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COMMUNICATION CHALLENGES DURING INCIDENTS OF NATIONAL SIGNIFICANCE: A LESSON FROM HURRICANE KATRINA

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ABSTRACT

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National disasters will likely continue to increase in number and destructiveness due to current weather trends and the ever growing number of people living in the coastal areas. The immense destruction caused by Hurricane Katrina identified many challenges especially in the communications arena. Many organizations responding to such events are using the lessons learned from Hurricane Katrina to improve problem areas identified. This Strategic Research Paper (SRP) focuses on communications challenges of early responders to Hurricane Katrina. It also demonstrates why the National Guard is a primary player in natural disasters.

The destruction caused by Hurricane Katrina increased dramatically due to communications failures. The communications failures caused undue death and destruction in the affected areas. The first responders were unable to coordinate search and rescue operations efficiently and effectively without communications to guide them to the locations requesting assistance. Supplies and assistance from other states could not be delivered in a timely manner due to lack of communications. Lack of interoperability of communications equipment presented another problem. Numerous agencies are attempting to solve these problems. The solutions will require enforcement of common standards as well as funding to enable these organizations to acquire compatible communications equipment.

COMMUNICATION CHALLENGES DURING INCIDENTS OF NATIONAL SIGNIFICANCE: A LESSON FROM HURRICANE KATRINA

Natural disasters such as hurricanes, tornadoes, snow storms, earthquakes, floods and forest fires affect many states and their inhabitants. In the United States there has been a sharp increase in the number of natural disasters in the last 50 years. In vulnerable regions such as U. S. coastal areas the population has increased by 33 million between 1980 and 2003.[1]

> The impact of hurricanes has increased the devastation and economic hardships to the residents in these coastal areas. In the last decade alone, more then two billion people worldwide were affected and the economic toll surpassed that of the previous four decades combined.[2]

The fundamental role of the government is to provide security and safety to the American people. The citizens of the U.S. demand immediate response, competency and efficiency from the government to limit human suffering and loss of property particularly during natural disasters. This Strategic Research Paper (SRP) focuses on communications challenges of early responders to Hurricane Katrina, particularly problems with the National Guard (NG) response.

In a natural disaster or other emergency first responders are local assets such as policemen, firefighters and local government agencies. If these organizations become overwhelmed by the magnitude of the disaster, the state governor utilizes the services of state agencies and the National Guard under state active duty or Title 32 status. If the state assets are unable to manage the disaster the governor requests assistance from neighboring state resources designated by compacts or agreements. The compacts speed the process of acquiring needed personnel and resources from other states during emergencies. The Emergency Management Assistance Compact (EMAC) provides such authority for most states. "EMAC is a congressionally ratified organization that provides form and structure to interstate mutual aid."[3] Using EMAC, a disaster impacted state can request and receive assistance from other member states quickly and efficiently, resolving key issues such as liability and reimbursement."[4]

In the event certain requirements still cannot be met, state governors, with assistance from EMAC can make a request to the President to declare a state of emergency. Once the President declares a state of emergency, federal assistance is immediately available to the state. This federal assistance includes the engagement of personnel and equipment from organizations such as Federal Emergency Management Agency (FEMA), the Army Corps of Engineers, Department of Defense (DoD) and Department of Homeland Security.

> The department of Homeland Security with the Federal Emergency Management Agency (FEMA) will lead the efforts to create and employ a system that improves our response to all disasters. In a catastrophic event, the federal government augments state and local response efforts. FEMA provides funding and command and control.[5]

In addition, under current law the Armed Forces provide federal military support to civil authorities when directed by the President and the Secretary of Defense.[6]

> At the direction of the President or the Secretary of Defense, the Department of Defense (DoD) provides defense support to civil authorities in order to prevent terrorist incidents or manage the consequences of an attack or a disaster. DoD provides support to a lead Federal Agency. Civil authorities are most likely to request DoD support because the military can provide unique capabilities when civilian responders are overwhelmed.[7]

Effective coordination of these national, state and local response efforts decreases the overall impact of a natural disaster. The NG, a military component of the Armed Forces, is typically a first responder and has a dual mission that includes state and federal responsibilities. It has assisted all states and territories in responding to natural disasters, civil uprisings and other national emergencies. The NG is uniquely postured to provide assistance during natural disasters and terrorist attacks in both state and federal missions.

