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October 26, 2005

Improving Response Planning for Catastrophic Events

Statement before the Senate Judiciary Committee,  
Subcommittee on Terrorism, Technology, and Homeland Security

by

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October 26, 2005

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Chairman Kyl, Senator Feinstein, and members of the committee, it is an honor to testify today on ways we can improve preparedness for catastrophic events.

While I understand this hearing is focused on terrorism, I would like to provide a broad perspective on preparedness and technology, primarily in the context of our recent experience with Hurricane Katrina. Terrorism events and large natural disasters can produce many of the same consequences, and the lessons learned in planning for catastrophic natural disasters can be used to improve planning for terrorism events.

Our company, Innovative Emergency Management (IEM), has a unique perspective on preparing for catastrophic events. To cap twenty years of experience in disaster preparedness, we conducted the Southeast Louisiana Catastrophic Hurricane planning workshops based on a hypothetical "Hurricane Pam." Hurricane Pam was a first step toward an innovative model for integrated Federal, State, and local catastrophic planning throughout the United States. By August 24, 2005, when the fourth Hurricane Pam workshop was held, the evolving plan was still a version 1.0 with many topics still to be addressed. Katrina, which struck on August 29, 2005, required version 10.0.

Guided by this serendipitous experience, my testimony focuses on a response planning framework which produces the outcomes that our leaders and citizens demand, which is based on sound science and available technology, and which deeply engages all layers of government - Federal, State, and local. Hurricane Pam was the start of such a framework.

Define Specific, Acceptable Results

The public perception is that the response to Hurricane Katrina was inadequate. What this means is that the response did not accomplish the results the public expected. For example, people expected life-sustaining supplies to be delivered to those in New Orleans shelters immediately

after the storm passed. During emergencies, these are the results that people care about. They are the criteria by which plans and responses are judged effective or unacceptable.

Typically, response plans are divided into emergency support functions, such as Transportation, Mass Care, and Communications. Each function separately addresses organizational roles and responsibilities, defines the overall missions to be accomplished, and identifies resources available to accomplish the missions. Piece by piece, the functional approach allocates the whole of emergency response and recovery to agencies and organizations.

What is missing is the integration of functions to focus on the accomplishment of results. Delivering life-sustaining supplies to those in shelters immediately after a storm (the expected result) may require coordination between several agencies and functions. If planning is focused on achieving these results, there is a greater chance the plan will prove to be effective. Plans can continue to be developed by functional areas, relying on exercises to illustrate where integration between functions is needed. However, a great deal of time and effort spent in plan development, exercise, and revision could be saved by defining the desired results for public protection first, then developing plans to accomplish those results.

This may sound like a simple concept, and in many respects it is. However, it requires policy makers, decision makers, and emergency managers to answer difficult questions about what results are desired, acceptable, and possible. In a democracy, elected leaders demand the desired, acceptable results. Emergency managers must determine if those results are possible--that is, if the results can be accomplished with available resources. Plans need to identify actions and decisions necessary for accomplishing those results.

Allow me to use a non-hurricane example to illustrate this concept. As part of a project to assess regional preparedness for a chemical weapons stockpile event at the Umatilla Army Depot, over 100 key stakeholders--emergency managers, first responders, military personnel, two Confederated Tribes of Native Americans, two states, three counties, political leaders, and Citizen's Advisory Commission members--agreed to a set of criteria defining an adequate emergency management system for a site that has been the subject of much controversy in recent years. The process took only four meetings covering a total of six days. It led decision makers to the difficult realization that they could not protect everyone. Through dialogue, decision makers defined high, but achievable results--when the emergency system accomplished these results, it would be effective. Defining and agreeing to achievable results is the foundation of a good planning process.

Community by community, this same process should be used to engage elected leadership in setting the goals for the public's protection.

#### Base Plans on Detailed Consequence Assessments

Generally, emergency response plans are not based on specific disaster scenarios. Planning annexes cover specific hazards such as industrial accidents, terrorism, and hurricanes. For example, the hurricane annex covers all hurricanes, from tropical storms to Category 5 hurricanes. However, it is normal human tendency to shy away from thinking of catastrophic events. Therefore, most plans tend to cover the last disaster that occurred in recent memory. There is not enough depth of realism in the planning basis on which specific plans are founded. There is another way.

