
**OBSERVING AND DOCUMENTING THE
INTER-ORGANIZATIONAL RESPONSE TO
THE SEPTEMBER 11TH ATTACK ON THE
PENTAGON**

Activities and Findings

The George Washington University
Institute for Crisis, Disaster, and Risk Management

The University of Pittsburgh

*Research Supported by National Science Foundation
Grant CMS-013909*

Project Summary

The National Science Foundation provided funding through SGER grant CMS 0139309 for the George Washington University Institute for Crisis, Disaster, and Risk Management to acquire and structure baseline data that will support the analysis of the inter-organizational response to the terrorist attacks of September 11, 2001. The documentation of organizational structures and the information flows between and among emergency management and emergency medical decision makers will support future research that will address the problems of communication, inter-organizational coordination, and decision making in complex, multi organizational response environments. This report focuses on the response to the attack on the Pentagon and describes a very successful, very complex, response operation. The organizational response was based on existing emergency management organizational systems and processes: the Federal Response Plan (FRP), the Incident Command System (ICS), Unified Command (UC), and Mutual Aid (MA), but a significant level of organizational creativity and adaptation was necessary to achieve success.

On Tuesday, September 11, the United States experienced the worst terrorist attacks in its history that took the lives of over 3000 people. The nature and complexity of the events called for deployment and large-scale integration of various emergency management, emergency medical, law enforcement, and military resources within a few hours as prescribed by the Terrorism Annex to the FRP. The attacks also resulted in the first time activation of the National Disaster Medical System (NDMS). The devastation of this disaster was in such an unprecedented scale that necessitated studying, understanding and interpreting the functioning mechanisms of the organizations that were involved in the response. How these organizations manage information in such a turbulent environment, how they make best use of technology to support their decision processes and how organizational knowledge of successes and failures can best be maintained.

Early in this project, it became apparent that there were not sufficient resources and time to examine the on scene response to both attacks. The focus of the GW research team became the response to the Pentagon attack and the mobilization of federal resources to support both the Pentagon and World Trade Center responses. This selection was made for three reasons. First, the World Trade Center response was examined in a parallel project by The University of Delaware Disaster Research Center. Second, GW's geographic location provided ready access

to federal and local emergency managers in Washington, D.C. Third and most importantly, the Pentagon response was a complex, unique, and effective coordination of local, state, and federal resources that deserves close examination and documentation. Part I of this report is based upon the GW teams activities. The University of Pittsburgh, as part of this project, performed a related analysis of organizational relationships at the World Trade Center based on the print media, federal agency situation reports, and personal interviews. Professor Comfort and her University of Pittsburg assistants analyzed the data they collected to document inter-organizational relationships, communication patterns, and organizational auto adaption and is presented as Part II of this report.

The purpose of the project was to observe, identify, and collect documents on information management and coordination issues that arose in this response, before this data was lost or the ability to interpret data were degraded. The methodology of the research was personal observations, structured interviews, and document collection. The results will support future research that will enhance the emergency management and emergency medicine capabilities of the United States, increasing the ability to minimize the consequences of future potential mass destruction/mass casualty events.

The George Washington University Institute for Crisis, Disaster and Risk Management (GW ICDRM) team consisted of Principal Investigators John Harrald, Ph.D. and Joseph Barbera, M.D., Research Associate Irmak Renda-Tanali, D.Sc., Research Assistant Mr. Damon Coppola, B.S. and Research Scientist Greg Shaw. Co-PI Joe Barbera, M.D. served as Medical Unit Leader of the Federal Emergency Management Agency (FEMA) Urban Search and Rescue (US&R) team at the Pentagon, deployed to New York City (NYC) on a fact-finding mission for HHS Secretary Thompson, and deployed by FEMA to NYC as an advisor to the NYC Fire Commissioner. Louise Comfort, Ph.D. was the Co-P.I. for the University of Pittsburgh in this effort. Dr. Comfort was assisted by graduate research assistants Michael Carrigan and Naim Kapucu.

Part I
The Federal Mobilization in Response to the 9/11 Attacks
And the Management of the Pentagon Response
By
The George Washington University
Institute for Crisis Disaster and Risk Management

1. Introduction

On September 11, 2001, the United States (U.S.) suffered its first civilian mass casualty event since the Texas City Explosions/Fires of 1947 (581 deaths, 3,500 injuries). The toll of the attacks approached the casualty toll of the Galveston Hurricane of 1900, the most catastrophic disaster in U.S. history. First response, emergency management, emergency medicine, and military organizations responded heroically and effectively. These attacks have, however, destroyed the myth that somehow the U.S. will remain immune to mass casualty disasters and that the U.S. emergency medical, emergency response, and emergency management systems would not have to deal with tragedies on the scale experienced in less developed countries.

The coordination of the complex organizational systems that are rapidly created to respond to an event such as the World Trade Center (WTC) collapse and the Pentagon attack is incredibly difficult. After the September 11 attacks, the U.S. experienced its first large scale integration of emergency management, emergency medical, law enforcement, and military resources prescribed by the Terrorism Annex to the Federal Response Plan (FRP) and the U.S. Government Interagency Domestic Terrorism Concept of Operations Plan (CONPLAN, 2001). The attacks also resulted in the first activation of the National Disaster Medical System (NDMS). We do not fully understand how to ensure that these meta-organizations will function effectively, how to best use technology to support their decision processes, how to manage information in such a turbulent environment, and how to retain the organizational knowledge of their successes and failures.

The objective of this project was to identify information management and coordination issues that arose in this response and to document how the emergency management system designed for response to natural and technological hazards was used to respond to terrorist attacks. As we face an

uncertain future, improving our consequence management systems to meet the terrorist threat is a national priority. The organizational issues discussed in this report must be identified, studied, and documented as our response system evolves in the response to the tragedy of September 11, 2001.

Early in this project, it became apparent that there were not sufficient resources and time to examine the on scene response to both attacks.. The focus of the research became the response to the Pentagon attack and the mobilization of federal resources to support both the Pentagon and World Trade Center responses. This selection was made for three reasons. First, the World Trade Center response was examined in a parallel project by The University of Delaware Disaster Research Center (DRC). Secondly, GW's geographic location provided ready access to federal and local emergency managers in Washington, D.C. Most importantly, the Pentagon response was a complex, unique, and effective coordination of local, state, and federal resources that deserves close examination and documentation. However, the mobilization of Federal resources in support of both the Pentagon response and the World Trade Center Response is described in the timeline developed in Appendix 1. The University of Pittsburgh, as part of this project, performed a related analysis of organizational relationships, communications, and organizational adaptation based on the print media and situation reports. This analysis, which provides insight into the complexity of the World Trade Center response is presented in Part II of this report.

2. The September 11, 2001 Attacks Revisited

At 8:45 AM (EDT) on Tuesday, September 11th 2001, an American Airlines Flight 11 that had been hijacked by a group of terrorists after taking off from Boston crashed into the north tower of the WTC Complex in New York City (NYC). Initially, this event appeared to be isolated. Eighteen minutes later, as the media was televising video of the blazing tower around the world , a second commercial airliner came into view and disappeared with an enormous explosion into the South Tower of the WTC. This plane, United Airlines Flight 175 (also from Boston) confirmed that the U.S. was under attack by an unidentified terrorist group.

Immediately after the North Tower was hit, the NYC Fire and Police Departments dispatched personnel to secure the scene. Within five minutes of the second attack, the Federal Aviation

Administration (FAA) ordered all NYC airspace 'sterilized', (freed from air traffic). Seven minutes later, all NYC airports were closed, and at nine minutes after that (9:26 AM), all civil flights were prevented from taking off. Over 4000 planes had been over U.S. land, and several hundred were en route from overseas - all were grounded or re-routed to Canada. This could do nothing, however, to stop American Airlines flight 77, hijacked immediately after departing Washington Dulles Airport, from reaching its crash- course destination of the Pentagon at 9:43 AM. Fearing yet another attack, the White House was evacuated at 9:45 AM. Around 10:00 AM a fourth commercial plane, United Airlines Flight 93 from Newark, N.J., crashed in Somerset County, Pennsylvania, about 80 miles southeast of Pittsburgh. At about the same time a partial collapse occurred at the Pentagon building in the area of impact. Just after 10:00 AM, the South Tower of the WTC complex collapsed, raising the estimated dead and injured exponentially. Secret service agents were positioned in Lafayette Park (10:08 AM), the United Nations complex was evacuated in NYC (10:13 AM), and several Federal departments and agencies were evacuated in Washington, DC (10:22 AM). By 10:30 AM, the U.S. Office of Personnel Management had begun the evacuation of all DC federal buildings.

At 10:28 AM, the North Tower of the World Trade Center complex collapsed, adding to fears concerning the scale of casualties. At this point, New York (NY) Governor Pataki closed all government offices in NY, and NYC mayor Giuliani ordered the evacuation of all Manhattan areas south of Canal Street. It was reported that several airports around the country were evacuating, and rumors of car bombs and additional hijacked planes were making their way into the news.

At noon, it was still not known if the attack was over. Washington, DC closed its city government buildings, and the General Services Administration (GSA) closed its buildings and courthouses throughout 5 states in the capitol region. Washington D.C. Mayor Anthony Williams declared a state of emergency for the city of Washington at 1:22 PM. Soon after, the FAA announced that there would be no commercial air traffic until at least noon of September 12.

By mid afternoon, rescue crews from around the country began arriving at the three sites to assist local police and fire departments that immediately responded. Mayor Giuliani announced at 2:49 PM, in a press conference, that subway and bus services were restored in NYC. Estimates into the

number of injured or killed ranged from several hundred to tens of thousands, though no official was willing to give specific numbers. When both towers collapsed, 2830 people were killed including 343 firefighters and 78 police officers. At the Pentagon, the terrorists claimed 284 victims.

As the evening approached, at approximately 5:30 PM, a third building in the WTC complex, Building #7, housing NY City's multi-million dollar Emergency Operations Center (EOC), which had been burning for much of the day, also collapsed. In addition, other buildings in the area of the towers were on fire. Mayor Giuliani appeared at an evening press conference and urged New Yorkers to remain at home on September 12th if they could, though Defense Secretary Rumsfeld held a news conference in which he stated that Pentagon employees should expect to report to work. A detailed time line of the first 48 hours that was derived from different media and government sources is provided in the Appendix Section at the back of this report.

In the aftermath of the September 11th attacks, the U.S. experienced its first large scale integration of emergency management, emergency medical response, law enforcement, and military resources prescribed by the Terrorism Annex to the FRP. In NYC, initial efforts on the part of locally based regional offices of Federal agencies to deal with emergency response were hampered by damage to the city's EOC. NYC had recently completed a multi-million dollar state of the art EOC; but it was housed in WTC Building 7 that was heavily damaged and had to be evacuated. WTC 7 collapsed at 5:28 PM The city's EOC capabilities had to be regenerated virtually from scratch. The State of NY seemed to fare better. The Federal Center in NYC was not physically damaged, but telecommunications were knocked out, which meant that FEMA Region II, Environmental Protection Agency (EPA) II, and other Federal agencies had to find other operational locations. Additionally, the grounding of commercial aircraft restricted the deployment of emergency response personnel across the country. At that time, many senior Federal and State emergency managers were in Big Sky, Montana at an national emergency management conference and other key federal response personnel were deployed for potential hurricane response. As a result, traditional means of transporting resources and supplies had to be re-thought and worked around. A rapid mobilization of Federal resources occurred despite these obstacles. The Federal response organization was created and the Federal mobilization was successfully executed by skilled upper and mid-level managers.

Federal resources mobilized included search and rescue teams, Disaster Mortuary Teams (DMORTS), Disaster Medical Assist Teams (DMATS), National Medical Response Teams (NMRTs), EPA HAZMAT teams, U.S. Army Corps of Engineers (USACE) debris removal teams, and American Red Cross mass care resources. The Catastrophic Disaster Response Group (CDRG), the interagency group of senior managers tasked with resolving problems during a disaster response, never convened. As of October 1, 2001, there were around 2000 Federal employees working in response to the September 11th attacks. Large forces of Urban Search and Rescue (US&R) teams, structural safety specialists, and debris specialists engaged in the largest search and rescue and debris removal mission in United States history.

3. The Interview and Analysis Process

The project team interviewed key personnel from the Arlington Fire Department, the Arlington County Metropolitan Medical Strike Team/National Medical Response Team, the Federal Emergency Management Agency (FEMA), The Department of Defense, the FEMA Incident Support Team (IST), Fairfax County Urban Search and Rescue Team, members of the National Catastrophic Disaster Response Group (CDRG), The National Emergency Support Team, The FEMA Pentagon Disaster Field Office, the Federal Pentagon Joint Operations Center, the U.S. Army Corps of Engineers (USACE), U.S. Health and Human Services (HHS), Office of Emergency Preparedness (OEP), the State of Virginia Office of Emergency Management, the National Response Center (NRC), the HHS National Medical Response Team, the American Red Cross, and the District of Columbia Emergency Management Agency. The team obtained and analyzed situation reports (sitreps) and reports from FEMA, EPA, the USACE, the OEP, and the National Response Center (NRC). The team also obtained daily action plans prepared by the FEMA Emergency Response Team (ERT), Disaster Field Office (DFO), and Incident Support Team (IST). Press reports (primarily the *Washington Post*, *New York Times*, and CNN) were also used to confirm events and times. The team focused on the Federal mobilization of resources for all events and on the incident response to the Pentagon attack because of the proximity to first responders, the limited time and resources for the study, and the complexity and continuing status of the response to the WTC collapse. The on scene response to the attack on the Pentagon was coordinated by the Arlington County Fire Department. However, over 100 organizations played a role in this complex response.