> As a portion of its dual mission the National Guard supports Homeland Security/Defense on a federal or state level in three different ways: in-state service funded with state funds, under the direction of the governor; in state service, but performing duties of federal interest, under Title-32 status and funded with Federal funds; and in federal Title-10 status, when mobilized under the direction of the President or the Secretary of the State.[9]

The NG's federal mission is to provide units trained, equipped and ready to mobilize quickly for war, national emergencies and other missions. The NG's state role is to prepare for domestic emergencies and other missions required by state law as directed by the governor.

During state emergencies the NG is part of the first responders group within the state. The NG's focus in these situations is to protect life and property and to preserve peace, order, and public safety. The NG units are commanded by the state governor (e.g., the state executive) unless they are otherwise mobilized for federal missions. For example, the governor can preposition NG forces in preparation for an upcoming hurricane, other natural disasters or emergency incidents. The NG can also work with local law enforcement in support of an event or emergency. The governor can use NG assets on state active duty under Title 32 status to perform law enforcement duties.

> The use of NG soldiers in law enforcement is addressed in 18 U.S.C. § 1385 (2002): The Posse Comitatus Act (1878), 18 U.S.C. § 1385 (2002), prohibits the

> use of the Army or the Air Force for law enforcement purposes, except as otherwise authorized by the Constitution or statute. This prohibition applies to Navy and Marine Corps personnel as a matter of DoD policy. The primary prohibition of the Posse Comitatus Act is against direct involvement by active duty military personnel (to include Reservists on active duty and National Guard personnel in Federal service) in traditional law enforcement activities (to include interdiction of vehicle, vessel, aircraft, or other similar activity; directing traffic; search or seizure; an arrest, apprehension, stop and frisk, or similar activity). (Note exception under the Insurrection Statutes.)[8]

In his 2006 Posture Statement, NG Commander Lieutenant General Blum states that the priority mission for the Guard is Homeland Defense.[9]

> The President, the governors, Congress and the Secretary of Defense demand that the National Guard be fully engaged in Homeland Defense and support the Homeland Security mission. Congress enhanced the capability for the state mission in the Defense Authorization Act, by amending Title 32 of the U. S. Code to authorize funding of homeland defense activities by the National Guard.[10]

The NG is uniquely poised to respond and support Military Support to Civil Authorities (MSCA) missions. With 3,200 NG armories positioned throughout the United States, NG organizations regularly support Homeland Defense in their local communities and maintain a rapport with the community and local first responders. These relationships are enhanced because the NG soldiers live and work in these communities. Consequently, the NG soldiers are uniquely positioned to quickly respond to a local emergency. They are familiar with the community, people, roads, buildings and surrounding areas. They are acutely aware of the strengths and weaknesses of the community, because they interact with community members and provide assistance to the community year round in a variety of activities. Additionally, NG Civil Support Teams (CST) in local communities are uniquely trained for response to weapons of mass destruction events, provide sophisticated communications equipment and have advanced training in chemical detection as well as many other highly technical skills. CSTs are ready to deploy and react to any incident within a few hours.

In addition to providing local community support the NG can assist governors with capabilities that include key assets for command and control, immediate response teams, medical, aviation and engineering support.[11] The NG participates in preparedness exercises and works in coordination with local responders, state agencies, private organizations, the Department of Homeland Security and other Federal agencies in any situation or incident as needed.

In 28 states the Adjutant General of the NG serves as the state Director of Emergency Management, the state Director of Homeland Security, or both. These overlapping functions

streamline the command and control of assets. The NG has a Joint Force Headquarters that coordinates, synchronizes and controls all military efforts in support of the lead state, local or federal agency responding to a crisis.[12] The NG balances its routine missions with continued support to state and local authorities during natural and manmade disasters.[13] Given its legal status, its training and equipment and its close associations with response assets, the NG is the primary player for immediate response to disaster and catastrophic events.

The NG integrates with the Department of Homeland Security and other agencies to respond quickly and efficiently to natural and man-made emergencies.

> The Department of Homeland Security (DHS) had several objectives in emergency preparedness: integrate separate federal response plans into a single all-disciplined incident management plan; plan for military support to civil authorities; build a national training and evaluation system; and create a national incident management system.[14]

The above objectives will be discussed at length.

> Military support to civil authorities usually falls in a variety of areas-including technical support and emergency support assistance to law enforcement, assistance in the restoration of law and order, and providing specialized equipment to the first responders.[15]

An example that demonstrates how the military supports civil authorities is Winter Freeze. The exercise Winter Freeze conducted by DHS Homeland Security, other agencies, local and state governments has shown that preparedness is critical to provide an effective response to natural disasters. The nation must continue to equip, train and utilize many different response units to mobilize for any emergency.

