMaps', automatically generated, instrumental maps of shaking intensity).

- **Accurate scenarios.** An integrated picture of what will happen in a future earthquake event from rupture on the fault to shaking and damage of buildings and infrastructure is needed. To chart the road to full recovery from such an event there is a need to study and plan for the response at all levels including emergency response. Such analysis requires research on all aspects of the earthquake process, including: mapping the near-surface geology in the urban region; determining the location and geometry of all hazardous faults; measuring the seismic wave speed in near-surface materials; and deploying Advanced National Seismic System (ANSS) instruments in the ground to quantify the way earthquake waves travel in the region, and in key engineered structures to better predict how they will respond to severe shaking. These results would provide a complete picture of where mitigation would do the most good. Complete scientific analysis reduces uncertainty and further engineering evaluation will help reveal the actual level of vulnerability in our built environment and help prioritize retrofitting. The USGS conducts and sponsors research so that it can provide credible scenarios and other products for its partners in other Federal, State, and local agencies and the private sector. Activities in the central and eastern U.S. are particularly closely coordinated with those of FEMA's sponsored Central United States Earthquake Consortium, and the state geological surveys in the region.

- **Education.** Our citizens will eventually be the true first responders to the next disaster. They need to be educated on the likely consequences of earthquakes, how to recognize a safe building, the importance of retrofitting and how to respond safely. In particular, education is the only viable approach to encourage the securing of contents of buildings. Damage to contents caused $12 billion of the $40 billion losses in the 1994 Northridge earthquake that struck southern California.

Natural hazard events during the past year underscore the need for timely, relevant scientific information. USGS efforts in hazards monitoring and long-term data and information collection from past and present hazard events is not simply a scientific research endeavor - - it is a matter of public safety.

Mr. Chairman, thank you for the opportunity to appear before you today. I am happy to answer any questions that you and Members of the Subcommittee may have.

USGS
science for a changing world

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires

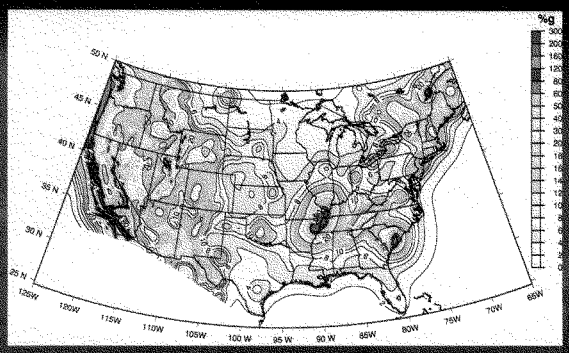
Earthquake Hazard in the New Madrid Region of the Central United States

Eugene Schweig
U.S. Geological Survey
Memphis

U.S. Department of the Interior
U.S. Geological Survey

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires

By some measures, the hazard in the New Madrid region equals that in California.

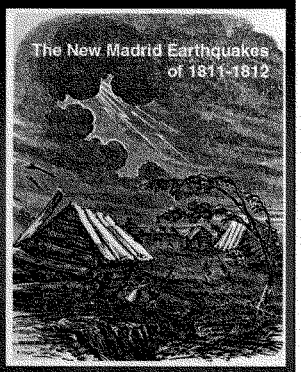


USGS

National Seismic Hazard Map

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires

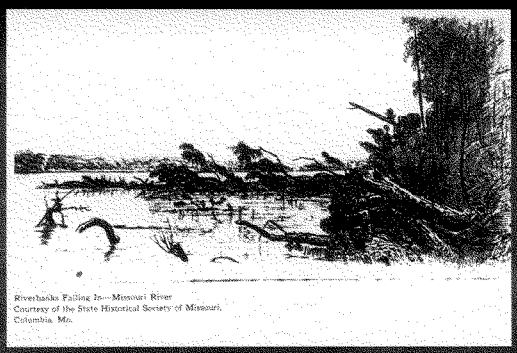
1811-1812 three earthquakes, magnitude 7.5-8.0 struck the New Madrid region; Thousands of aftershocks followed



USGS

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires

Riverbanks caved.