4. Response Actions to the Attack on Pentagon

4.1. General Observations

The initial response to the Pentagon attack was performed by the fire and emergency units from the Arlington County Fire Department (ACFD), the Fort Myer Fire Department (a U.S. Army Base located adjacent to the Pentagon), and the Metropolitan Airport Authority Fire Unit at Ronald Reagan National Airport.

Municipalities in the Washington, DC Metropolitan Area have a well-established mutual aid system that grew out of the chaotic response to the crash of Air Florida Flight 90 into the Potomac River within sight of the Pentagon in January, 1982. As a result of this local mutual aid system, Fire and Rescue units from Fairfax County, Montgomery County, Alexandria, and the District of Columbia (DC) responded without any state or Federal intervention or control.

The Federal and state mobilization of resources for the response was governed by the structure and process defined in the Federal Response Plan (FRP). The purpose of the FRP is to provide a mechanism for the mobilization and coordination of federal resources to assist states in the response to Presidentially declared disasters. The FRP was amended in 1997 to provide a Terrorism Annex, providing a collaborative role for the Federal Bureau of Intelligence (FBI) and FEMA during the response to a terrorist attack.

This revision to the FRP assigned “crisis management” responsibilities to the FBI, and “consequence management” responsibilities to FEMA. Crisis management was defined as “measures to identify, acquire, and plan the use of resources needed to anticipate, prevent and/or resolve a threat or act of terrorism” and was designated as a law enforcement function.

Consequence management was defined as “measures to protect public health and safety, restore essential government services, and provide emergency relief to governments, businesses, and individuals affected by the consequences of terrorism.” This division of responsibility was reaffirmed by the Federal CONPLAN of 2001 which gives the Department of Justice the lead role in crisis management related to acts of terrorism with state and local governments providing assistance as required. State and local authorities exercise primary authority to respond to the consequences of terrorism, FEMA is responsible for coordinating federal assistance as required.

(FRP, page TI-1)

The flow of decisions and organizational capability envisioned for the response to a major natural disaster is illustrated in Figure 1 below, taken from the FRP. Our findings indicate that the actual organizational evolution during the Pentagon response was considerably more complex. Figure 2 provides a graphical summary of how and when many organizations became part of the response. This diagram is intended to provide an indication of the organizational complexity that faced responders, and is not a complete depiction of all the organizations involved. The ACFD established the incident command structure based upon the principals of the Incident Command System and Unified Command. Department of Defense (DoD) organizations and assets were coordinated through the Unified Command Structure.

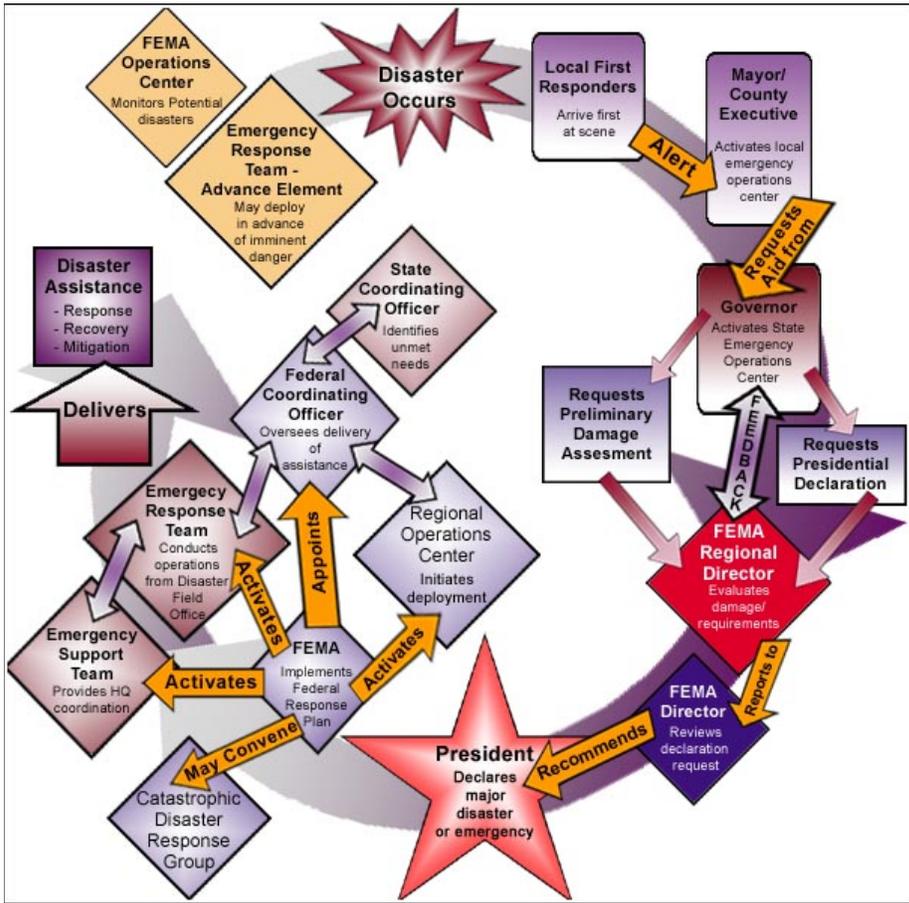


Figure 1: Organizational Evolution Specified by the FRP

What follows is a chronological review of the initial response actions on the part of local, Federal and military organizations derived from the accounts of the persons interviewed for this study that furnish the basis for the findings. They are primarily based on the interviews conducted by the research team and secondarily on the review of media reports, sitreps and other material related to the September 11th attacks.

Command Post (ICP) for the Pentagon response underneath the Interstate 395 overpass and established security for the ICP with Arlington County SWAT team members. The officers from the Arlington County Police Force played a supportive role, assuming charge of traffic around Pentagon, ordering the closure of roads surrounding it, helping evacuate the Pentagon and helping the FBI and the other law enforcement agencies collect evidence and search for bodies outside of the building. Fairfax motorcycle officers also reported, unrequested, outside Arlington police headquarters shortly after the attack, offering their help.

Within 50 minutes of the attack, the Regional Coordinator (Region III) of Virginia Department of Emergency Management, Ms. Cindi Causey, was at the Arlington Emergency Operations Center (EOC) to assume her role as the state/local liaison person. The State Emergency Management Organization, represented at the Pentagon and FBI JOC, liaised with the Federal agencies. Ms. Cindy Causey acted as an emergency management consultant to the Arlington Emergency Management Center and facilitated the State's provision of resources to the local emergency management operation. By mid-afternoon of 11 September, the State of Virginia deployed a recovery team to the EOC in order to aid the local response efforts.

Due to the chaos and complexity of the initial response, Chief Schwartz retained individual IC until 6:00 PM on 11 September, the day the attacks occurred. At 6:00 PM a meeting was called by Chief Schwartz in the Pentagon Press room (on the opposite side of the building from the crash) where he established a Unified Command (UC). He explained what the UC System was and then identified who would be part of the team. The UC initially consisted of Arlington County Fire, Arlington County Police, FBI, and FEMA Incident Support Team (IST). The IST is the interdisciplinary support group trained, supported, and mobilized by FEMA to support its urban search and rescue (US&R) teams. A detailed description terms used in the IC and UC System is provided at the back of this report in the Appendix Section.

FEMA activated all of its 10 regional operations centers on 11 September. The State of Virginia requested US&R teams from the Federal government immediately. FEMA initially sent a 62-member team, a task force composed of four teams (a search team, a rescue team, a medical team, and a logistical support team; Virginia-1, Virginia-2, Maryland-1 and Tennessee-1) to the

Pentagon site to assist and work closely with the state and county in rescuing and recovering the victims. During the first 24 hours, the major priority was to support search and rescue operations with those four US&R teams. FEMA was also responsible for providing financial assistance and reimbursement to the county and state. The Disaster Field Office was setup by FEMA to serve as an administrative office for Federal and State response and recovery efforts in Arlington, Virginia and was up and running by the end of 13 September. FEMA worked with the State Medical Examiner's Office in the recovery, identification, and transport of the victims' bodies. The military retained control of mortuary functions for military personnel and remains recovered from the Pentagon were transported to Dover Air Force Base in Delaware for identification

The NDMS was activated within 10 minutes into the attacks. Medication from the National Pharmaceutical Stockpile (NPS) was deployed to Andrews Air Force Base without the State having requested the shipment. The Office of Emergency Preparedness (OEP, a division of HHS located in Rockville, MD) deployed a total of 382 medical personnel from disaster readiness teams to assist physicians and other health providers to both Pentagon and NYC. Gary Moore, the Deputy Director of the HHS Office of Emergency Preparedness received approval from FEMA Operations and Planning Division Chief, Bruce Baughman, to activate 4 DMATs and 4 DMORTs for NYC. Three DMATs and three DMORTS were mobilized for the Pentagon site, including 35 medical personnel from Winston-Salem, 36 from Atlanta, Georgia, and 46 from Rockville, Maryland. These units were staged at Anacostia Naval Air Station in Washington, but were never deployed to the Pentagon since the military and the State of Virginia indicated that they did not require medical or mortuary assistance.

FEMA also immediately deployed one Mobile Emergency Response Support Detachment along with four Region IV Incident Management Augmenters (IMAs) to Arlington. An Incident Management Team (IMT) was deployed to Anacostia Naval Air Station.

The U.S. Army Corps of Engineers (USACE) deployed US&R teams to work closely with the FEMA IST to help recover bodies, locate survivors and conduct structural assessments. USACE conducted these actions through its Prime Power Assessment Teams, Structural Safety Engineers and Debris Planning and Response teams.

A partial collapse of the Pentagon occurred at 10:10 am. Two minutes before the collapse, the FEMA IST engineer called for an evacuation because he saw cracks in the walls/floors. The evacuation was ordered by the IC, and no injuries were sustained by responders.

EPA Headquarters began 24-hour operations immediately after the attacks and through its Region 3, deployed four On-Scene Coordinators (OSC—a position defined by the National Contingency Plan) and two air inspectors to Pentagon and surrounding Arlington/DC area. These emergency responders worked with the FBI and the Defense Department. Their primary mission was environmental monitoring by collecting air, water, and debris samples at and around Pentagon crash site to ensure the safety of response personnel, Pentagon employees and nearby residents. There were no major pollutants detected at the crash site; air-monitoring near the Pentagon revealed no impact from fire but the air quality monitoring for volatile organic carbons, particulates and asbestos continued through 29 September.

The senior medical person on scene for Arlington County was Chief John White, Arlington County EMS. Mr. White was reassigned to a logistics role and was relieved by Jim Bonzano in EMS. The National Medical Response Team (NMRT) located in Arlington responded almost immediately and was assigned the task of chemical monitoring during the first day. The NMRT was created in 1996 by the Washington Council of Governments (COG) and was called the Metropolitan Medical Strike Team (MMST) until it became a federal asset, funded by HHS, in 1999.

The Arlington County Employee Assistance Program (EAP) group was on the scene in just three hours. They did immediate counseling and brought in masseuses for the first responders. The military and the American Red Cross also provided mental health services. A risk manager was deployed by Arlington County, and a doctor for Arlington County Fire was brought in to examine workers and staff. Chief Schwartz asked the risk manager to waive the 24 hour reporting requirement for minor injuries. The reporting requirement was waived for all incidents that did not require hospitalization. The mental health professionals provided a total of 6,356

crisis-counseling sessions to victims, families and disaster workers during the first month of the Pentagon response and recovery operation.

The Presidential Emergency Declaration for Arlington County was signed on 13 September (FEMA-3168-EM), 2 days after the attacks and Virginia State's request for a major disaster declaration. On September 21, President Bush declared the Pentagon and the surrounding region a disaster area making funding available for those affected by the attacks, including the Arlington County government. This assistance included funds for funeral arrangements, crisis counseling, small-business loans, and additional aid for the county. The search, rescue and recovery operations lasted for 10 days at the Pentagon crash site. The FBI officially assumed responsibility for the entire site on 21 September to start a lengthy criminal investigation. County rescue workers, and health workers left the site the same day. Fire fighters, however, remained at the scene because of concerns of possible flare-ups.

4.3. Logistical, Financial and Administrative Issues

The Arlington County EOC, which is a simple meeting room with desks and computer hook-ups, was up and running within 30 minutes of the crash. The Arlington County Emergency Management Plan defines the relationship between the County EOC and the Incident Command structure and provides various task groups to support the IC. For example the resource task group, made up of county employees who work mostly in purchasing and finance, was linked closely with the ICS logistics branch at the Pentagon. This group was supervised by Dean Cox, from Fairfax County. Similarly, the Arlington County emergency planning team was linked to the ICS planning branch.