An example of a military response to a natural disaster came in the wake of Hurricane Katrina, the nation's most devastating natural disaster. Approximately 51,000 NG soldiers from the 54 states and territories, along with Active Duty soldiers from across the United States, assisted in rescue and restoration of New Orleans and other areas hit by Hurricane Katrina. Hurricane Katrina's catastrophic effects created an unprecedented challenge. Each affected state in the region had plans for natural disaster, and each responded according to its respective plan. NG personnel in Louisiana, Mississippi and Alabama were on call and ready to respond as soon as the hurricane hit. EMAC was utilized to provide NG soldiers and equipment for recovery efforts after the hurricane. The local and state responders were also ready to respond. The mayors and governors of each state were in command and control in their respective states. Immediately after the hurricane hit, first reports indicated that the storm was not as destructive as predicted. Consequently, the state governments and residents seemed to take a figurative sigh of relief. In most cases, after a hurricane passes through an area, local

authorities assess the damage and identify the major issues and react accordingly. Hurricane Katrina was different. The major destruction in New Orleans did not occur until the levees failed 24 hours later. As the massive flooding continued the local government in New Orleans was overwhelmed and had become victims themselves. "Massive communications damage and a failure of an adequate contingency plan impaired response efforts, command and control and situational awareness."[16] Communications were limited at all levels due to infrastructure problems, insufficient interoperability and lack of equipment. This lack of communications kept the media confused about isolated incidents and put them in a position to report misinformation. Lacking access to critical communications assets government and assistance organizations could not dispute media reports or defend their efforts. They had no valid intelligence. In addition, proper response efforts could not be coordinated by local, state or federal agencies during the first two days due to extensive communications failures in the affected areas. This lack of communications led to a slow response, which then led to more misinformation and a protracted chaotic response. The lack of fully operable communications and intelligence increased death, destruction and human suffering.

Understanding the Role of Communications

To truly understand the consequences of the lack of communications, it is important to understand the role of communications in complex equations:

> Communications is information transfer and involves the technology associated with the representation, transfer, interpretation, and processing of data among persons, places, and machines. It includes transmission, emission, or reception of signs, signals, writing, images, and sounds or intelligence of any nature by wire, radio, optical, or other electromagnetic systems.[17]

Technological advancements over the years have increased our expectations and dependence on communications. Organizations have implemented complex processes to enhance efficiency in transportation, personnel management, communications, command and control and many other fields. Today organizations rely heavily on email, collaborative tools, spread sheets and power point presentations to function effectively. Technological tools have become an American way of life. The average person can get up to date information from news organizations twenty-four hours a day. Most people have phones in their homes or they carry cell phones to contact others at any time. When a natural disaster or catastrophic event occurs and Americans loose these tools, the loss affects efficiency and the feeling of security that most individuals are reliant upon. This lack of communications causes frustration, fear and misinformation, which intensifies the tensions and anxieties of the situation. Historically, lack of

communications has affected reaction times, command and control and efficiency of organizations during a significant event.

The Federal Government has been working to overcome the communications challenges that emerge in responding to natural disasters, Weapons of Mass Destruction (WMD) events, or terrorist attacks.

> An example of such efforts is the "The Communications Act of 1934, 47 U.S.C. §§ 151-615b (2002): This legislation provides the authority to grant special temporary access an expedited basis to operate radio frequency devices. It could serve as the basis for obtaining a temporary permit to establish a radio station to be run by a federal agency and broadcast public service announcements during the immediate aftermath of an emergency or major disaster. Likewise, 47 U.S.C. § 606 (2002) provides the authority for the NCS to engage in emergency response, restoration, and recovery of the telecommunications infrastructure.[18]

Communications outages have occurred during major hurricanes such as Andrew in Florida, Hugo in South Carolina and Katrina in Louisiana and Mississippi. Consequently, the shortages of communications equipment, the interoperability problems at all levels and damage to communication infrastructure all affect responders' ability to provide the right people and equipment at the right place at the right time. During Hurricane Katrina "massive inoperability had the greatest effect on communications, limiting command and control, situational awareness, and federal, state and local officials' ability to address unsubstantiated and inaccurate media reports."[19] For example, televised scenes from New Orleans may have shown a dramatic helicopter rescue of an individual from an attic window of a flooded house while the newscaster pointed out that scores of patients in a nearby hospital were seemingly being ignored. FEMA officials claimed they were unaware of the hundreds of thirsty, hungry, angry people stranded in the New Orleans Convention Center, but the media was showing their plight repeatedly to the national audience.