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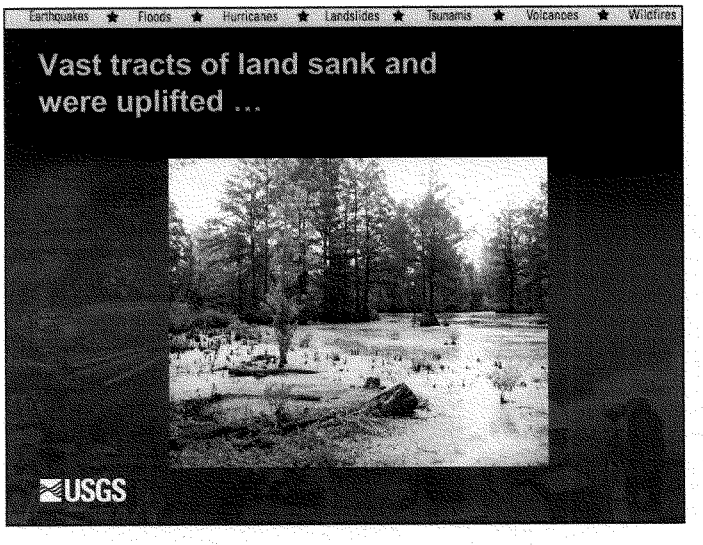
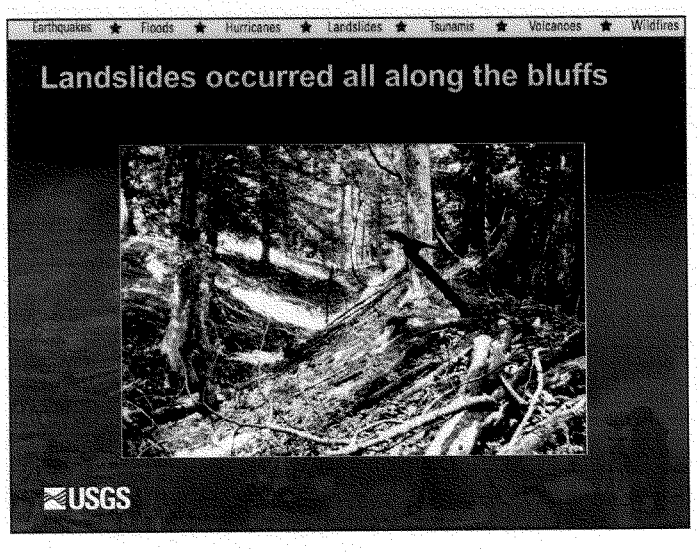
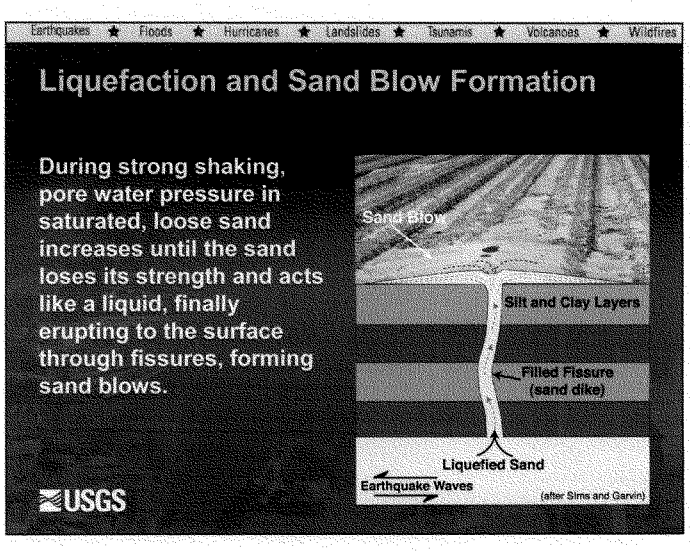
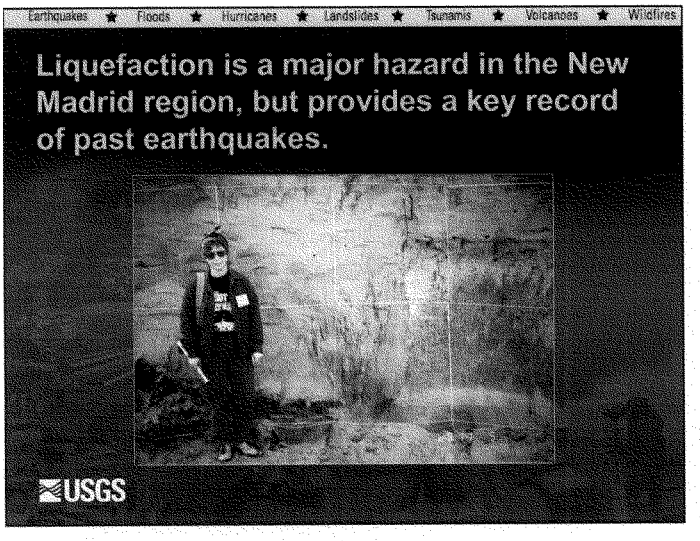
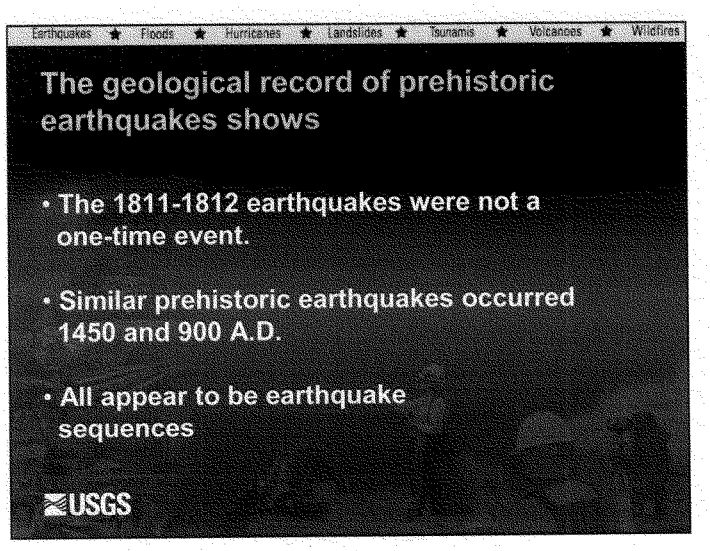