Early in the response to the Pentagon crash, logistical efforts were all facilitated by Arlington County. Chief Schwartz reassigned Chief John White to establish a logistics section, which was designed to handle the first eight days of operation. The logistics worked initially like it would for a large fire, but as the incident grew; Arlington County established a Logistics Incident Task Group. This group purchased lumber for shoring and other supplies from commercial vendors such as Home Depot.

The Virginia State Recovery Team was deployed to the Arlington EOC on 11 September and despite little or no previous team training, the team worked well together to support financial accounting requirements.

Under the Federal Response Plan, FEMA provides reimbursement to state and local governments for equipment and supplies used during the disaster response. In the Pentagon response, as in many natural disasters, the reimbursement process is problematic. During an incident, immediate payment is not requested for supplies purchased. For example, on the second day of the incident, the IC was told that the Tennessee US&R team did not come with appropriate boots and needed a few. He asked the logistics section to obtain boots, the logistics staff member called the Logistics Incident Task Group resulting in the delivery of a tractor-trailer of boots the next day. The boots were billed to FEMA and FEMA paid for them after the incident was over, based on a count of the number actually used. This resulted in quite a bit of excess material that ACFD had to pay for because not all of it was actually used and some stores would not take the unused material back.

The Pentagon response received a significant amount of donated supplies and materiel that had to be coordinated and controlled by the Incident Commander. The area where the restaurants, materiel, lumber, clothing, etc, was located was called "Camp Unity". This was running parallel to FEMA's supply operation, and the management of unsolicited donations remained an issue at the Pentagon, as at all major disasters.

All payroll issues within ACFD were handled by the administrations of the individual departments. Specific contracts, such as the contract for the heavy rigging were directly issued by the FEMA IST.

Direct local level mutual aid agreements worked particularly well. As described elsewhere in this report, Fairfax County, Alexandria County, Montgomery County and The District of Columbia all immediately provided units to the response. However, since these units were not requested by the State of Virginia, they were technically not eligible for Federal reimbursement.

4.4. Security and Safety issues

Security was an issue from the start since this had been an attack on the headquarters and symbol of the U.S. Armed Forces. Within one hour, snipers were placed on the rooftops of nearby buildings to protect the response staff. However, failure to immediately control access to the site remained a significant problem.

Convergence is a well documented phenomenon after a disaster. Skilled and unskilled spontaneous volunteers come to help out of altruistic motives, other individuals arrive with services or goods to sell, still others to get media attention, or simply to witness the event. Determining who should be allowed access to a disaster operation is always a difficult task. Following the 9/11 attacks, access control was a critical function since no one knew whether or not secondary attacks would occur. The FBI was in charge of handling the badging system at the Pentagon and the Secret Service provided systems and staff for this monumental task. They started to plan for this the first night by determining who should have access into the perimeter. For the first couple of days the system was marginally effective, since all that was required to obtain a badge was to show identification. At one point there were 8000 people with badges. The Incident Commander decided to shrink the perimeter, and devise a new badging system. This required obtaining lists of all those with badges, dividing these lists up into groups according to organizational affiliation, and tasking each organization leader with deciding who was vital to the operation. A more controlled and effective badging system was created from these lists. This system still proved lacking in that it identified those who had access, but not the work period for which that access was valid (a color coded system evolved at the World Trade Center site in New York to provide work shift identification) Chief Schwartz noted that this was not only a security, but also a health and safety issue due to the intense desire of rescuers to remain on scene. Firemen would come off a 12-hour shift, and be bused back to the station, only to get in their cars and drive back to the scene to work another 12 hours without resting. Rest/sleep for the firefighters became a major concern of the IC. The experience at the Pentagon indicates that a badging system must be pre-established so that it can be utilized immediately for a large scale response to an extreme event.

4.5. Elements of A Successful Response: What worked well?

Effective inter-organizational coordination was a key factor in the successful response to the attack on the Pentagon. The coordination was based upon (1) a willingness of key persons to make the effort to communicate with other organizations, (2) a history of joint pre-planning and coordination, and (3) effective leadership on scene. Officials of the Metropolitan Washington Council of Governments, composed of 17 regional jurisdictions, and key Federal Government agencies were involved in hourly conversations and briefings about the situation at the Pentagon from the morning of September 11. The command centers of the local jurisdictions worked smoothly with each other since their emergency plans had been exercised during their preparation efforts for the Year 2000 Computer bug two years earlier. More importantly, the mutual aid agreements with the Fire and Rescue units from Arlington County, Fairfax County, Montgomery County, Alexandria, and the District of Columbia following the Air Florida Flight 90 crash of January 13, 1982 had produced a common doctrine and a shared working experience. The other county responders recognized that Arlington County was in the lead position and were able to efficiently integrate their resources in the ACFD incident command system.

Every four hours a meeting of the Unified Command was held to give briefings by individual team members on what had been accomplished, to raise the issues of concern and report what they expect to do by the next meeting. Everything from these meetings was reported on paper or in a laptop. The 'four-hour' meetings, established early on, provided a means for the central command to come together often, but did not require the UC team to be physically together at all times. This prevented the forced co-location of all the highest-level people. Effective communications made this central command possible without co-location. The conflict between the need for co-location to enhance internal communications and de-centralization to enhance operational effectiveness is a common issue in complex response operations. The resolution of this conflict early in the Pentagon response was an important achievement.

The basis for the on scene structure was the Incident Command System. Arlington County uses ICS on a daily basis for all fire events, even for small fires. Personnel responding to the Pentagon attack were, therefore, integrated into a familiar operational structure. The Incident

Command System provided the structure for the response, but was not rigidly followed. The need for improvisation was recognized and creative response to new problems resulted. For example, Arlington County Fire Chief Plaughter, elected not to relieve Chief Schwartz as Incident Commander, recognizing that his skills would be needed to coordinate organizational relationships away from the scene. He served in a role of 'Senior Advisor' to the Unified Command. Chief Plaughter could easily have taken incident command, but he saw that someone had to connect the Joint Operations Center (JOC) at Fort Myer, the Arlington County EOC, and the Incident Command/Unified Command at the Pentagon and that this role had to be filled by a very senior person.

Chief Schwartz and Chief Plaughter were organizationally astute. This was a very large-scale incident involving many Federal, State and local organizations. They recognized the importance of 'who was speaking for whom' within the incident structure. Leaders recognized that people in staff positions within the incident command could be representing the positions of their parent organization and that these positions had to be considered in the planning of the response strategy.

A critical factor that enabled this organizational integration was that responders knew and understood each other's roles. In many cases, they knew each other personally. Most metropolitan commanders had previously exercised together before, so there was an immediate link when they came together on September 11th. There had actually been a fire at the Pentagon on August 2nd, 2001, which prepared them even further. The pre-established relationships between the FBI and the local and state personnel helped integrate the operations smoothly. The use of ICS for everyday operations also contributed to the success of this operation.

The 20 years of mutual aid experience between Arlington County, Alexandria, and Fairfax County helped in the operations as well. Arlington County was always at the lead but other mutual aid department staffs were in the incident command structure. In fact, the Unified Command vehicle was the Fairfax County vehicle and during the response there were always 3 Fairfax County people in the vehicle at all times, 24-hours a day.

The fact that Arlington County assumed command immediately, was assertive, and exhibited competence was critical to the effective management of the response. The UC and resulting on scene organization and inter-organizational cooperation allowed Chief Schwartz to focus on strategic considerations. The Unified Command recognized that it was responding to a unique and complex event. Many of the traditional rules of ICS were bent if not broken; operational supervisors made decisions based upon what made sense, not strict doctrine. The competence of the responders that made up the on scene organization allowed Chief Schwartz to stand above the tactical situation and allow professional responders to use their best judgment. The every four-hour meetings conducted by the IC/UC established trust, passed the word and facilitated the dispersion of key leaders to do their jobs where appropriate rather than have to rely on co-location.

Another key factor in the response was the recognition by the military that the local government was responsible for the response. The Military District of Washington Commander, General James Jackson, assumed the responsibility for coordinating the military assets at the Pentagon. After the 6:00 PM meeting on September 11, MDW Commanding General Jackson approached Chief Schwartz and stated that DoD would fully support Arlington County responders. Although General Jackson and Chief Schwartz had no professional relationship prior to the event, General Jackson recognized the Chief's competence and control of the situation. The General's trust in and support of the local responders was the key to the effective military/first responder coordination. During the first day, General Jackson introduced Jim Schwartz to Secretary Rumsfeld as "the man who owns this ground."

Initially, many resources and people were sent to NYC, and Arlington County had to deal with the fact that the crisis at the Pentagon did not have priority for resources.. Many people and teams were mobilized for NYC before the Pentagon crash even occurred.

The State of Virginia through its Recovery Team and its liaison, performed very well despite lack of personal relationships and training. Virginia used the all hazards approach to planning and the fact that they were now dealing with a terrorist incident instead of a natural or technological emergency did not negate the applicability of the plans, preparation, or response. The only difference from the State's perspective was the size and the duration of the response

operations. The local response organizations had to change their focus this time from an immediate short-term response to a more strategic, resource management intensive perspective.

4.6. What areas need improvement?

4.6.1. Organizational Culture

Organizational culture issues that require further examination arose during the Pentagon response. The structure and culture of the Incident Command System used by civilian responders is not familiar to most military personnel. Similarly, emergency response units do not work within a military command and control structure. There is always the potential of a civilian/military culture clash when military and civilian emergency response organizations work together. The key question is, ‘How do you, beyond ICS, blend the cultures of local organizations and military organizations?’. During the initial response to the Pentagon attack, DoD tended to act independently. For example, DoD attempted to set up its own recovery operations center at the Pentagon and asked for state and local representation in the DoD center, in spite of the fact that a Joint Operations Center had already been established at Fort Myer and a Incident Command Post (ICP) had been established at the Pentagon for the Incident Command/Unified Command. As stated above, however, an effective coordination between Unified Command and DoD/MDW resources was quickly achieved. General Jackson recognized the value of the ICS very early – he understood the importance of unity of command and of limited span of control. At the 6 p.m. meeting to establish the ICS structure on September 11th, Jackson stood off to the side to listen, and came up to Chief Schwartz after the meeting to introduce himself. This emergent personal relationship was a key to the effective military—first responder coordination after the first day.

A better understanding of civilian response procedures and structures by the military is necessary, however, and was captured as a lesson learned from the Pentagon response as a key to the effective use of military assets in consequence management. Since 9/11, the Pentagon has had several tabletop exercises with Arlington County, based on Chem/Bio terrorism scenarios, and the ACFD has briefed military leadership on ICS.

4.6.2. Plans and Procedural Issues

The FRP Terrorism Annex, defines the local emergency management component as a sub unit under the Consequence Management Group in the JOC structure. Early in the response operation and after the report of a second suspected inbound plane, the FBI asked Chief Schwartz to move the ICP to the FBI Joint Operations Center (JOC) that was being established at the Fort Meyer Community Center. The JOC was fully established with the ICP co-located by midnight on September 11th. Co-locating the ICP with JOC at Fort Myers it did not work well for the Incident Commander. Recognizing that the Incident Commander had to remain on scene, Chief Schwartz stayed at Fort Myers for only for 24 hours. He then assigned a high-level Arlington County commander to be his representative at the JOC and moved back to the Pentagon; this representative was included in all of the meetings FBI had at the JOC.

In spite of the problems in co-locating the IC and JOC, the utility of coordination was recognized. For instance, incident management operations such as authorizing and controlling people who were requesting access back into the damaged part of the building to retrieve either classified or other critical information or personal items, required JOC support. The IC had no way of assessing the legitimacy of these requests or the people making them, so the FBI took care of that issue.

Another problematic issue was that the local responders did not have experience dealing with the FEMA Incident Support Teams (IST). The ISTs don't arrive with written explanations of what they do nor are MOUs in place with state and local governments that define their use. The IST provided essential capability to the IC, but Chief Schwartz and his staff had to learn of this capability as the response progressed. The IST maintains its internal ICS based structure and operates as a support unit to the Incident Commander. This procedure is considered essential by the ISTs because of the uncertainty of local capabilities and ability of local responders to incorporate IST into their local response organizations. The integration of the IST into the local response at the Pentagon was facilitated by personal relationships. Absent these relationships the effectiveness of both the IST and the response could have been degraded. Minor problems did occur, but were quickly resolved. As an example of the minor problems encountered in organizationally integrating the IST, the California Management Team was mobilized by FEMA

to support the IST, without the knowledge of the IC. This resulted in several minor disconnects between the Unified Command and the IST logistics sections.