Many times in an emergency the local responders, NG personnel and federal agencies are unable to communicate with each other. Each organization brings communications equipment to the incident, but this equipment is not always compatible with that of other organizations. For example, DoD assets may respond with several different devices: cell phones, blackberry(s), handheld SAT phones, handheld radios, GPS and blue force tracker. Other organizations do not necessarily have the same tools that can communicate with these devices. This lack of interoperability has been evident during hurricanes, floods and the bombing of the World Trade Towers. Many different plans have attempted to address some of the communications problems that arise during such incidents.

The National Response Plan (NRP) recognizes this problem and has tried to remedy it. The NRP has annexes called Emergency Support Functions (ESF), and in the NRP ESF #2 focuses specifically on:

> Communications ensures the provision of Federal communications support to Federal, State, local, tribal and private-sector response efforts during an Incident of National Significance. This ESF supplements the provisions of the National Plan for Telecommunications Support in Non-Wartime Emergencies, hereafter referred to as the National Telecommunications Support Plan (NTSP).[20]
>
> Further, ESF #2 coordinates Federal actions to provide the required temporary National Security and Emergency Preparedness (NS/EP) telecommunications, and the restoration of the telecommunications infrastructure. ESF #2 supports all Federal departments and agencies in the procurement and coordination of all NS/EP telecommunications services from the telecommunications and information technology (IT) industry during an incident response.[21]

The ESF #2 indicates that DHS is attempting to develop some general guidance to facilitate communications among responders to natural disasters and other incidents.

Despite these efforts, Hurricane Katrina demonstrated that communications challenges are still very prevalent. The first few days following any natural disaster or other emergency are critical to the safety and well being of the citizens affected by the event. Hurricane Katrina illustrates the communication failures during this crucial time and demonstrates the slow response and ineffective strategic and operational communications that isolated areas in Louisiana, Mississippi and Alabama. These communications failures caused slow response at the strategic, operational and tactical levels. The following is a time line that illustrates events and slow response during Hurricane Katrina.

> Friday, Aug. 26:
>
> 10,000 National Guard troops are dispatched across the Gulf Coast.
>
> Saturday, Aug. 27:
>
> — New Orleans Mayor Ray Nagin declares a state of emergency and urges residents in low-lying areas to evacuate.
>
> — Mississippi Gov. Haley Barbour declares a state of emergency. A mandatory evacuation is ordered for Hancock County.
>
> Sunday, Aug. 28:
>
> — Nagin orders a mandatory evacuation for New Orleans. (Ten shelters are also set up.)
>
> — Alabama Gov. Bob Riley declares a state of emergency.

Monday, Aug. 29:

— Katrina makes landfall near Buras, La., at 6:10 a.m. CDT

— President Bush makes emergency disaster declarations for Louisiana and Mississippi. **(With communications breakdowns critical information could not be transmitted. The levees broke and no one other than local residents knew about the massive flooding for several hours. Victims could not communicate with possible responders which increased the lack of response and devastation.)**

Tuesday, Aug. 30:

— The hurricane death toll in Mississippi rises to more than 100.

— Two levees break in New Orleans and water pours in, covering 80 percent of the city.

— Louisiana Mayor Nagin orders the evacuation of New Orleans.

Wednesday, Aug.31: **(Lack of communications at all levels increased the chaos, deaths and destruction in the aftermath of Hurricane Katrina.)**

— "At first light, the devastation is greater than our worst fears," reports Louisiana Governor Blanco.

— The looting grows exponentially. Blanco asks the White House to send more people.

— Health and Human Services Secretary Mike Leavitt declares a federal health emergency throughout the Gulf Coast.

— Pentagon mounts one of largest search-and-rescue operations in U.S. history, sending four Navy ships with emergency supplies. **(Activation of these soldiers should have taken place two days prior to save lives and maintain stability)**

Thursday, Sept. 1:

— Looting, carjacking and other violence spreads, and the military decide to increase National Guard deployment to 30,000.

— Mayor Nagin calls the situation critical and issues "a desperate SOS" for more buses.

Friday, Sept 2:

Thousands of National Guardsmen arrive in New Orleans in truck convoys carrying food, water and weapons. Not all trucks are equipped with radios which slows the process of distributing the needed materials to the victims effectively and efficiently. Lack of communications also affects the command and control structures from giving guidance to these personnel.