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
Vast tracts of land sank and were uplifted …
USGS

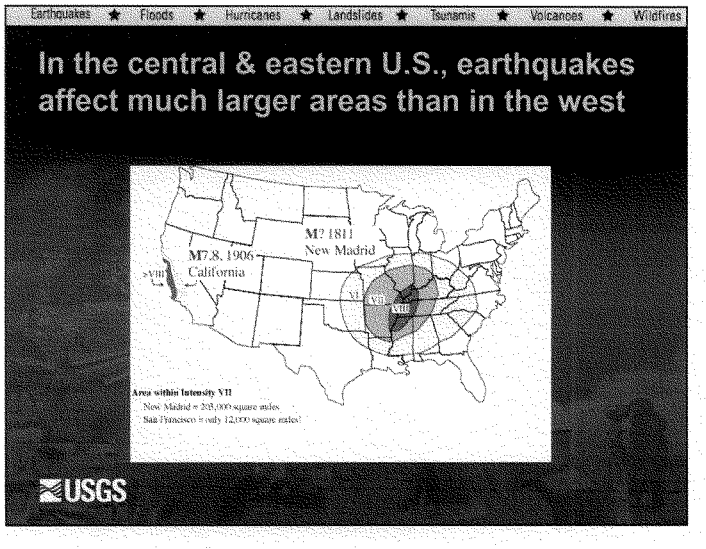

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
Landslides occurred all along the bluffs
USGS

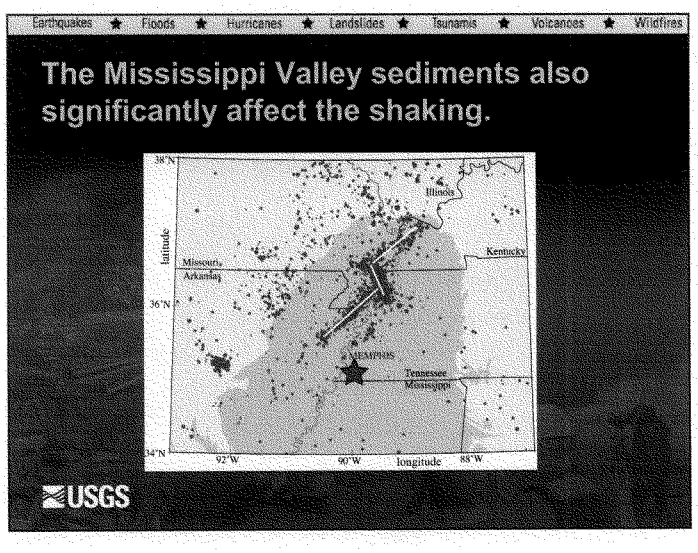
Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
What remains today…
(Blytheville, Arkansas)
sand blow
USGS

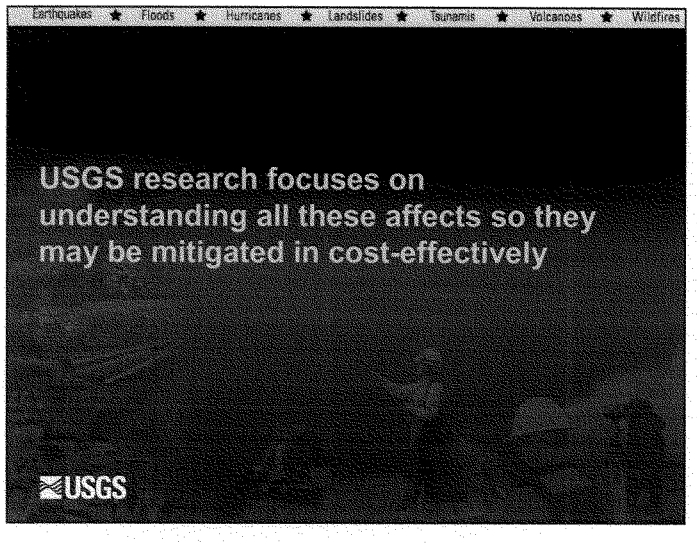

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
Liquefaction and Sand Blow Formation
During strong shaking, pore water pressure in saturated, loose sand increases until the sand loses its strength and acts like a liquid, finally erupting to the surface through fissures, forming sand blows.
Sand Blow
Silt and Clay Layers
Filled Fissure (sand dike)
Liquefied Sand
Earthquake Waves
(after Sims and Garvin)
USGS

