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FEMA Region II Perspectives for the Roundtable on Risk Management Strategies in an Uncertain World, IBM Center, April 12-13, 2002

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General Perspectives:

As the federal agency charged with coordinating and planning for the federal government's response to disasters of scale sufficient to exceed local capabilities, FEMA has a vested interest in measures that could improve our response abilities as well as those of others with similar responsibilities. Since the early 1990's, FEMA has made significant strides in improving its performance in disaster response, as well as working hard to improve local, State, and Federal capabilities in risk assessment and modeling, information technology, and promotion of disaster damage-reduction technologies and measures.

These activities have been primarily in response to the "big three" of natural disasters; freshwater flooding, hurricane storm surge and winds, and earthquakes. While the country has experienced extreme flooding in modern times, as demonstrated by the mid-west floods along the Mississippi in 1993 and 1994, that is really not the case with earthquakes and hurricanes. As bad as Hurricanes Andrew and Hugo were in 1992 and 1989, and Hurricanes Donna and Agnes in the 60's, we have been lucky. There has not been a strike by a hurricane of a major urban area of the U.S. in modern times. The extreme event for hurricanes would be a strike in the New York City area, Miami, Tampa, Norfolk, or New Orleans. Similarly, we've been lucky with earthquakes. The last "big one" in California was really the San Francisco quake of 1906. Think what would happen if the Anchorage, Alaska earthquake of 1964, an extreme event, were to occur in a major U.S. city now. In addition to LA and San Francisco, we now know of the high risk faced by other cities such as Seattle, and Memphis and St. Louis who are near or on the New Madrid fault. Even eastern cities such as New York and Boston have more of a risk than previously thought.

The events of September 11 have focused everybody's attention on the risks posed by terrorism, and particularly issues associated with weapons of mass destruction. While preventing terrorism is ultimately a law enforcement /military matter, the response to terrorism extends well beyond policing actions. The World Trade Center attacks, extreme as they were, produced damages and dislocations that were considerably less widespread than if an attack occurred using nuclear, biological, or chemical contaminants along with conventional explosives. Existing facilities, such as nuclear power plants, provide the

emergency management community with extreme challenges that extend even beyond those posed by petrochemical facilities. The nuclear fuel cycle provides opportunities for widespread contamination and health affects that extend far beyond the conventional operating parameters of nuclear power plants.

The following are perspectives on extreme catastrophic events for consideration by the Roundtable.

I. Communications: The failure of portions of the telecommunications systems in lower Manhattan after the World Trade Center attacks (both land line and overloaded cell systems) hindered the ability of emergency response personnel to communicate. This also occurs to varying degrees after major storms. A national assessment of communications capabilities at the Federal, state and local levels indicates a critical shortfall nationally regarding standardization, protocols, and modernization of communications equipment.

- The development of a national emergency management communications system with application at all levels of government should be a high priority. Whether it is based on direct satellite communications systems, or ground based digital wireless networks should be studied.
- First responders need portable radio equipment that works inside dense built environments such as large buildings and tunnels.

II. Information Technology: Information technology (IT) systems now play a key role in successful disaster response and management. The term "information technology" as it's used here refers to both the hardware systems that are necessary to link organizations and the development of data resources necessary to inform organizations. For example, several of the key federal agencies which are part of the Federal Response Plan maintain a workable resource listing of critical assets that can be shared via IT systems in emergencies. Similarly, many states and larger localities also maintain listings, but they are of varying completeness and formats.

- A national response information management system for federal, state and local governments with emergency response and public safety responsibilities is needed, with the ability to:
  - Link all immediately available resources that could support a catastrophic event.
  - Link existing databases in a web based system.
  - Develop enhanced urban infrastructure data bases for identification of critical structures and decision making options in response to catastrophic failure and/or damage.
  - Be available to all critical first responders
  - Be maintained by a consortium of public, private, and academic organizations.

III.Risk Assessment and Modeling: This is a broad area of endeavor that academic institutions are particularly well suited towards addressing. There are current efforts underway in developing GIS based risk assessment and loss estimation models for

earthquakes, with much still needing to be done for hurricane force winds and storm surge, and riverine flooding. The level of modeling out there for emergency management and response agencies for WMD is miniscule. Without some level of modeling for these hazards, it is difficult to plan effectively for these hazards in specific locations.

Some examples of risk assessment and modeling needs are:

- Development of accurate GIS data bases of complex urban infrastructures to allow for useful and accurate applications of hazard algorithims.
- Development of air and water dispersal models for WMD threats that can be used real time by emergency response decision makers (subways, aerial plumes, water systems).
- Development of transportation models for catastrophic events in urban environments.

IV. Logistics and Operations: Some examples of areas for additional study and support are:

- Research and development of new fire fighting techniques and strategies in battling catastrophic urban and high rise fires including the impacts of WMD.
- Research into new technologies in debris management and separation, including removal and transportation options and environmental and economic quality control .
- Debris strategies for catastrophic impacts in a broader urban environment - say 30 city blocks instead of 16 acres.
- Research and development to expand capabilities of search and rescue teams to deal with WMD events.
- Review of crisis management models being taught and assess for needed adjustments to terrorism and WMD threats.
- Develop new strategies in dealing with World Trade Center type events for emergency responders that assess potential environmental and health hazards.

V. Recovery and Mitigation: There are complicated policy and regulatory considerations that will come into play after events such as the World Trade Center that have a large impact on the finances of governments and the insurance industry. Areas to be further defined are:

- Impact on the insurance industry of future coverage for terrorist events, including WMD events.
- Insurance risk and its relationship to future urban development.
- Improved methodologies for coordination between government and the insurance industry.
- Research into loss reduction models for WMD events and urban implementation strategies.
- Research into building performance standards for the post 9/11 environment.
- Insurance cost incentives for mitigation beyond floodplain management.
- Research into the establishment and operation of mitigation banks.