IEM conducted the Southeast Louisiana Catastrophic Hurricane planning workshops in 2004 and 2005. These workshops were based on a hypothetical Category 3 storm called Hurricane Pam that strikes New Orleans on September 28, 2004. In these workshops, personnel from 13 parishes, 30 State agencies, and 15 Federal agencies including FEMA, the US Army Corps of Engineers, the US Coast Guard, and the National Weather Service began brainstorming and planning for a response to a catastrophic hurricane.

To create catastrophic conditions, Hurricane Pam was modeled as a strong, slow-moving Category 3 storm preceded by 20 inches of rain, spawning 14 tornadoes, and resulting in 10 to 20 feet of water within the City of New Orleans from overtopping of levees.

The consequence assessment showed that 9 refineries and 57 chemical plants shut down during the storm. The Louisiana Offshore Oil Port (LOOP), which handles 12% of US crude oil imports, shut down pre-landfall and re-opened 2-3 days after the storm. Hurricane Pam left over 55,000 in public shelters outside Southeast Louisiana prior to landfall. The hypothetical storm displaced over 1.1 million people, affected 500,000 households and left 230,000 children out of school. Search and rescue required 20,000 boat-based missions and 1,000 helicopter-based missions for those left behind. Over 500 miles of major roads were flooded, almost 200 miles of these flooded more than 10 feet. One major bridge collapsed and almost all customers in a 13-parish area were without landline communications, TV and radio broadcast capability. Hurricane Pam generated over 12.5 million tons of debris and almost 250,000 cubic yards of hazardous household waste. Sewage treatment facilities were not working in the metropolitan area. The storm resulted in 80% of the structures affected by wind and flooding, varying from minor wind damage to total structural collapse. The total damages estimated for Hurricane Pam made it the costliest natural disaster in U.S. history. Affecting more than 12,000 square miles in Louisiana and over 1.7 million people, Hurricane Pam presented a complex web of topics and missions to be addressed in the planning for such an event.

The more than 300 Hurricane Pam planners and operators were faced with these and more specific consequences. They were facing a real storm, and they had to build action plans to respond to such an event. A catastrophic event of this magnitude would require concerted and coordinated effort from Federal, State, and local officials and agencies.

#### Integrate Federal, State, and Local Response Planning

At the local level, emergency responders are usually familiar with each other. They work together on a daily basis; they understand the capabilities and capacities of each responding organization and how they fit together during response. This may be a key reason why responses to local disasters are typically effective. For example, emergency personnel in county-level responses to Florida hurricanes are clearly reaping the benefits of responding to many hurricanes together.

Catastrophic events require much more than local resources. Personnel from Federal, State, and local jurisdictions must coordinate closely to ensure a successful response. What is needed is a method that facilitates collaboration and relationship-building between responders and officials at all of these levels, and among personnel from neighboring states, as catastrophes require an integrated regional and national response.

The Hurricane Pam planning process was a step toward this. The consequences of a catastrophic hurricane were presented to more than 300 Federal, State, and local personnel--both planners and operational personnel--in a scenario-based workshop environment. Personnel from different jurisdictions were divided into groups to begin tackling the operational complexities involved in addressing 15 key response and recovery results, such as unwatering the City of New Orleans,

conducting search and rescue operations, establishing temporary housing, and others. The focus was on operational concerns and initiating dialogue between the many different groups involved. Though more workshops to continue the collaboration and planning effort were needed, participants in each group were clearly focused on addressing the catastrophic consequences they had been presented with. Working together, participants developed a mission statement and concept of operations. They also identified response actions to be taken as well as available resources needed to support these actions. They were committed to producing results and there was very little finger-pointing or blame.

Catastrophes require coordinated action from Federal, State, and local agencies. For catastrophic planning to be successful, officials from all levels must be involved and committed to the process and the results. This is not always easy to achieve. There are conflicting priorities, turf issues, and resource concerns. A scenario-based planning exercise like Hurricane Pam makes the disaster real and propels officials at all levels to cut through these concerns and focus on meaningful results.