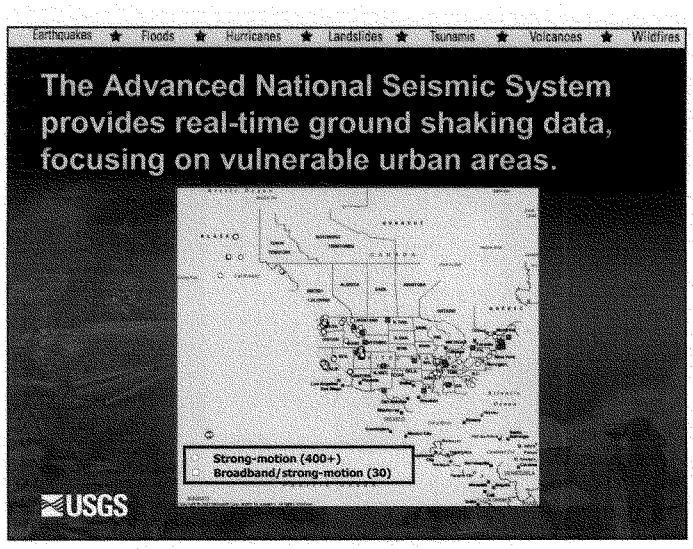

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
Liquefaction is a major hazard in the New Madrid region, but provides a key record of past earthquakes.
USGS

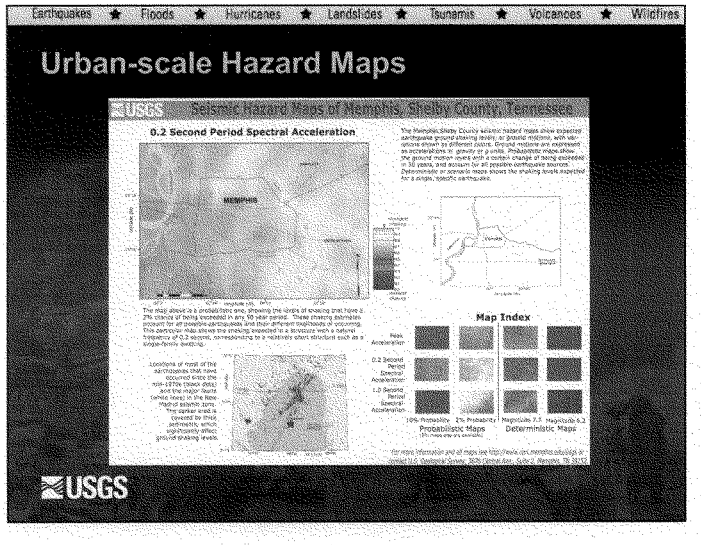

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
The geological record of prehistoric earthquakes shows
• The 1811-1812 earthquakes were not a one-time event.
• Similar prehistoric earthquakes occurred 1450 and 900 A.D.
• All appear to be earthquake sequences
USGS

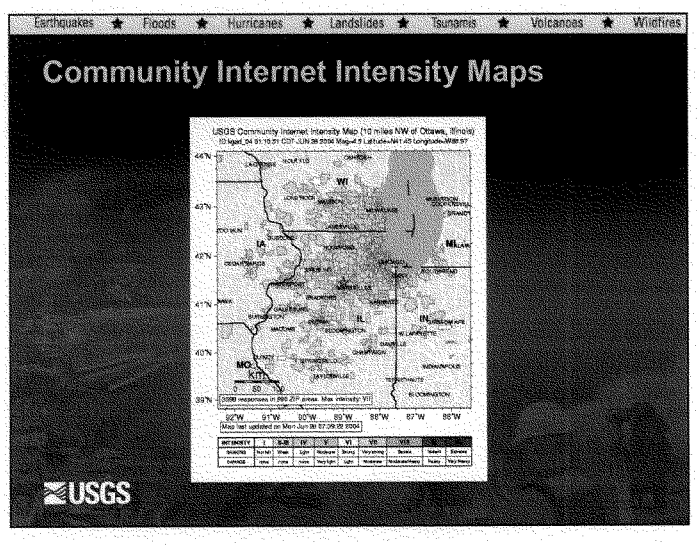

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
In the central & eastern U.S., earthquakes affect much larger areas than in the west
M? 1811
New Madrid
M7.8, 1906
California
>VIII
VI
VII
VIII
Area within Intensity VII
New Madrid = 205,000 square miles
San Francisco = only 12,000 square miles!
USGS

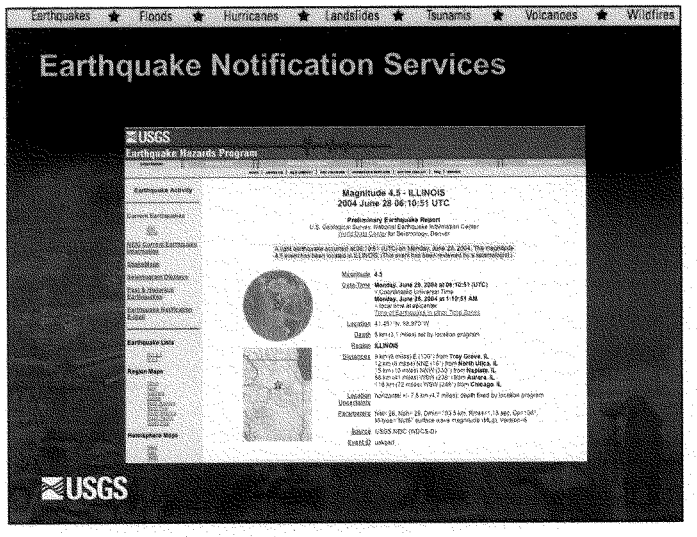

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
The Mississippi Valley sediments also significantly affect the shaking.
38°N
36°N
34°N
latitude
Illinois
Kentucky
Missouri
Arkansas
MEMPHIS
Tennessee
Mississippi
92°W
90°W
longitude
88°W
USGS