5. Summary of Findings

- 1. The response system designed for natural disasters proved effective for managing the consequences of a terrorist attack.* This system includes local Incident Management built on the principles of the Incident Command System (ICS), Unified Command, and Mutual Aid and mobilization and integration of Federal and state resources in accordance with the Federal Response Plan (FRP). The ability of the Arlington County Fire Department (ACFD) to rapidly establish an ICS based organizational structure was the key to success. The ACFD and other local fire departments use the ICS for all operations. “Everyone knew that Arlington County was the Incident Commander” and “everyone in the ICS structure knew this is not about turf, it’s about getting the job done” were among the comments recorded in our interviews. The Unified Command of ACFD, FBI, Arlington County Police, DOD Military District of Washington and the FEMA USAR Incident Support Team were established during the first day. Arlington, Fairfax, and Alexandria Counties drew upon 20 years of mutual aid experience. The Arlington County Incident Commander, for example, used a Fairfax County mobile command vehicle as the site for the Unified Command Center.
- 2. Federal assets and teams, were obtained through the Federal Response Plan structure, and were effectively used.* Federal resources mobilized included search and rescue teams, disaster mortuary teams, disaster medical teams, medical response teams, EPA Hazmat teams, US Army Corps of Engineers debris removal teams, and American Red Cross mass care resources. The mobilization of federal resources occurred despite that fact that senior Federal and State emergency managers were isolated in Big Sky, Montana at an emergency management conference. The federal response organization was created and the federal mobilization was successfully executed by skilled mid and upper level managers without convening The Catastrophic Disaster Response Group, the interagency group of senior managers tasked with resolving problems during a disaster response.
- 3. The Pentagon response was effective. An effective on scene response organization was rapidly created. Goals were defined and met.* The response required the local first response organization (Arlington County fire department) to coordinate a complex meta-organization

consisting of organizations from different communities: emergency response (fire, rescue, EMT), emergency management, law enforcement, and the military. The Unified Command created and executed response plans and coordinated these plans with FEMA, the FBI, and DOD. The Arlington County EOC was established within 30 minutes of the event, and supported the first responders. The FBI and FEMA established a Joint Operations Center as prescribed by the FRP.

4. *The complex organization that evolved was based upon the ICS system, but creativity and coordination resulted in a flexible, effective organization.* Very few of the responders and managers participating in the response to the Pentagon had ever responded to a terrorist attack. The fact that this attack took place in metropolitan Washington, and was on the headquarters building of the U.S. military meant that many organizations would be involved and many organizational issues that were totally unanticipated by response planners would occur. Issues such as the relationship between military and local responders (the ACFD was in charge) and the responsibility for identification of remains (DOD was in charge) were handled professionally and quickly. The incident management structure was a point of departure for creative, effective management...not a strait jacket.
5. *Effectively coordinating organizations with the diverse organizational cultures of first responders, military, medical, and law enforcement in a complex disaster response is a difficult issue for incident managers.* As asked by one senior participant: “How do you, beyond ICS, blend the cultures of local assets and military assets?”. More than one participant pointed out that pre-established relationships between federal law enforcement and local responders greatly eased potential organizational problems. Unified Command is a concept used in the U.S. for pollution incidents and technological accidents, but has not been formally incorporated into the Federal Response Plan. Organizational familiarity was a key factor in the successful coordination of response organizations. Personal relationships were helpful, but not as critical as familiarity with organizational roles, responsibilities, and capabilities.
6. *Information Management and Media Relations are critical to actual and perceived success.* The response was hindered in the early hours by conflicting and uncertain external information. For example, rescue operations were suspended and the site evacuated based on rumors of an additional incoming plane. On site communications were established using

radios (common frequencies pre-established through mutual aid agreements) and cell phones (assisted by “cells on wheels”). “Media management was a ‘huge’ issue in this incident” according to a senior manager. Very early in the process, a media site was established at a gasoline station within view of the site and periodic briefings were provided. This minimized, but did not eliminate, erroneous and conflicting information in media reportage.

During the Pentagon response, a complex management situation involving very disparate entities under severe stress responded surprisingly well. Unfortunately, this is unlikely to be the last time that first responders and emergency managers face the challenge of managing the consequences of a deliberate terrorist event. The fact that systems worked is important. Documenting why they worked and communicating that knowledge is essential.

6. Bibliography

Federal Emergency Management Agency. FEMA 3168-EM. September 2001. *Pentagon Terrorist Incident Information Package*. Washington, D.C.

Federal Emergency Management Agency. September 2001. *Incident Support Team Operational Action Plan: The Pentagon*.

FEMA, HHS, EPA, USACE Situation Reports (daily)

Federal Emergency Management Agency. April 1999. *Federal Response Plan*. Washington, D.C.

Harrald, J.R., Renda-Tanali, I. and Coppola, D. May 2002. *Observing and Documenting the Inter-Organizational Response to September 11 Attack on Pentagon*, Proceedings of The 9th Annual International Emergency Management Conference May 14 – 17, 2002, University of Waterloo, Waterloo (Toronto), Canada, pp 32-43.

Rubin, C.B. and Renda-Tanali, I. May 2002. *Federal Emergency Management In The U.S.: Implications of The Terrorist Attacks of Sept. 11, 2001*, Proceedings of The 9th Annual International Emergency Management Conference May 14 – 17, 2002, University of Waterloo, Waterloo (Toronto), Canada, pp.44-57.

Shaw, G. L., Renda-Tanali, I., and Coppola, D. June 2002. *Assessment of Geospatial Technology Applications by the U.S. Army Corps of Engineers during World Trade Center Operations*, GW-ICDRM, Technical Report, 30 pp.

United States Army Corps of Engineers. Nov.9, 2001. North Atlantic Division After-Action Review. Draft Report for Review only. 10 pp.

United States Army Corps of Engineers. Nov.7, 2001. *USACE First Impressions Report: September 11, 2001 World Trade Center and Pentagon Terrorist Attacks*. Final Report. 20 pp.

United States Army Corps of Engineers. 2001. *Operation Center Briefings - World Trade Center and Pentagon Attacks*. 12 Sep. through 30 Sept 2001. 100 pp.

7. Appendices

7.1. Appendix 1 - Timeline of the first 48 hours

September 11, 2001

- 8:45am American Airlines Flight 11 from Boston flown into World Trade Center North Tower (cnn.com)
- 8:50 EPA Headquarters EOC activated
- 8:50~ USCG NRC alerts FBI of WMD terrorist event. (Capt. Mike Eagan, USCG)
- 9:00~ Airports Authority begins evacuation of Reagan, BWI and Dulles airports
- 9:01 EPA headquarters and EPA Region 2 begin coordination conference call (EPA Timeline)
- 9:03 United Airlines Flight 175 from Boston flown into World Trade Center South Tower (cnn.com)
- 9:08 FAA sends written notice to all NYC airports to 'Sterilize' the airspace
- 9:10 EPA Headquarters uses GETS conference call system with regions 1-4 (EPA Timeline)
- 9:17 FAA shuts down NYC Airports (cnn.com)
- 9:21 Port Authorities of NY and NJ close all bridges and tunnels in NY area (cnn.com)
- 9:26 FAA issues national "ground stop", preventing all civil flights from taking off
- 9:30 President Bush gives first press appearance in Florida (cnn.com)
- 9:32 HHS National Disaster Medical System (NDMS) and Commissioned Corps Readiness Force (CCRF) notified and placed on advisory (HHS Sitreps)
- 9:40 DC recalls off-duty police officers, begins closing roads and securing government buildings (Washington Post, 9/17, A1)
- 9:43 American Airlines Flight 77 hits Pentagon - immediate evacuation begins. (cnn.com)
- 9:45 FAA grounds all planes in the US
- 9:45 White House evacuation begins (cnn.com)
- 9:50~ Arlington County activates emergency response plan - County Mgr. Ron Carlee becomes director of the emergency response (Alexandria/Arlington Extra, 9/20, p12)
- 9:57 President Bush departs Florida for Barksdale, LA (cnn.com)
- 10:00 EPA begins coordination with NY and VA governments (26 initial staff to NYC and Pentagon) (EPA Timeline)
- 10:05 World Trade Center South Tower Collapses (cnn.com)
- 10:08 Secret Service begin patrol of Lafayette Park, across from the White House (cnn.com)
- 10:10 Partial collapse of the Pentagon (cnn.com)
United Airlines Flight 93 from Newark crashes in Somerset County, PA (cnn.com)
- 10:13 United Nations evacuates NY headquarters (11,400 employees) (cnn.com)
- 10:16 DC Mayor COS sends email to 100's of workers 'Evacuate Building NOW' - retracts 4 min's later (Washington Post, 9/17, A1)
- 10:22 World Bank, State Department and Justice Department evacuate (cnn.com)
- 10:24 FAA reports all inbound transatlantic flights are being diverted to Canada (cnn.com)
- 10:25 Alarm sounds at OPM, PA system instructs employees of that building to evacuate
- 10:28 World Trade Center North Tower collapses (cnn.com)
- 10:30 OPM and White house begin evacuation of all Washington, DC federal buildings
- 10:39 FAA closes all operations at all US airports by NOTAM (Notice to Airmen)

10:46 Colin Powell begins his trip back to the United States (cnn.com)

11:50~DC hospitals move into emergency response mode

10:54 Israel begins evacuation of all diplomatic missions (cnn.com)

10:57 NY Governor Pataki closes all NY government offices (cnn.com)

11:02 NYC Mayor Giuliani orders evacuation of area south of Canal Street (cnn.com)

11:16 CNN reports the Center for Disease Control and Prevention response teams preparing to respond (cnn.com)

12:00pm US closes border to Mexico

12:04 Los Angeles International airport evacuated (cnn.com)

12:15 San Francisco airport evacuated (cnn.com)

12:46 GSA orders federal courthouses and offices in VA, DE, MD, PA, WV closed until further notice

Trains in/out of DC Union Station stopped

DC closes all government buildings and all 19 buildings under Capital Police jurisdiction

1:04 President Bush gives second press appearance from Barksdale, LA (cnn.com)

1:27 Mayor Anthony Williams holds news conference, declares state of emergency for DC (cnn.com)

1:44 Pentagon announces 5 warships and 2 aircraft carriers have been deployed for NY and East Coast (cnn.com)

1:48 President Bush begins flight from Barksdale, LA to Offutt Air Force Base, NE (cnn.com)

2:00 FBI announces they "are working under the assumption that the 4 planes are part of a terrorist attack" (cnn.com)

2:21 53 people reported injured at the Pentagon

2:30 FAA announces there will be no commercial air traffic until at least 12pm on September 12 (cnn.com)

2:49 Mayor Giuliani announces subway and bus service has been partially restored - no casualty info (cnn.com)

3:55 Mayor Giuliani announces that 200 people are critically injured, of 2100 total injuries reported (cnn.com)

4:06 CA Governor Gray Davis dispatches USAR teams to NYC (cnn.com)

4:25 Stock exchanges (ASE, NYSE, Nasdaq) announce that they will remain closed September 12 (cnn.com)

4:30 President Bush leaves Offutt Air Force Base, NE for Washington, DC (cnn.com)

5:20 World Trade Center building 7 collapses (cnn.com)

6:00 Incident Command Meeting at the Pentagon, led by Chief Schwartz

6:00 AMTRAK resumes rail service

6:10 Mayor Giuliani urges NYC residents to remain home September 12 if at all possible (cnn.com)

6:40 Donald Rumsfeld holds news conference in Pentagon to announce the building is operational except for corridors 2-6 (cnn.com)

6:54 President Bush arrives in Washington, DC (cnn.com)

7:02 CNN reports that some NYC bridges are open to outbound traffic

7:17 Attorney General Ashcroft announces FBI website for attack tips, and that friends/family can call 800.331.0075 to leave contact information (cnn.com)

7:30 President Bush issues major disaster declaration for NYC (FEMA-1391_DR)