Saturday, Sept. 3:

President Bush orders more than 7,000 active duty forces to the Gulf Coast.[22]

The following time line demonstrates the gradual re-establishment of communications days after Hurricane Katrina's landfall. This gradual re-establishment of communications was insufficient to manage the disaster. By September 3rd 2005, much of the damage and loss had taken place due to lack of initial communications during the first critical days of the catastrophe.

3 Sep Basic communications are re-established in Louisiana.

6-12 Sep Planning for commercial initiatives: Cell tower installation, LMR radio distribution and Global Star Distribution.

13 Sep Installation of cellular tower on Belle Chasse

17 Sep Qualcomm cellular tower installed at NAS New Orleans[23]

The timeline referenced above illustrates the very limited communications capabilities during the critical days of recovery. This lack of communications cost needless deaths and increased human suffering. There were no communications between the local responders who were overwhelmed and the command and control cell that was coordinating the rescue efforts. "Six of eight police districts' operations were out of commission due to flooding, limiting (or precluding) their ability to establish command and control by performing basic law enforcement functions because their communications were destroyed.[24] The lack of communications from those on the ground in the disaster zone and those coordinating the efforts in the state and outside the state caused ineffective response to human suffering.

Some examples that demonstrate how effective communications would have made a difference are as follows. (1) At one point during the rescue operations, six helicopters hovered over the same roof top to rescue civilians. If proper communications had been in place, only one helicopter would have been sent to that roof top and the other five would have been able to rescue other civilians. (2) Hundreds of commercial trucks with food and supplies stopped in Mississippi and refused to continue without armed escorts because they had the false perception those shootings were taking place in various locations. If the proper officials had communicated with the trucks, the situation could have been clarified with accurate informational updates. (3) In New Orleans, the NG assets in Jackson Barracks were unable to communicate the massive flooding to higher headquarters. Guardnet had failed, so they could not pass critical data. These are just a few examples that illustrate the importance of communications and interoperability. Effective communications systems are critical and the failure of these systems can have catastrophic consequences. The shortfalls with

communications systems must be corrected to better prepare for future catastrophic disasters or the result will continue to be needless deaths and human suffering.

The Louisiana Army NG's main communications infrastructure was destroyed by the hurricane. "FEMA dispatched Amateur Radio Operators to hospitals, evacuation centers and county Emergency Operations Centers to send emergency messaging 24 hours per day."[25] These assets did help provide minimal communications. Many areas hit by the hurricane in Louisiana were deprived of most communications for four days, while areas of Mississippi were deprived of most communications for two days. These circumstances contributed to the loss of life and property, because the first responders from the local, state and federal governments were unable to communicate. Personnel and critical assets (search and rescue, law enforcement, fire fighting, medical assistance, transportation and delivery of life sustaining materials) could not be distributed to areas that needed it the most due to lack of functional communications systems. The lack of communications between major players severely hampered the coordination and distribution of rescue and relief efforts. "Severity of storm disrupted state JFHQ connectivity to the National Guard Network, GuardNet, for an indeterminate period of time."[26](JFHQ-Joint Force Headquarters) Further, NG assets were limited due to mobilization of forces in the affected states.

Hurricane Katrina damaged most of the communications systems in the affected area. By all accounts, destruction to regional communications companies' facilities and the power systems on which they depend was extraordinary."[27] "The Louisiana Army NG (LAARNG) lost its main private branch exchange (PBX) voice switch as a result of the flooding at Jackson Barracks in New Orleans."[28] LAARNG's main commercial communications hub was completely destroyed in the New Orleans area. Subsequently, the GuardNet was out of service for a week before restoration was complete.[29] Cell towers were blown down and telephone lines were damaged so there was no phone service in the hardest hit areas. "In Louisiana, most of the parishes did not have satellite phones because they chose to disconnect the service after the state stopped paying the monthly fees for the phones."[30] Satellite phones and other equipment were brought in, but they quickly overloaded the satellite bandwidth. In addition, interoperability of radios, downed radio antennas and poorly distributed base stations hindered communications at all levels.