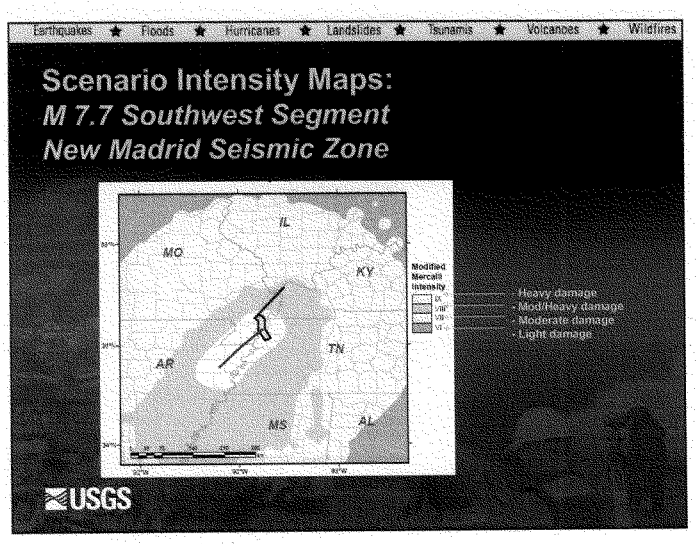

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
USGS research focuses on understanding all these affects so they may be mitigated in cost-effectively
USGS

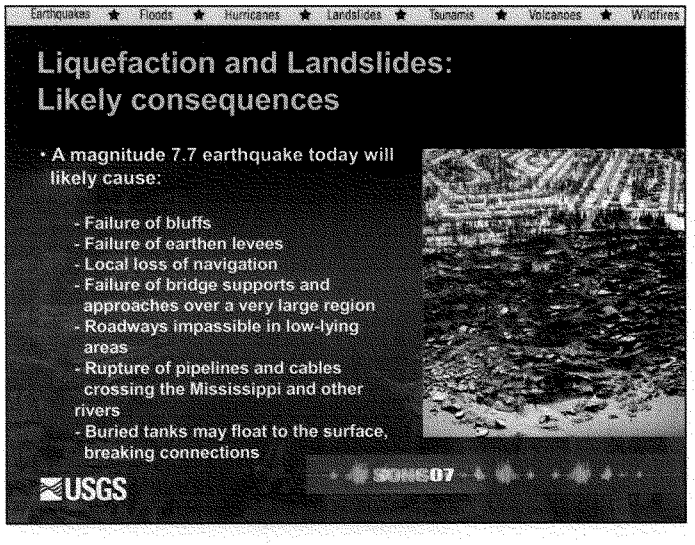

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
The Advanced National Seismic System provides real-time ground shaking data, focusing on vulnerable urban areas.
Strong-motion (400+)
Broadband/strong-motion (30)
USGS

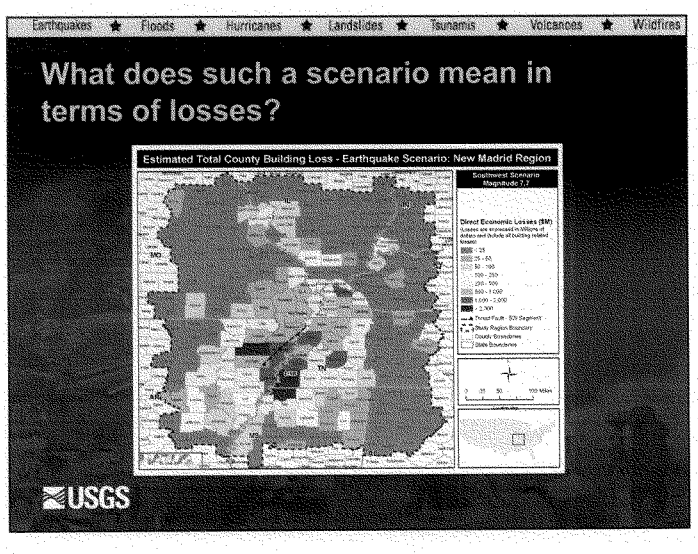

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
Urban-scale Hazard Maps
USGS
Seismic Hazard Maps of Memphis, Shelby County, Tennessee
0.2 Second Period Spectral Acceleration
MEMPHIS
Map Index
Probabilistic Maps
Deterministic Maps
USGS