- 7:45 NYPD announces that 78 officers are missing, and at least 200 firefighters are feared dead (cnn.com)
- 8:30 President Bush gives 3rd press appearance (cnn.com)
- 9:22 Pentagon fire still burning, but under control (cnn.com)
- Unsp. DOD opens media operation center at Marine Corps Post Henderson Hall, Arlington, VA (703.697.9928) (defenselink.mil)
- Unsp HHS activates National Medical Emergency System, which put and puts 7000 volunteer doctors in 80 disaster teams on readiness alert. The PHS Commissioned Corps was also put on readiness alert (5700 personnel); waits for orders from FEMA (HHS Sitreps)
- Unsp Federal Reserve assures that funds will be available if needed
- Unsp DC Emergency Management Agency holds meeting at Franklin D. Reeves Conference Center
- Unsp FEMA dispatches 4 USAR teams to Pentagon - claims to have coordinated Emergency Response
- Unsp Arlington Fire Chief Plaughter announces 100 - 800 feared dead at Pentagon
- Unsp HHS sends 3 DMATs to the Pentagon (46 medical personnel from the U.S. Commissioned Corps DMAT in Rockville, MD; 35 from Winston-Salem, NC; and 36 from Atlanta, GA.) (HHS Sitreps)
- Unsp HHS sends 3 DMORTs to the Pentagon, with 102 personnel (HHS Sitreps)
- Unsp HHS sends 5 DMATs to NYC (25 personnel from Lyons, NJ; 44 from White Plains, NY; 41 from Boston; 52 from Worcester, MA; and 49 from Providence, RI). (HHS Sitreps)
- Unsp HHS sends 4 DMORTs with a total of 169 personnel to NYC from throughout the East Coast. (HHS Sitreps)
- Unsp Navy prepares USS Comfort to ship to NYC if necessary
- Unsp US Customs goes on Code Red Security Alert
- Unsp USCG sends 4 helicopters, 270' Cutter, 3 110' coastal patrol boats and 7 small boats to NYC
- Unsp FEMA names Ted Monet as coordinating officer of the disaster
- Unsp HHS CDC deploys 4 epidemiologists and 2 laboratory experts to NY to assist assessing medical needs and capacity planning for treating victims in the area's hospitals. (HHS.gov)
- Unsp HHS Centers for Medicare & Medicaid Services sends 5 staff to assist at the response center established by FEMA in Edison, NJ (HHS.gov)
- Unsp HHS authorized the 1st emergency use of the National Pharmaceutical Stockpile - the shipment arrived in NY at 9pm - 1 of 8 "12-Hour Push Packages" (HHS.gov)
- Unsp HHS CDC worked with tetanus vaccine manufacturers and the public health dept's of NY and DC to ensure adequate supplies of the vaccine were shipped to both locations (HHS.gov)
- Unsp HHS CDC activates Health Alert Network (provides rapid information to all health departments)(HHS.gov)
- Unsp EPA and OSHA both monitoring exposure to potentially contaminated dust and debris; Region 2 emergency response staff stationed at FBI Joint Operations Center in NYC, Trenton NJ EOC, and FEMA's office in Albany, NY; Region 2's Edison, NJ office is

providing space for 100 FEMA staff; EPA HQ EOC operating on 24-hour basis; R3 has emergency responders deployed DC, Ft. Meade and at Willow Grove Naval Air Station, PA. (EPA Timeline)

- Unsp** EPA - REGION II: Deployed 4 On-Scene coordinators to NYC, began 24-hour operations in Edison, NJ, Collected 4 dust samples in vicinity of WTC, initiated daily ambient air monitoring program downwind of WTC, coordinated with NYC and OSHA (EPA Timeline)
- Unsp** EPA- REGION III: Deployed 4 OSCs (VA, EOC, DC EOC, FEMA ROC, Ft. Meade), Deployed 4 START with OSC to Ft. Meade (EPA Timeline)
- Unsp.** EPA- HEADQUARTERS: Began 24-hour operatoin at EOC, prepared for Continuity of Operations Plan (COOP) activation, removed EPA's website to protect against hackers & secure data (OEI), staffed FEMA EST, staffed FBI Strategic Information Operations Center (SIOC), Took precautions to ensure payroll for all EPA employees, Discussion of permitting issues for air and waste with Regions II and III. (EPA Timeline)

September 12, 2001

- 8:00am**FEMA director Allbaugh announces phone number (800.462.9029) for emergency assistance
- 8:11** Mayor Giuliani announces the rescue of 6 firemen and 3 police officers from WTC (stratfor.com)
- 8:15** UN announces that all staff are ordered out of Afghanistan (stratfor.com)
- 9:05** Announcement made that Dulles Airport will open at 3pm for luggage/car retrieval (stratfor.com)
- 9:53** Pentagon announces that 80 bodies have been recovered (stratfor.com)
- 10:06** Congress reconvenes (stratfor.com)
- 10:30~**DOD opens family assistance center at Sheraton Hotel in Crystal City (info, counseling, support)(defenseink.mil)
- 11:20** FAA bans all air-travel in US indefinitely (stratfor.com)
- 11:58** Pentagon evacuates because of smoke; staff return shortly thereafter (stratfor.com)
- 1:00pm** Pentagon alerts HHS that it will handle all med and mort needs on -site (
- 1:07pm** FBI conducts search of Boston hotel room (stratfor.com)
- 1:10** American Airlines distributes passenger lists (stratfor.com)
- 1:48** United Airlines distributes passenger lists (stratfor.com)
- 2:20** Flights rerouted on September 11 given authority to resume - all others still grounded (stratfor.com)
- 2:40** Amtrak train from Boston to Providence boarded - 3 taken into custody (stratfor.com)
- Unsp** Bush issues Emergency Declaration for Arlington County
- Unsp** NY Union officials release that ~265 Firemen were killed
- Unsp** FAA says that flights can resume, but airline executives decide not to do so for safety reasons
- Unsp** Allbaugh and Bush meet to discuss the role FEMA will play in the disaster
- Unsp** FEMA Acting Deputy Director Mike Brown holds press conference, gives NYC statistics - 40 bodies recovered, 1600 treated

- Unsp** Bush requests \$20 billion in emergency funding from congress; congress allocates \$20 billion
- Unsp** Army Corps of Engineers sends Structural Assessment Teams to assess debris removal and power
- Unsp** FEMA Director Allbaugh flies to New York City
- Unsp** IAFF President Harold Schaitberger says toll to NYC firefighters higher than originally estimated
- Unsp** Metro opens Pentagon subway stop
- Unsp** DOE's Energy Information Agency (EIA) releases oil market assessment showing overall U.S. and global oil supplies appeared to be minimally impacted, to quell rising fears of a shortage; DOE coordinates with ACOE to restore power to NYC, provide power generators and fuel; DOE personnel help evaluate the movement of critical oil resources into NY Harbor and review tug and barge availability for oil movement to upstate NY; DOE offers key equipment to assist in the NYMEX re-opening and is coordinates with USCG and local harbors to evaluate oil supplies up and down the East Coast; in conjunction with FEMA, DOE assists in search and rescue using Ground Penetrating Radar (GPR) equipment, adapted with motion detection applications and uses remotely-operated equipment, including infrared cameras, robotic equipment and fiber optic cameras, to aid the search for victims and evidence.
- Unsp** EPA- REGION II: Received initial mission assignments from FEMA for \$200,000, later increased to \$500,000, established operations from Edison, NJ with help of 12 OSCs, took initial dust and air samples near WTC, provided 200 Tyvek suits to Monmouth County, NJ Health Department (EPA Timeline)
- Unsp** EPA- REGION III: Received initial mission assignment from FEMA for \$25,000, deployed 4 OSCs and 2 air inspectors to Pentagon and surrounding Arlington/DC area, deployed OSCs to FEMA A-ROC, ERT-A in Arlington, DC EMA; closed DC EMA, moved 4 START personnel from Ft. Meade to Pentagon (EPA Timeline)
- Unsp** EPA - HEADQUARTERS: Began twice daily emergency response technical conference calls with regions 1-6, prepared morning and evening special reports, held conferene call with the National Response Team agencies, established communications support for Region II, including website and web access to email (EPA Timeline)
- pm** Donald Rumsfeld announces Pentagon death toll lower than estimated 800 (defenselink.mil)
- pm** HHS NMRT-E Weapons of Mass Destruction travels to NYC (HHS Sitreps)

September 13, 2001

- 7:30am** Pentagon evacuated after a bomb threat is called in
- 8:15** Sec. Thompson authorizes first collaboration of DMORT team with FBI to PA crash site
- 12:00pm** Vice President Cheney is taken to Camp David
- 6:00pm** Congress evacuated after a bomb threat is called in
- 6:00** NYC Mayor's Office (Sam Benson) discusses establishment of treatment center with HHS, to begin at 7am on September 14th
- Unsp** President Bush declares September 14 a day of remembrance
- Unsp** President and Congress agree on \$40 billion in emergency appropriations

- Unsp Airline operations resume
- Unsp Army search and rescue move ~60 bodies to Dover Air Force Base, DE from Pentagon
- Unsp President Bush announces the creation of Homeland Security cabinet position, names Tom Ridge
- Unsp President Bush issues Emergency Declaration for VA
- Unsp Tommy Thompson meets with Governor Pataki and Mayor Giuliani to discuss NYC needs (HHS.gov)
- Unsp HHS Substance Abuse and mental Health Administration team dispatched to NY to conduct longer-range planning for services to rescue workers, survivors and others. (HHS.gov)
- Unsp HHS sends National Medical Response Team (NMRT) to NY to help detect any possible industrial chemical-related problems that may result from the collapse of buildings (HHS.gov)
- Unsp HHS sends DMORT team with 35 personnel and a portable morgue with 8 personnel to Pennsylvania crash site at request of FBI. (HHS Sitreps)
- Unsp HHS Veterinary Medical Assistance Team (VMAT) activated and sent to NYC - 9 vets. (HHS Sitreps)
- Unsp HHS FDA continues to monitor pharmaceutical and blood availability and helped arrange deliveries of skin products for burn victims in New York and Washington, D.C.(HHS.gov)
- Unsp EPA- REGION II: Staffed Edison, NJ with 30 personnel, received 15 OSCs who were deployed to Edison, NJ, provided assistance to financial district companies to recover business assets in computers, coordinated with ACOE on WTC debris removal (EPA Timeline)
- Unsp EPA- REGION III: Deployed 6 OSCs to Arlington, VA, Initiated air monitoring at Pentagon, transitioned A-ROC activities back to ROC in Philadelphia (EPA Timeline)
- Unsp EPA- HEADQUARTERS: Continued EOC operations, technical conference calls, and special reports, initiated procurement of laptops and wireless communications for Region II. (EPA Timeline)

Color Key

- = Event
- = Action - General
- = Action - NYC
- = Action - Pentagon and PA
- = Organizational Response

7.2. Appendix 2 - Incident Command System Definitions

Command – The act of directing and/or controlling resources by virtue of explicit legal, agency, or delegated authority. (FEMA)

Command Staff – The Command Staff consists of the Information Officer, Safety Officer, and the Liaison Officer. They report directly to the Incident Commander. They may have an assistant or assistants, as needed. (FEMA)

Communication – The exchange of information between individuals (*and/or organizations*) through common language, signs, symbols, or conduct. (EEI)

Coordination – The process of systematically analyzing the situation, developing relevant information, and informing appropriate command authority of viable alternatives for selection of the most effective combination of available resources to meet specific objectives. The coordination process (which can be intra- or inter- agency) does not involve dispatch actions. However, personnel responsible for coordination may perform command or dispatch functions within the limits established by specific agency delegations, procedures, legal authority, etc. (FEMA)

Director – The ICS title for individuals responsible for supervision of a Branch. (FEMA)

Incident – An occurrence caused by either human action or natural phenomena, that requires action by emergency service personnel to prevent or minimize loss or life or damage to property and/or natural resources. (FEMA)

Incident Action Plan – Plan containing objectives reflecting the overall incident strategy and specific tactical actions, and supporting information for the next operational period. (FEMA)

Incident Commander (IC) – The individual responsible for the management of all incident operations at the incident site. (FEMA)

Incident Command Post (ICP) – The location at which the primary command functions are executed. (FEMA)

Incident Command System (ICS) – A standardized on-scene emergency management concept specifically designed to allow its user(s) to adopt an integrated organizational structure equal to the complexity and demands of single or multiple incidents, without being hindered by jurisdictional(*and/or organizational*) boundaries. (FEMA Glossary)

Incident Command System – A model tool for command, control and coordination of a response and provides a means to coordinate the efforts of individual agencies as they work toward the common goal of stabilizing the incident and protecting life, property and the environment. (FEMA Page I-2)

ICS Functions – ICS Functions refer to the five major activities in an ICS, i.e., Command, Operations, Planning, Logistics, Finance/Administration. The term function is also used when describing the activity involved (e.g., the planning function). (FEMA)

Operations Section – The section responsible for all tactical operations at the incident. (FEMA)

Logistics Section – The section having responsibility for providing facilities, services, and materials for the incident. (FEMA)

Planning Section - The section responsible for the collection, evaluation, and dissemination of tactical information related to the incident, and for the preparation and documentation of Incident action plans. The Planning Section also maintains information on the current and forecasted situation and the status of resources assigned to the incident. (FEMA)

Finance/Administration Section – The section responsible for all incident costs and financial considerations. (FEMA)

Incident Objectives – Statements of guidance and direction necessary for the selection of appropriate strategy/ies, and the tactical direction of resources. Incident objectives are based on realistic expectations of what can be accomplished when all allocated resources have been effectively deployed. Incident objectives must be achievable and measurable, yet flexible enough to allow for strategic and tactical alternatives. (FEMA)

Jurisdiction – The range or sphere of authority. Public agencies have jurisdiction at an incident related to their legal responsibilities and authority for incident mitigation. Jurisdictional authority at an incident can be political/geographic (e.g., city, county, State, or Federal boundary lines) or functional (e.g., police department, health department, etc.) (FEMA)

Jurisdictional Agency – The agency having jurisdiction and responsibility for a specific geographic area, or a mandated function. (FEMA)

Multiagency Coordination (MAC) – A generalized term which describes the functions and activities of the representatives of involved agencies and/or jurisdictions who come together to make decisions regarding the prioritizing of incidents and the sharing and use of critical resources. The MAC organization is not part of the on-scene ICS and is not involved in developing incident strategy or tactics. (FEMA)

Multiagency Incident – An incident where one or more agencies assists a jurisdictional agency or agencies. May be single or unified command. (FEMA)

Multijurisdictional Incident – An incident requiring action from multiple agencies that have a statutory responsibility for incident mitigation. In ICS these incidents will be managed under Unified Command. (FEMA)

Span of Control - The supervisory ratio of from three to seven individuals, with five-to-one being optimum. (FEMA)

Unified Command – A unified team effort which allows all agencies with responsibility for the incident, either geographic/political or functional, to manage and incident by establishing a common set of incident objectives and strategies. This is accomplished without losing or abdicating agency authority, responsibility or accountability. (FEMA)

Unified Command – A structure that brings together the Incident Commanders of all major organizations involved in the incident to coordinate an effective response while at the same time carry out their own jurisdictional responsibilities. The UC links the organizations responding to the incident and provides a forum for these agencies to make consensus decisions. Under the UC, the various jurisdictions and /or agencies and non-government responders may blend together throughout the organization to create an integrated response team. The UC may be used whenever multiple jurisdictions are involved in a response effort. These jurisdictions could be represented by:

- Geographic boundaries;
- Government levels;
- Functional responsibilities; Statutory responsibilities; or
- Some combination of the above.