A scenario-based process can also help distinguish when a disaster is primarily handled at the local level, when it escalates into a State and local partnership, and when it requires massive Federal intervention to prevent enormous human suffering. Even in a primarily local disaster, the Stafford Act involves the support of the Federal government. If the resources of a local jurisdiction are overwhelmed, they request assistance and resources from the state. Likewise, if a disaster exceeds the capacity of the State to meet the needs of its citizens, then the state can request assistance from the Federal government. But during catastrophes, natural or terrorism-induced, the Federal government is a protector of last resort.

The National Response Plan is a good strategic document. However, an incident action plan with sufficient detail is required to handle catastrophic events impacting specific communities. Not every region is vulnerable to natural catastrophes, but some are, namely, the San Francisco region, the New Madrid Seismic Zone, Washington State, and of course, New Orleans. For these locations, a detailed and integrated catastrophic plan is the first layer of protection for saving lives.

To be effective, scenario-based plans would have to be formally adopted by all Federal, State, and local agencies who participated in their development. This is a dramatically different concept compared to current practice.

#### Exercise and Evaluate Against Results

Most exercises test plan compliance, checking whether responders explicitly follow the plan. However, most plans are not detailed enough and do not provide specific actions in specific timeframes. Also, most exercises do not stress the system enough, nor do they measure results in human terms. Exercise participants generally know when the exercise will be held and what will be tested. An open-book test at school, no matter the subject area, simply tests a child's ability to read. We want to test their ability to think and apply what they have learned. To truly measure plan effectiveness, it is imperative that plans be detailed and evaluation tools be designed to measure results.

Earlier, we discussed a project in which acceptable protection results were defined for a chemical weapons stockpile site in Oregon. Once these results were defined, exercises were conducted to gather data to measure performance against desired results. Where intended results were not accomplished, recommendations for improvement were provided and a "roadmap" indicating all actions needing to be completed to achieve specified results. The performance measures and action items were used by the State of Oregon to develop work plans and budget submissions for

fiscal year 2001, and the State's consistent progress toward meeting performance measures through the identification of actions, responsible agencies, and milestones for remedying areas of concern.

Citizens and their elected officials are interested in outcomes. It is hard to gauge these outcomes when evaluating either plans or exercises. One small break in the chain of response could result in hundreds of unnecessary deaths. There are many complex interactions between the hazard, the people and their unique characteristics, the shelters that protect them, the roads through which they evacuate, and many other factors. Each such interaction can end in a result that is acceptable or not acceptable.

Modeling and simulation provides a useful tool for handling this complexity. With recent advances in technology, it is possible to build a full and realistic simulation of a response and run the simulation to determine the effectiveness of a plan or an exercise for various catastrophic disasters. Improvements to the system can be modeled and their impacts on protection calculated. This provides decision makers with scientific information that can be used to make well-informed resource allocation decisions before any funds are expended. This information can also be used as the basis for resource requests.

Working together--Federal, State, and local-- we can engage science and technology to build better plans and test them more rigorously. More importantly, we can produce outcomes that the public demands.

#### Conclusion

Our nation needs an effective method for developing plans that can be easily implemented and that deliver expected, acceptable results. The process should begin by answering a difficult question: what are the acceptable results for response? Once this question is answered, plans can be developed to and tested to see if they do so.

Planning also must include those personnel who are critical to response--responsible agencies, operational personnel, and senior leadership from Federal, State, and local levels. Commitment, coordination, and understanding necessary for successful response can only be achieved through this type of collaboration. Scenario-based planning workshops are an effective way to accomplish this.

Modeling and simulation technology that can calculate disaster consequences and measure plan effectiveness should also be incorporated into planning and evaluation. These tools offer a sophisticated method of ensuring that the plan developed accomplishes the necessary results.

The Hurricane Pam planning process was a step toward this model. A realistic, specific hurricane scenario was used to drive planning. The method emphasized collaboration between responders and focused them on specific, necessary outcomes. Clearly, the process was not perfect, but it was a step in the right direction.

We must plan together, train together, exercise together, and respond and recover together. This is the path to success.