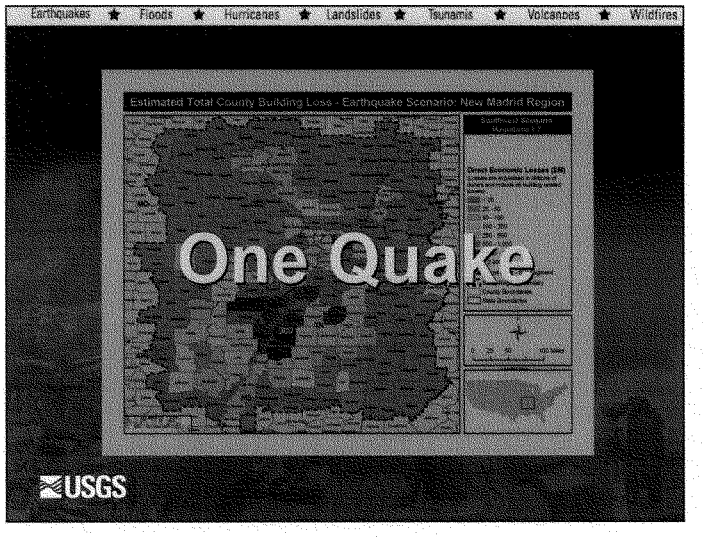

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
Community Internet Intensity Maps
USGS Community Internet Intensity Map (10 miles NW of Ottawa, Illinois)
WI
IA
IL
IN
MO
92°W 91°W 90°W 89°W 88°W 87°W 86°W
Map last updated on Mon Jun 28 07:09:02 2004
USGS

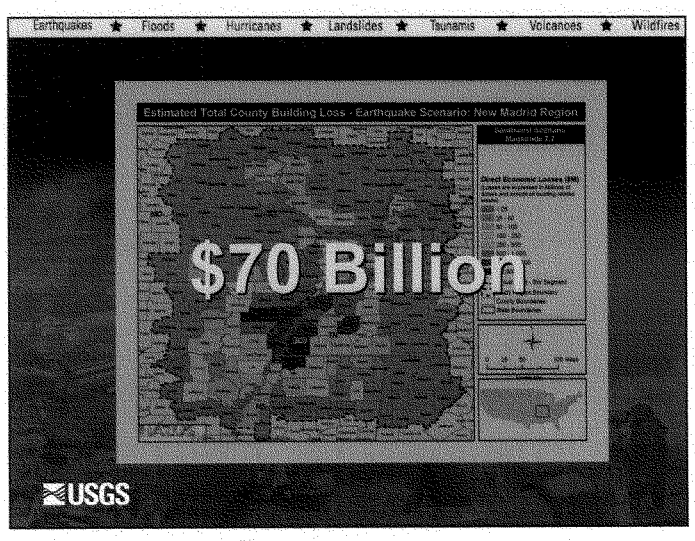

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
Earthquake Notification Services
USGS
Earthquake Hazards Program
Magnitude 4.5 - ILLINOIS
2004 June 28 06:10:51 UTC
Preliminary Earthquake Report
USGS

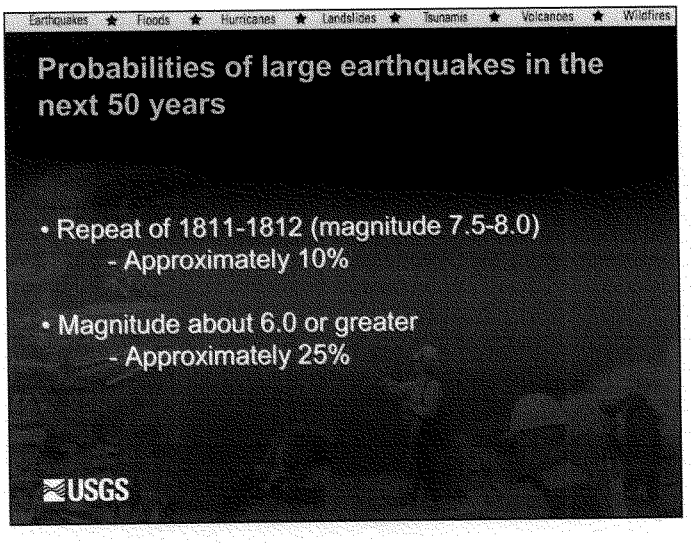

Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
Scenario Intensity Maps:
M 7.7 Southwest Segment
New Madrid Seismic Zone
IL
MO
KY
AR
TN
MS
AL
Modified Mercalli Intensity
Heavy damage
Mod/Heavy damage
Moderate damage
Light damage
USGS


Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
Liquefaction and Landslides: Likely consequences
• A magnitude 7.7 earthquake today will likely cause:
- Failure of bluffs
- Failure of earthen levees
- Local loss of navigation
- Failure of bridge supports and approaches over a very large region
- Roadways impassible in low-lying areas
- Rupture of pipelines and cables crossing the Mississippi and other rivers
- Buried tanks may float to the surface, breaking connections
USGS


Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
What does such a scenario mean in terms of losses?
Estimated Total County Building Loss - Earthquake Scenario: New Madrid Region
Southwest Scenario Magnitude 7.7
Direct Economic Losses ($M)
USGS


Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
Estimated Total County Building Loss - Earthquake Scenario: New Madrid Region
One Quake
USGS


Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
Estimated Total County Building Loss - Earthquake Scenario: New Madrid Region
$70 Billion
USGS


Earthquakes ★ Floods ★ Hurricanes ★ Landslides ★ Tsunamis ★ Volcanoes ★ Wildfires
Probabilities of large earthquakes in the next 50 years
• Repeat of 1811-1812 (magnitude 7.5-8.0)
- Approximately 10%
• Magnitude about 6.0 or greater
- Approximately 25%
USGS

Serving the Preparedness Needs of the Central U.S.