(USCG)

Unity of Command – The concept by which each person within an organization reports to only one designated person. (FEMA)

References

FEMA IS 195 Basic Incident Command System (ICS) Independent Study

USCG Incident Management Handbook COMDTPUB P3120.17. 4/11/01

Part II
Analysis of Communication, Coordination, and Organizational Adaptation
Following the 9/11 Attacks

University of Pittsburgh

COMMUNICATIONS AND COORDINATION

While the full record of damaged conditions and actions taken during the intense hours, days and weeks immediately following the 9/11 terrorist attacks is not yet complete, sufficient information regarding key aspects of the response is available to allow preliminary observations and interpretation. This analysis is based upon accounts of the events and actions taken from news reports, agency situation reports, and notes from interviews with key participants.¹ It is also important to set this analysis in administrative context. In terrorist incidents, two types of response operations are initiated simultaneously. The first is crisis management, or the effort to identify and pursue the perpetrators of the incident. Under the United States Government Interagency Domestic Terrorism Concept of Operations Plan (CONPLAN 2001), the U.S. Department of Justice (DOJ) is designated as the lead agency for crisis management, and coordinates its work with other agencies involved in pursuing individuals who may have engaged in illicit activity. These agencies include the Federal Bureau of Investigation (FBI), the Central Intelligence Agency (CIA) when international agents are involved; the Immigration and Naturalization Service (INS), which governs entry and exit of foreign nationals across U.S. borders; and the Bureau of Alcohol, Tobacco and Firearms (ATF), which tracks the entry of illegal substances across U.S. borders. These agencies operate within the bounds of security required for a criminal investigation.

The second type of response to a terrorist attack is consequence management, or the immediate mobilization of search and rescue operations to save the lives of people harmed by the incident, as well as disaster assistance to the people who suffered losses from the incident, and recovery and reconstruction of the damaged communities. The Federal Emergency Management Agency (FEMA) has lead responsibility for consequence management, focusing first on lifesaving operations and second on assistance to the victims, along with recovery and reconstruction of the community. Under the Federal Response Plan, eight federal agencies in addition to FEMA play

lead roles in disaster operations, with 25 federal agencies assigned responsibilities under twelve specified emergency support functions. The lead agencies include the Departments of Transportation (DOT), National Communications Service (NCS), Defense (DOD), Agriculture (USDA), Health and Human Services (HHS), Housing and Urban Development (HUD), Environmental Protection Agency (EPA), and the General Accounting Office (GAO). Two departments have dual emergency support functions. The USDA has the primary support function for firefighting, carried out by its sub-unit, the U.S. Forest Service (USFS), as well as for food. FEMA is responsible for information management, as well as urban-search-and-rescue operations (Federal Response Plan 1999). The American Red Cross (ARC), a nonprofit organization, is designated as the lead agency for mass care.

Findings are presented from a preliminary analysis of the performance of the public security system, using three primary sources of information. The Concept of Operations Plan 2001 was used as the administrative model for the public security system. Situation reports prepared by the Federal Emergency Management Agency (FEMA), designated as the lead agency for consequence management, were used as the official account of organizational operations following the 9/11 attacks. Under the Federal Response Plan, FEMA assumes responsibility for information and planning in any federally declared emergency. News stories reported in *The New York Times* for three weeks after the attacks were analyzed to corroborate findings from the official documents and to provide a daily record of organizational actions and events as they evolved. These sources were supplemented by a set of ten semi-structured, in-depth interviews with senior operations officers from seven different agencies representing three jurisdictional levels. These officers were directly involved in managing response operations for their respective agencies and in coordinating their agency's interactions with other organizations engaged in response. Content analysis was used to identify the public security system, its component organizations, and the interactions among them conducted in response to the attacks. The unit of analysis was the organization, and the unit of observation was the manager.

The integration of the functions of crisis management and consequence management into a single, coordinated strategy represents the newest and most difficult aspect of the CONPLAN. The actual steps required to achieve integration had not been defined for a plan that had been

placed in operation only nine months earlier. Organizational procedures to facilitate an integrated approach were not clearly formulated, nor was there a technical information infrastructure in place to support rapid information exchange and feedback among the two sets of agencies.

Integration of the crisis and consequence management functions requires not only a shift in agency interactions, but also a significant change in the culture and operating styles of the specific agencies. Law enforcement agencies by necessity have operated with a significant degree of secrecy and confidentiality in their strategies. Sharing information with other agencies has not been routine practice, even for separate agencies tracking the same threat. More difficult is sharing information across jurisdictional lines, so that a cumulative pattern of minor infractions committed by the same hostile agent in different municipalities in different states might never come to the attention of any federal agency, let alone several federal agencies. This difficulty in identifying patterns of threat to public security is compounded by other factors as well, such as the use of multiple aliases by the same agent, systematic efforts by intelligent agents to evade detection, and inadequate language skills by counter-intelligence agents.

Four primary factors contributed to the failure to detect the risk of attack; there may be others. First, governmental agencies responsible for security measures operate within a largely closed, hierarchical context. These agencies include the federal law enforcement agencies under the supervision of the Department of Justice – FBI, CIA, INS, ATF -- as well as the state and local law enforcement agencies that operate in different state, county, and municipal jurisdictions. Sharing information among these agencies in any one jurisdiction is not easy, and among many jurisdictions has been very difficult. Many of the agencies with responsibilities in crisis management had no clear profile of a wider threat that extended beyond their particular jurisdiction. With narrowly defined tasks and little guidance in defining public security for the nation, the separate agencies and jurisdictions focused on the limited scope of their respective responsibilities. Consequently, what appeared to be minor infractions in several jurisdictions did not present clear evidence for a broader pattern of hostile activity that was occurring across the nation and across the world. In contrast, the terrorists were operating within a highly flexible, networked system in which rapid communication and closely coordinated action enabled them to maximize modest resources to support their hostile intent.

Secondly, an analysis of communication and coordination among the agencies that shared responsibility for protecting public security reveals that the processes of information search and exchange vital to adaptive learning often did not occur. A content analysis of the FEMA situation reports and news stories reported in the *New York Times* for twenty-one days following the attacks (September 12 - October 4, 2001) identified a total response system to the World Trade Center site that was composed of 457 organizations, as shown in Table 1. Subtracting the international organizations, both public (64) and private (15), leaves a total of 378 domestic organizations that engaged in response organizations under CONPLAN 2001.

Table 1

Frequency Distribution, Number of Organizations Involved in Response Operations to 11 September 2001 Attacks, by Sector and Jurisdiction

	US & International		US Response System	
	<u>N</u>	<u>%</u>	<u>N</u>	<u>%</u>
Public Organizations				
Public International	64	14.0	-	-
Public-federal	73	16.0	73	19.3
Public-state	34	7.5	34	9.0
Public-regional	9	2.0	9	2.4
Public-county	2	0.4	2	0.5
Public-local	9	2.0	9	2.4
Public-city	<u>41</u>	<u>9.0</u>	<u>41</u>	<u>10.9</u>
Total Public Organizations	232	50.9	168	44.6
Nonprofit Organizations	64	14.0	64	16.9
Private Organizations				
Private-domestic	143	31.3	143	37.9
Private-international	5	3.3	-	-
Public-private	2	0.4	2	0.5
Total Private Organizations	<u>160</u>	<u>35.1</u>	<u>145</u>	<u>38.5</u>
Total System: Public, Nonprofit, Private	456	100.0	377	100.0

Sources: Situation Reports, Federal Emergency Management Agency, September 11-October 4, 2001; The New York Times, September 12 - October 4, 2001. Listing of Specific Organizations available from authors

Notable in these findings is the large number of private organizations, 145, or 38.5% of the 377 US organizations that were involved in response operations. Clearly, it was the intent of the terrorists to damage commercial organizations housed in the World Trade Center, organizations that represented commercial interests not only in New York, but in the world. Significant also is the number of federal organizations that were involved in the response operations, 73 out of 168, or 43.4% of the total number of public organizations operating at the New York site. This representation documents the immediate assistance provided by federal agencies to the state, regional and municipal organizations of New York after the attacks.

Although the evidence available from the content analysis is still preliminary, the pattern of interactions among the organizations offers further insight into the dynamics of the response operations. Findings from content analysis of the *New York Times* news reports indicate that interactions were limited (127 in total) and occurred primarily between organizations of similar types. For example, public organizations tended to interact most frequently with other public organizations from the same jurisdiction; private

organizations with other private organizations; nonprofit organizations with other nonprofit organizations. Interactions were infrequently reported across jurisdictional lines. These results are filtered through the journalists' perspectives and knowledge, and must be interpreted accordingly.

The content analysis of situation reports prepared by FEMA, summarized in Table 2, shows substantial direct interaction between key federal agencies -- Department of Transportation (DOT), Department of Health and Human Services (HHS), Department of Defense (US Army Corps of Engineers), National Communication Service (NCS), and particularly FEMA – with their counterpart agencies in New York City. Nearly two-thirds of the reported interactions (330 out of 532, or 62%) involved FEMA, not surprising given its information and management functions under the CONPLAN.

Table 2: Analysis of FEMA Situation Reports

Matrix of Interacting Organizations, Content Analysis of Situation Reports, Federal Emergency Management Agency, September 11 - October 4, 2001														
	<i>Public-Federal</i>		<i>Public-State</i>		<i>Regional/County</i>		<i>Public-Municipal</i>		Total Public		Nonprofit Organizations		Private Organizations	
Public Organizations	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Pres. Bush: Exec. Off.	2	1.0	2	3.2	0	0.0	1	0.7	5	1.2	0	0.0	0	0.0
DOT	8	3.5	0	0.0	0	0.0	1	0.7	9	2.2	0	0.0	0	0.0
NCS	2	1.0	3	4.8	2	66.7	2	1.3	9	2.2	0	0.0	1	2.6
DOD	12	6.6	2	3.2	0	0.0	19	12.6	33	8.0	0	0.0	2	5.1
DOA	1	0.5	0	0.0	0	0.0	6	4.0	7	1.7	0	0.0	0	0.0
FEMA	109	55.1	41	66.1	1	33.3	89	58.9	240	58.0	60	75.9	30	76.9
GSA	5	2.5	1	1.6	0	0.0	1	0.7	7	1.7	0	0.0	0	0.0
HHS	13	6.6	7	11.3	0	0.0	12	7.9	32	7.7	2	2.5	1	2.6
EPA	6	3.0	2	3.2	0	0.0	4	2.6	12	2.9	0	0.0	0	0.0
DOJ	3	1.5	0	0.0	0	0.0	0	0.0	3	0.7	0	0.0	0	0.0
Support: DOL, HUD	5	2.5	0	0.0	0	0.0	0	0.0	5	1.2	0	0.0	0	0.0
Total, Federal Orgs.	166	83.8	58	93.5	3	100.0	135	89.4	362	87.4	62	78.5	34	87.2
<i>Public-State</i>	3	1.5	0	0.0	0	0.0	2	1.3	5	1.2	0	0.0	1	2.6
<i>Public-Regional</i>	6	3.0	0	0.0	0	0.0	0	0.0	6	1.4	0	0.0	0	0.0
<i>Public-Municipal/Loc</i>	10	5.1	0	0.0	0	0.0	7	4.6	17	4.1	0	0.0	1	2.6
Total Public Organizations	185	93.4	58	93.6	3	100.0	144	95.4	390	94.2	62	78.5	36	92.3
Nonprofit Organizations	6	3.0	1	1.6	0	0.0	2	1.3	9	2.2	17	21.5	0	0.0
Private Organizations	7	3.5	3	4.8	0	0.0	5	3.3	15	3.6	0	0.0	3	7.7
Interactions: Column Tot	198	100.0	62	100.0	3	100.0	151	100.0	414	100.0	79	100.0	39	100.0
<i>Legend:</i>														
President Bush: Executive Office					GSA: General Services Administration									
DOT: Department of Transportation					HHS: Department of Health and Human Services									
NCS: National Communications Services					EPA: Environmental Protection Agency									
DOD: Department of Defense					DOJ: Department of Justice									
DOA: Department of Agriculture					DOL: Department of Labor									
FEMA: Federal Emergency Management Agency					HUD: Department of Housing and Urban Development									

Table 2 reveals substantial gaps in communication and information exchange both among the agencies engaged in consequence management functions led by FEMA and between these agencies and the crisis management agencies operating under the Department of Justice. These gaps document the lack of integration among the crisis and consequent management functions of the CONPLAN, essential to protect public security.