Briefing to the
Subcommittee on Economic Development, Public Buildings and Emergency Management

by

James M. Wilkinson, Jr.
CUSEC Executive Director

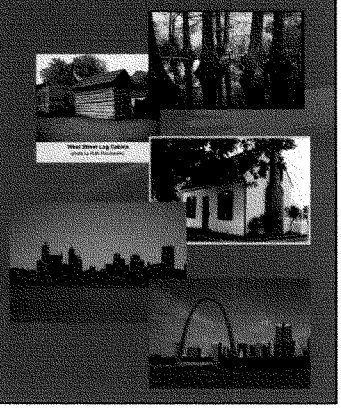
February 24, 2006

Briefing Overview

- Setting the Stage
  - Expected losses for the central US
- Regional Hazard -Requires Regional Approach
  - Central United States Earthquake Consortium
    - Purpose and Role
    - Current Activities
- Conclusion
  - Risk Reduction Efforts are Dependent on a Strong Partnership Approach

Setting the Stage
Putting the Seismic Risk in Perspective

- 1811-1812 – Central US was sparsely populated
  - Approximately 20,000 people lived in the MO Territory (what's now Arkansas and Missouri)
  - Most Counties in Western TN were established 1819-1823 – Pop fig's increase around 1830.
- 2005 – Approximately 11 million people in the at risk areas – of those, approx. 7 million in rural/small communities.



Expected Losses as Generated by FEMA Loss Est. Software - HAZUS

- Scenario input and outputs provided by FEMA / USGS / CUSEC
- Parameters used
  - 7.7M (Based on January 20, 2005 USGS recommendation - "not worst case")
  - Modified level one – out of possible three
  - Modeled all 3 segments of the New Madrid seismic zone
- <u>Does not</u> reflect cumulative effect of 1811/12

Estimated Direct Economic Losses

Scenario	Bldg	Trans	Util.	Total
NE Segment	$49.2	$6.3	$12.5	**$68.0**
RT Segment	$52.6	$6.7	$11.0	**$70.3**
SW Segment	$57.8	$7.3	$12.0	**$77.1**

Does not reflect cumulative effect of 1811/12

Global Summary Reports available:
http://www.cusec.org/hazus/
click on Central U S Scenarios

What is Driving the Losses in the Central U.S. and Beyond

- High percentage of URM's
- High percentage of structures built without seismic considerations
- Transportation cross roads – Pipelines, Rivers, Roads, Airports
- Building codes have only recently addressed the seismic hazard
- Last Mag. 6 event 1895 - 6.8
- Low level of understanding / belief which can limit risk reduction efforts
- More pressing issues for community leaders

Regional Hazard Requires Regional Approach

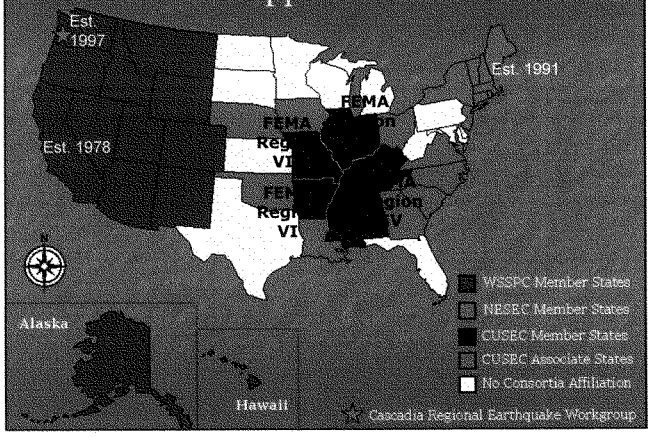
Central United States Earthquake Consortium

- Non-profit 501 (c) (3) organization formed in 1983
  - Role: Address the regional aspects of the seismic hazard while meeting the needs of its member states.
  - Mission: "... the reduction of deaths, injuries, property damage and economic losses resulting from earthquakes and other disasters which effect the Central United States."
- Eight Member States – Originally 7 – Alabama included as full member in 2002
  - Nine Associate states
- Board of Directors - Sets Policy - Comprised of 8 State EMA Directors and 1 *ex-officio* member – CUSEC State Geologists

CUSEC Continued

- State Earthquake Program Managers – Working element
  - Working Groups: State EMA -PIO's, Ops Chiefs, Mitigation, Donations Planners, Communications
- Organizational Associations
  - Association of CUSEC State Geologists
  - CUSEC State Transportation Task Force
- One of four FEMA supported Consortia
  - Covers four FEMA Regions
- Staff of Five – Exc. Director, Associate Director, Earthquake Program Manager, Accounting Clerk, and Administrative Assistant

FEMA Supported Consortia



CUSEC Goals

- To raise the level of public awareness of the earthquake hazard in the central U.S.
- To promote the adoption of mitigation programs, tools, and techniques to reduce vulnerability
- To foster multi-state planning for response and recovery to a damaging earthquake
- To promote the application of research and lessons learned to improve the level of preparedness

**Same goal areas adopted by the CUSEC Board for state Eq. programs*

Organizational Strategies Carried out by the CUSEC / State Earthquake Programs

Public Outreach and Education

1)Inform all sectors of the public about the potential impacts of earthquakes,
2) Increase the desire and ability to act in every individual, home, school, business, and community,
3) Promote the improvement of K-12 school preparedness and its extension to colleges, universities, businesses, and professionals,
4) Promote the initiation of broad educational efforts,
5) Promote an understanding of secondary effects,
6) Promote competency of professionals,
7) Increase public awareness,
8) Inform public officials.

Mitigation

1) Promote the development of comprehensive and cost-effective mitigation approaches that are CUS specific,
2) Expand the use of loss estimation methodologies and
3) Develop uniformity in training & inspection, programs,
4) Promote the provision of incentives to retrofit,
5) Promote the development of effective methodologies for mitigation,

Mitigation - continued

6) Promote upgrade of vulnerable buildings and other structures,
7) Promote seismic safety of all new construction,
8) Promote the development of an integrated approach to seismic design,
9) Promote the adoption of CUS-specific standards,
10) Promote performance standards for infrastructure,
11) Evaluate and prioritize mitigation,
12) Promote retrofit of critical infrastructure,
13) Promote the establishment of an integrated program of risk assessment and risk reduction,
14) Look for ways to demonstrate cost-effectiveness of mitigation and preparedness,
15) Look for ways to develop incentives and remove barriers,
16) Promote adoption of standards for protection of property in codes,
17) Promote protection of infrastructure,
18) Promote incorporation of earthquake hazards data in general plans,
19) Promote the development of advanced mitigation techniques.

Multi-State Planning

1) Improve communications,
2) Improve health care response,
3) Improve search and rescue capability,

Multi State Planning – Continued

4) Improve capability to collect, analyze, and disseminate damage data,
5) Establish a recovery/reconstruction plan for every CUS urban center,
6) Improve interim and long-term housing for the recovery and reconstruction period,
7) Streamline the permitting and rebuilding process for the recovery and reconstruction period,
8) Ensure accurate and timely information flow to everyone.

Application of Research

1) Promote performance based research that can be applied in performance based codes and standards,
2) Promote the improved use of geoscience data,
3) Promote the application of consistent standards in the acquisition, analysis, and application of geoscience data,
4) Look for opportunities to show cost-effectiveness of the use of geoscience data in mitigation methodologies,
5) Promote support for ongoing research to close gaps in knowledge,
6) Look for ways to demonstrate the applicability of research and technology to risk reduction,
7) Look for ways to demonstrate the benefit of the research and technology,
8) Foster coordination of ongoing research,
9) Promote the development of seismic zonation techniques.

Current Activities

- Earthquake Program Managers Workshop
  - State / FEMA Earthquake Program
- Risk Assessment Training – ATC-21
- Earthquake Town Hall Meetings
  - AR, MO, KY, TN
- Earthquake Awareness Week
  - AR, MO, IN, KY
- Earthquake Exercise – Spills of National Significance (SONS)
  - 15 state involvement
  - Four FEMA regions
  - Numerous federal level players
- Catastrophic Planning
  - FEMA CUSEC States

Risk Reduction Efforts are Dependent on a Strong Partnership Approach

- Private Sector
- Elected Officials
- Federal, State, and Local Agencies
- Civic Groups

CUSEC Partnering Organizations

State Government

CUSEC States

CUSEC State Geologist

Medical & Health

State Dept.'s of Transportation

Associate / Non-Profit

American Red Cross

American Society of Civil Engineers

Building Seismic Safety Council

EQ Program Managers (Associate States)

Earthquake Engineering Research Institute

Institute for Business and Home Safety

International City / County Mgt. Association

National Association of Insurance Commissioners

International

Organization of American States

Private Sector

Robert Lee Blaffer Foundation

International Paper

Simpson Strong Tie

Federal Government

Centers For Disease Control and Prevention

Federal Emergency Management Agency

National Science Foundation

National Institute of Standards and Technology

US Department of Transportation

US Department of Energy

U.S Geological Survey

Research

Center for Earthquake Research and Information – Univ. Memphis

Mid America Earthquake Center

National Centers for Earthquake Engineering Research

Natural Hazards Research and Applications Information Center

Good News

We have the knowledge and tools needed to address the problem

The Challenge Before Us

To find a balance between competing priorities

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Web site: www.cusec.org

Questions?