Observations by seven of the ten senior operations officers in consequence management indicated that, in practice, information sharing was based on previously established professional relationships. The degree of uncertainty created by the severity and urgency of the attacks led senior personnel to seek information from trusted sources. Although not surprising in such a traumatic event, this pattern reveals a weakness in the capacity to integrate information across a large, loosely connected system of response organizations through standard agency procedures.

Third, despite the large number of organizations involved in response operations after the attacks, the set of organizations engaged in crisis management was unable to create a comprehensive profile of risk from evidence scattered through multiple organizations and jurisdictions before the event. Developing the capacity to communicate information and coordinate actions across the full range of organizations and jurisdictions engaged in security operations, acknowledged as a major function of the newly proposed Department of Homeland Security, will be essential to effective administrative performance in protecting public security.

Finally, responsibility for risk reduction was not integrated among all organizations and individuals throughout the society, but rather perceived largely as a function of public organizations. For risks that are shared among all organizations and citizens, the responsibility for identifying and reducing that risk must also be shared. Public agencies alone cannot solve the problem of public security. Only an informed citizenry and active engagement in measures to reduce fraud and identity theft by private and nonprofit organizations as well as public can consistently reduce risk from hostile agents.

MODES OF ORGANIZATIONAL ADAPTATION TO THE 9/11 WTC ATTACK

This analysis addresses only consequence management operations, which are led by FEMA in conjunction with other civilian federal agencies and state and local governments. While the interaction between the DOJ agencies and FEMA is critical to the overall operation of the response to a terrorist attack, the records of the agencies supervised by the DOJ are not open for public review because the criminal investigation is still on-going.

The initial conditions in which the incidents occurred shaped distinctively the emergence of the response systems at the World Trade Center and the Pentagon. At the World Trade Center, the physical devastation was catastrophic. The attacks caused not only the collapse of the 110-story twin towers, with an estimated 20,000 people in the buildings at the time of the attacks, but also the complete or partial loss of five smaller buildings in the immediate area, and heavy damage to twelve other buildings in the roughly six-square-block area in which the towers were located. In addition, the electrical power generation and distribution system for lower Manhattan was destroyed; the water distribution system, dependent upon electricity for pumping water, was disabled; gas pipelines were heavily damaged; and the telephone and telecommunications services were seriously disrupted.² The technical infrastructure that enabled people to live and work in this densely populated, interdependent urban environment was decimated, and the site was dubbed appropriately “Ground Zero.”

Organizationally, the New York City Fire and Police Departments responded immediately to the event. In terms of professional experience and training, both departments had seasoned, well-trained and well-equipped personnel. Neither department, however, had confronted events as catastrophic as this. Both departments responded within their standard framework of operations for a major fire. But without an assessment of the interdependent effects of the collapse of the technical infrastructure needed to support their operations, the responders themselves became victims. The loss was greatest in the Fire Department, when 343 fire personnel were lost. This number

included personnel who were in the buildings seeking to rescue others when the towers collapsed, as well as departmental leadership on duty when their command post, established in the ground floor of the North Tower, was destroyed.

Culturally, the emergency-response departments of New York City have well-developed, coherent professional beliefs and values regarding their departmental performance. Less well developed, however, was their awareness of the need for information from other departments in order to craft an effective strategy of action for this extraordinarily difficult event. With little experience in suppressing fire in 110-story buildings, the fire department did not consider the possible collapse of the buildings themselves. Without an assessment of the structural damage to the building and its state of fragility, standard departmental procedures placed their own personnel at risk.

At the Pentagon site, the Boeing 767 struck a section of the building that had just been reinforced against possible attack. The physical reinforcement of the building, including \$10,000 windows and fire-resistant walls between sections of the building, limited the damage. Fortunately, the advanced structural design of the building largely confined the damage to one section, facilitating response and enabling the occupants of the other sections of the building to leave unharmed. Organizationally, Pentagon forces were both a target of the attack and a responder to the event. With personnel trained in battlefield management, the Department of Defense was uniquely suited to respond to this event. Located in Arlington County, Virginia, the Pentagon site drew its first responders from the Arlington County Fire Department and the Fairfax County Search and Rescue Team. With familiarity developed from prior training and joint exercises, the local emergency-response agencies moved quickly to joint operations with the Defense Department's Security Force, and together the two sets of agencies created an effective response system. In this unusual situation, federal forces integrated directly with county emergency-response teams without the usual intervening state jurisdiction. The markedly lower death toll at the Pentagon site, 184 persons, documented both less devastating conditions and a smoother inter-organizational transition to response than at the World Trade Center.

AUTO-ADAPTATION IN PRACTICE

Elements of auto-adaptation were evident in local response at both sites, but the difference in the magnitude of disaster at the two sites affected the interaction between the local site-response sub-systems and the wider national response. The response to the World Trade Center attacks involved a much larger loss of life, a far greater number of organizations, a significantly higher cost in damage, and a more profound impact on the economic, social, and emotional state of New York City, the state, and the nation. Responsible actors at both the Pentagon and World Trade Center sites requested assistance from FEMA, and FEMA personnel responded promptly to both sets of requests. The response to the Pentagon site was managed by a joint federal-local task force and was largely under control within four days. The response to the World Trade Center site was a much more complex operation that is still in progress. This analysis will review the five phases of a preliminary model of auto-adaptation (information search, information exchange, sensemaking, adaptation, and inter-organizational learning) against actual practice, focusing on the response to the World Trade Center site and the interactions among the participating jurisdictions as the more complex, dynamic set of operations.

Information Search: The interdependence among the response organizations' technical information infrastructure, their organizational procedures and capacity to assess accurately the risk to which they were exposed, and their willingness to explore alternative strategies in response to the extraordinary damage is clear. This interdependence is vividly demonstrated by the mixed signals, costly delays, and painful misjudgments that exacerbated the loss of life in the 71 minutes that included the crash of United Flight #11 into the North Tower at 8:48 a.m., the second crash of American Airlines Flight #175 into the South Tower at 9:03 a.m., and the collapse of the South Tower at 9:59 a.m. The final collapse of the North Tower at 10:28 a.m. added a scant 29 minutes to potential evacuation time for the occupants of the North Tower.

In retrospect, it is difficult to portray the unimaginable horror that emergency personnel confronted as these events were unfolding. Information search was seriously limited, resulting in a severe lack of information as a basis for decision making in this urgent, uncertain, swiftly moving context. The communications infrastructure was disabled. The Verizon cables in the base of the North Tower were destroyed, and telephone communication lines were disrupted. As people turned to cell phones, the number of calls increased by more than 1000 percent, overloading the base stations and rendering them useless. Police and fire personnel turned to radio communications, but their call channels were also overloaded. In this extremely dangerous environment, thousands of people frantically sought safety. Fire personnel entered the towers seeking to suppress the fires or guide the occupants to safety, but without adequate communication, they lost contact with departmental leadership and had little or no information about the growing instability of the towers. Information search at the site failed to provide a sufficiently timely assessment of this volatile set of conditions to support coordinated action. Departmental procedures developed for fires of lesser scale proved inadequate in this inferno.

Information Exchange: The capacity for information exchange is directly related to the performance of information search processes. On scene at the World Trade Center collapse, information exchange in the first hours after the attack was limited by the same failure of communications infrastructure that hindered information search. Without information exchange, coordination between the leaders of the response organizations and their personnel, as well as among organizations and between jurisdictions, was delayed and disrupted. The need for a joint information center among federal, state, municipal, and borough operations was acute, but the extraordinary physical destruction in the immediate area of the WTC complex made it difficult to find space close to operations to establish a joint information center. Separate jurisdictions established separate information centers, asserting that they were joint, but in fact presenting different accounts of operations to news and agency personnel. Conflicting reports hindered cooperation and detracted from efforts to build trust and coordinate action

among the agencies and jurisdictions in an extremely difficult, uncertain operations environment.

Among the federal agencies, information exchange reached the level of near auto-adaptation for agencies engaged in consequence management. At FEMA headquarters in Washington, D.C., senior personnel activated the Emergency Operations Center immediately upon seeing the second plane crash into the South Tower on the television news. Personnel from Health and Human Services began to mobilize the Disaster Medical Assistance Teams (DMAT) and Disaster Mortuary Teams (DMORT) to respond first to New York, and minutes later, to the Pentagon. Secretary of Transportation Norman Y. Mineta quickly grounded all airplanes in US airspace in order to prevent any further attacks. Army Corps of Engineers personnel recognized that debris removal would prove a major problem for New York and planned ways in which they would offer their services to New York City personnel.

In Washington, D.C. and in the cities near New York, the physical information infrastructure remained intact. Communication lines were not damaged, and information was exchanged freely via telephone, fax, radio and e-mail. Daily conference calls between FEMA's regional operating centers and headquarters maintained an open, two-way exchange of information that informed decisions at both locations. Twice-a-day briefings at FEMA headquarters kept both staff and leaders focused on actions planned and actions taken. In the intense first hours after the attacks, decisions were made and resources committed among agencies on the basis of verbal agreements. This informal process revealed the degree of common understanding among the senior personnel of the principal response agencies. It reflected a high degree of mutual respect, shared goals, and trust among responsible personnel gained from working together in previous disaster operations. This kind of information exchange represented "heedful interrelating" among the personnel, with participants paying careful attention to the actions and needs of the other agencies in order to achieve coordinated action among all participants in response operations. Even members of Congress set aside partisan differences to show a unified approach to counter this sobering national threat.

Problems did arise, however, in integrating information from the consequence management set of operations with reports from crisis management operations to present a comprehensive profile of disaster operations to President George W. Bush. At times, reports of the state of disaster operations were conflicting, or information presented to the public was not checked carefully. The result was apparent confusion among agency personnel and the public, with the unfortunate outcome of missed opportunities for detection in the anthrax cases or conflicting statements made regarding the level of risk to which postal workers or others were exposed. The credibility of the information processes is cumulative, with the quality of information exchanged dependent upon the degree of care taken in information search.

Sensemaking: The ability to act in difficult, urgent situations depends on sufficient understanding of the context to formulate a plausible strategy of action, given the existing constraints and available resources. This capacity depends, in turn, on the preceding processes of information search and exchange. In coping with this seemingly incomprehensible event, few persons initially understood the danger to which they were exposed. Most painful were the accounts of security guards urging occupants of the South Tower to return to their desks, after the North Tower was struck. In an effort to maintain order, and based on inadequate information, responsible managers informed employees that they could safely remain in the building and return to work. Precious minutes were lost in evacuating the building, as employees followed instructions instead of checking the validity of the information against their own perceptions (*New York Times* September 12, 2001). The limitations of human cognitive capacity are nowhere more apparent than in the inability to absorb information that is startlingly divergent from one's previous experience (Cohen and Levinthal 1990). The potential collapse of the towers was not recognized by managers, individuals, or emergency personnel in time to implement immediately the strategy of evacuation that appears obvious only in hindsight.

Away from the horror of burning buildings and failed infrastructure, federal-agency sensemaking spurred action in anticipation of requests for assistance. Federal officials,

recognizing the extraordinary extent of damage, pre-positioned mobile emergency response support (MERS) units to send communications equipment to New York to facilitate immediate response.³ From previous experience, senior officials recognized the type of assistance that would be needed for this demanding, urgent environment. They acted effectively to provide support to the on-scene managers, constructing meaning from a collage of prior disaster events. The contrast in ability to make sense out of this seemingly incomprehensible situation reflected not only the difference in experience between senior emergency management personnel and on-site security guards, but also the long-recognized observation that human problem-solving ability drops under stress (Miller 1967; Weick 1993; Comfort 1999; Flin 1996, 2001). In the actual context of disaster, the demands of the situation often exceed human problem-solving capacity.

Adaptation: Sensemaking represents a form of learning, the ability to construct meaning from perceptions that may be disparate or scattered, but that lead to recognition of a coherent strategy of action. The ensuing action constitutes a change from previous behavior that fits environmental demands more appropriately. Two incidents indicate adaptation of response units to urgent needs from the disaster environment. At the Pentagon, local emergency-response units from Arlington County and the FEMA-sponsored Urban Search and Rescue Team from Fairfax County responded immediately to the crash scene. Because the Department of Defense was the victim, the scene immediately became a federal disaster. Federal resources were made available to local managers, and the response system evolved essentially as a federal-local set of operations, with little involvement from the State of Virginia, despite formal requirements for state agencies to act as the intermediary between federal and local units. In this case, the experience and professional capacity of the local Arlington and Fairfax County responders, coupled with the immediacy of federal assistance, made formal intervention by state agencies, located in Richmond several hours away, virtually unnecessary.

The same situation prevailed in New York City, where federal agencies provided support directly to New York municipal agencies, without direct involvement of New York state

agencies located in Albany two hours away. The urgency and scope of assistance required in response operations in New York City demanded federal resources, and prior relationships between federal and municipal officials established the trust and collaboration essential to coordinate actions under the stress of this uncertain disaster environment. Prior procedures proved inappropriate, given the size and scope of this disaster. Taking reasoned action to save lives, reduce risk, assist those who had been harmed, and restore basic services in the damaged area meant adapting practice to this severely altered environment. Slowly, order emerged at both sites, but with significant adjustment of prior practices to meet the enormity of the tasks. These events indicate the need to review the role of state agencies in managing extreme events.

Interorganizational Learning: The final phase in adapting to a changed disaster environment includes evaluation of actions taken and modification of succeeding actions on the basis of observed results. This phase could initiate system-wide change as the action of one organization affects the performance of its near-neighbors in the response system, triggering a ripple of change throughout the interdependent set of organizations. It is too early to assess whether changes initiated by organizations as they modified prior practice in this event will remain in place. To the extent that they do, these changes will represent learning among organizations in a permanent alteration of conditions that lead to the disaster. A candidate for this type of permanent change among organizations responsible for public security is the newly formed Office of Homeland Security. This office, as presently conceived, would integrate functions of crisis and consequence management in a unified approach to reduction of risk and response to terrorist attacks or other types of threats. Although there is widespread recognition of the need to reduce the risk of threats to public security, the precise mechanisms for bringing about this reduction are not clear.

At issue is the balance between governmental authority used to protect the public good and the rights of individuals to freedom from unwarranted breaches of their privacy. A secondary issue is interdependence among government agencies. Whether agencies currently operating under the Department of Justice would be limited in their functions of pursuing perpetrators of terrorist acts by sharing information more widely with other

governmental agencies remains to be seen. Clearly, mutual adaptation among the agencies will occur over time, but the direction, rate, and intensity of this change will vary among the participant organizations and with the scope of the continuing threat.

Equally important will be the evolution of the relationships among the jurisdictions in countering and responding to terrorist threats. Whether the emergence of direct federal-local relationships will continue or be replaced by wider, regional networks of preparedness and response will depend on the interplay of threat and developing governmental capacity at state and local agencies. The lasting form of a response system for extreme events will certainly be intergovernmental, but the precise mix of federal-state-local participation will likely depend on public investment in building an information infrastructure sufficiently advanced to manage the intense flow of information search, exchange, and sensemaking among the respective governments needed to support coordinated action in risk reduction and response.

CONCLUSION : AUTO-ADAPTATION IN INTER-GOVERNMENTAL RELATIONS

While instances of auto-adaptation occurred in response to the 9/11 events, they were largely spontaneous acts taken by different agencies at different levels of jurisdiction in fortuitous recognition of a chance to improve performance. These instances were intermittent, without the cumulative power of a systematic effort to create change in the performance of the whole system. To improve agency response in extreme events, it is essential to recognize the systemic functions inherent in intergovernmental performance. Further, this recognition needs to foster the emergence of an auto-adaptive system among the governmental agencies that would seek the best mode of action at each agency and jurisdictional level of operations, while simultaneously integrating these separate actions into a coherent strategy of action for the whole system. This requirement places an intensive load on shared knowledge, communications and feedback both within and among the agencies and jurisdictions. It means the articulation of a common goal that is accepted by all agencies and jurisdictions, such as protection of public security. It also means the development of a basic set of knowledge bases for each agency within a

jurisdiction, and for each jurisdiction, that can guide operations on a daily basis, but that can be integrated across the inter-jurisdictional response system in an extreme event.

Accomplishing this change in intergovernmental performance means rethinking the public investment in governmental service. Systemic performance cannot be achieved by a hierarchical ordering of responsibilities and resources within and among jurisdictional boundaries. It requires the flexibility to reallocate resources and knowledge among agencies within a given jurisdiction and between the set of jurisdictions in response to demands from the environment. To counter the threat of terrorism, for example, local governments not only need viable computational systems to manage risk at their respective levels, but also to integrate the specific knowledge of their jurisdictions with the broader knowledge of the intergovernmental system. The lack of such capacity, particularly at the regional level that includes municipalities, counties, and special districts as well as major nonprofit and private institutions that serve a metropolitan region, was evident in the effort to mobilize response to the 9/11 events.

Auto-adaptation offers a mode of improving intergovernmental coordination in response to extreme events. This model acknowledges that change in performance needs to occur within organizations, among organizations within a single jurisdiction, and between jurisdictions engaged in response to an extreme event. The model builds on the human ability to learn and adapt to new information, but acknowledges that this capacity can only occur with the support of an appropriate information infrastructure. Federal investment in building the information infrastructure at sub-national levels of government would yield a major return in increased capacity of the intergovernmental system to anticipate and respond to extreme events.

NOTES

¹ The analysis of this case study draws heavily upon the daily news reports published by **The New York Times**, September 12 - October 6, 2001; situation reports prepared by the Department of Health and Human Services and the Federal Emergency Management Agency, and semi-structured interviews with key operations personnel in the Federal Emergency Management Agency, the Department of Health and Human Services, and

the US Army Corps of Engineers. The report is also informed by observations from professional researchers who were also engaged in studies of response to the World Trade Center-Pentagon Attacks, but who have not yet published their findings. To protect the confidentiality of the respondents, names will not be identified.

² FEMA Situation Report #1. Washington, DC. Federal Emergency Management Agency. September 11, 2001.

³ Interview, Director of Operations, Federal Emergency Management Agency, Washington, DC, January 28, 2002.

REFERENCES

- Argyris, Chris. 1993. *Knowledge for Action: A Guide to Overcoming Barriers to Organizational Change*. San Francisco: Jossey-Bass.
- Axelrod, R. 1997. *The Complexity of Cooperation: agent-based models of competition and collaboration*. Princeton, N.J.: Princeton University Press.
- Axelrod, R. and M. Cohen. 1999. *Harnessing Complexity*. New York: The Free Press.
- Bak, P. and K. Chen. 1991. "Self-Organized Criticality." *Scientific American*, 1991:46-53.
- Carley, K. and J. Harrald 1997. "Organizational Learning under Fire: Theory and Practice." *American Behavioral Scientist*. Vol. 40, No. 3 (January):310-332.
- Cohen, W.M. and Levinthal, D.A. 1990. "Absorptive Capacity: A New Perspective on Learning and Innovation." *Administrative Science Quarterly*. 35:128-152.
- Comfort, L. 2002. "Governance under Fire: Organizational Fragility in Complex Systems." In *Governance and Public Security*. Syracuse, NY: Syracuse University: 113-127.
- Comfort, L. 1999. *Shared Risk: Complex Systems in Seismic Response*. Amsterdam: Pergamon.
- Comfort, L.K.1994. "Self Organization in Complex Systems." *Journal of Public Administration Research and Theory*, Vol. 4, No. 3 (July1994): 393-410.
- Comfort, L.K. 1989. "Interorganizational Coordination in Disaster Management: A Model for an Interactive Information System." National Science Foundation Grant #CES 88-04285. Final Report submitted June 30, 1993.
- Comfort, L. K. and Y. Sungu. 2001. "Organizational Learning from Seismic Risk: The 1999 Marmara and Duzce, Turkey Earthquakes." In U. Rosenthal, L. Comfort and A. Boin, Eds. 2001. *Managing Crises: Threats, Dilemmas and Opportunities*. Springfield, IL: Charles C. Springer Publishers:119-142.
- Federal Emergency Management Agency. 1999. *Federal Response Plan*. Washington, DC: Federal Emergency Management Agency.
- Federal Emergency Management Agency. 2001. *Situation Reports, World Trade Center Site, New York*. September 11 - October 30. 2001.
- Feldman, M. and J.G. March. 1981. "Information in Organizations as Signal and Symbol." *Administrative Science Quarterly* 26: 171-86.

- Flin, Rhona. 2001. "Decision Making in Crises: The Piper Alpha Disaster." In U. Rosenthal, A. Boin and L.K. Comfort. *Managing Crises: Threats, Dilemmas, Opportunities*. Springfield, IL: Charles C. Thomas Publishers: 103-118.
- Flin, Rhona. 1996. *Sitting in the Hot Seat: Leaders and Teams for Critical Incident Management*. Chichester: John Wiley and Sons.
- Flynn, Steven E. 2002. "Transforming Border Management in the Post-September 11 World." In *overnance and Public Security*. Syracuse, NY: Syracuse University: 37-51.
- Gawronski, Vincent T. and Richard S. Olson. 2000. "'Normal' Versus 'Special' Time Corruption: An Exploration of Mexican Attitudes." *Cambridge Review of International Affairs*. Vol. XIV. No. 1:344-361.
- Gell-Mann, M.1994. "Complex Adaptive Systems." In Cowan, G.A., Pines, D. and Meltzer, D. *Complexity: Metaphors, Models, and Reality*. Reading, MA: Addison-Wesley. Proceedings, Vol. XIX, Santa Fe Institute Studies in the Science of Complexity: 17-45.
- Goodman, Paul, Lee Sproull and Associates. 1990. *Technology and Organizations*. San Francisco: Jossey-Bass Publishers.
- Hayes-Roth, F., D. Waterman and D. Lenat. 1983. *Building Expert Systems*. Reading, MA: Addison- Wesley Publishing Company.
- Holland, J. 1995. *Hidden Order: How Adaptation Builds Complexity*. Reading, MA: Addison Wesley Publishing Co.
- Kartez, Jack D. and William J. Kelly, 1988. "Research Based Disaster Planning: Conditions for Implementation." In L. K. Comfort, ed. *Managing Disaster: Strategies and Policy Perspectives*. Durham, NC: Duke University Press:126-146.
- Kauffman, S.A. 1993. *The Origins of Order: Self-Organization and Selection in Evolution*. New York: Oxford University Press.
- Kiel, L.D. 1994. *Managing Chaos and Complexity in Government*. San Francisco: Jossey Bass.
- Klein, Gary A. 1993. "A Recognition Primed Decision Making (RPD) Model of Rapid Decision Making. In G. Klein, J. Orasanu, R. Calderwood, and C. Zsombok, eds. *Decision Making in Action: Models and Methods*. Norwood, NJ: Ablex Publishing Corporation: 138-147.
- Mackenzie, K. D. 1986. *Organizational Design: The Organizational Audit and Analysis Technology*. Norwood, NJ: Ablex Publishing Corporation.
- Mileti, D., ed. 1999. *Disasters by Design: A Reassessment of Natural Hazards in the United States*. Washington, DC: Joseph Henry Press.
- Miller, G. 1967. "The Magical Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information" in *Psychology of Communication* New York, NY: Basic Books. 14-44.
- New York Times*. September 12 - October 4, 2001. New York.
- Newell, A. and H.A. Simon. 1972. *Human Problem Solving*. Englewood Cliffs, NJ: Prentice Hall.
- Ostrom, E. 1998. "A Behavioral Approach to the Rational Choice Theory of Collective Action." *American Political Science Review*, Vol. 92, No. 1: 1-22.
- Peitgen, H., H. Jurgens, and D. Saupe. 1992. *Chaos and Fractals: New Frontiers of Science*. New York: Springer-Verlag.

- Platt, Rutherford et al. 1999. *Disasters and Democracy*. Washington, DC: Island Press.
- Prigogine, I. and I. Stengers. 1977,1984. *Order Out of Chaos*. New York: Bantam Press
- Simon, H.A. 1981. *The Sciences of the Artificial*, 2nd ed. Cambridge, MA: MIT Press.
- Sylves, Richard T. and William L. Waugh, Jr., Eds. 1996. *Disaster management in the U.S. and Canada: The politics, policymaking, administration, and analysis of emergency management*. Springfield, Ill. : Charles C. Thomas, Publisher.2nd ed.
- Tribe, L., ed. 1988. *American Constitutional Law*, 2nd Ed.Mineola, NY: Foundation Press, Inc..
- United States Government Interagency Domestic Terrorism Concept of Operations Plan*. Available at <http://www.fbi.gov:80/publications/conplan/conplan.pdf>. Accessed 3/9/02.
- Weick, K. 2001. *Making Sense of the Organization* Oxford , Malden, Mass.: Blackwell
- Weick, K. and K. Roberts. 1996. "Collective Mind and Organizational Reliability: The Case of Flight Operations on an Aircraft Carrier Deck." In M.D. Cohen and L.S. Sproull, eds. *Organizational Learning*. Thousand Oaks, CA: Sage Publications: 330-358.
- Weick, K. and K. Sutcliffe, 2001. *Managing the Unexpected: Assuring High Performance in an Age*
- Weick, K. E. 1993. "The Collapse of Sensemaking in Organizations: The Mann Gulch Disaster." *Administrative Science Quarterly*, Vol. 22, no. 3:606-39.
- Weick, K. E. 1995. *Sensemaking in Organizations*. Thousand Oaks, CA: Sage Publications.