> The Mississippi Army National Guard (MSARNG) communications infrastructure required a significant amount of work in order to re-establish its permanent communications. It needed significant PBX work, and the installation of a 3 Mbps circuit to Camp Shelby due to the increased number of users at that location. The GuardNet circuits were down at several locations in Mississippi. These circuits were re-connected in two days. Power was one of the main

> problems in Mississippi. In many cases, over a five day period, once the power was restored there was restoration of communications.[31]

The NG and the active Army do provide unique assets in their responses to such crises. A significant challenge of interoperability between the DoD assets and first responders and other civilian agencies is the classification of the tactical systems. Many systems are encrypted to a secret level which deprives the use of these assets to organizations that conduct all communications in the clear or non-encrypted. Many exercises utilizing tactical communications systems in emergency situations identified this problem, but the problem has not been completely resolved. There has however, been some progress. For example, during Hurricane Katrina numerous ARNG Signal Units were deployed in support of response to the hurricane. They developed an impromptu solution to allow access to regular internet service using tactical signal equipment. This technical solution could not have been done prior to this deployment, because these tactical signal units did not have an authorization document for the use of a secure piece of equipment (KG-235).[32] It is critically important that the initial communications these forces bring are interoperable with the first responders they will be working with. These communications systems provide the military with command and control, but they are also utilized to assist the first responders and local governments with communications. The systems are also self-supportable for some time until re-supply or other communications assets become available.

Utilization of frequencies continues to be a problem during incidents such as Hurricane Katrina. Several bands of frequencies are set aside for different types of communications equipment. UHF and HF are utilized in the commercial world as well as by DoD and other agencies. It is very difficult to coordinate and de-conflict all the frequencies in a disaster since so many different organizations are involved. This issue has been compounded because of an increase in the use of Unmanned Arial Vehicles (UAVs) competing for the same frequencies. During Hurricane Katrina the National Guards 35th ID was deployed to Louisiana on 6 September. The unit was told it would receive frequencies needed to set up its communications network within 24 hrs. Due to the confusion created by multiple systems sharing the same frequencies in the area and the lack of an engineering tool the frequency issue was not resolved until 12 September.[33] Band-sharing will continue to be a problem in the future given the increase in the types of equipment utilizing the same frequencies.

Lack of interoperability and the limited quantity of communications equipment available caused inefficiencies at a time when the American people in the Gulf Coast region needed it most. The ARNG deployed a corps-sized force into the areas affected by Hurricane Katrina.

Unfortunately, the force had inadequate signal support. Most states do not have dedicated MTOE signal structure to support incident-area communications and/or communications above the tactical FM network. Some states sent Task Forces with non-standardized commercial satellite communications suites that were purchased by the individual states to fill this capability gap.[34] This is a common problem. Many local first responders, state, federal agencies and private organizations purchase and use different incompatible communications equipment. The equipment disparities make it extremely difficult to develop an "adhoc" communications network during an emergency.

The sheer magnitude of the destruction caused by Hurricane Katrina created many challenging obstacles that hampered response time. "The extent of destruction and damage to the communications infrastructure and services caused by Katrina exceeded that of any other natural disaster experienced by the Gulf Coast states."[35] The communications problems experienced during Hurricane Katrina continue to disrupt the effectiveness of response efforts in these types of disasters. The lack of interoperability and standardization in all organizations that participate in these activities is crucial. The National Response Plan, in ESF # 2, has attempted to address this issue, but the problem persists. The plan needs to be more specific regarding both interoperability and standards. With more specificity DHS can help the local and state responders achieve interoperability and observe common standards by providing sufficient funding. Most organizations continue to have interoperability problems largely due to insufficient funding. The large quantities of equipment needed for these missions and the cost of the communications equipment are indeed formidable. DoD also needs to provide funding to the Armed Forces, so it can purchase more communications equipment that is compatible with the local and state responders.

Several other key lessons were learned by the NG and other DoD assets during their support to Hurricane Katrina. DoD assets should:

- Provide both secure and non-secure command, control, communications & computers for deployed forces using voice, data and image/video as appropriate;

- Provide communications support to first responders including state, local and federal agencies;

- Provide interconnection with other agency networks as required;

- Allow interconnection with various levels of Operations Centers including NORTHCOM, Joint Task Forces, State & Local entities and National Guard forces;

- Utilize existing infrastructure to the maximum extent possible while planning, engineering and implementing military systems to bridge civilian communications gaps;

- Facilitate reconstitution of the civilian infrastructure and direct the installation, operation, maintenance and management of contingency communications systems in response to an incident/emergency. [36]

In conclusion, the following suggestions address some of the communications problems discussed in this SRP. The NG and the Army must find a way to eliminate classification and encryption problems in order to share information with civilian organizations. This can be achieved by declassifying the network or by passing the encryption devices in these incidents to all relevant entities to allow access to needed voice and data communications by all involved. During Hurricane Katrina the lack of interoperability and standardization overwhelmed the available bandwidth and delayed the creation of an effective network.

In addition, with increasing use of data systems the NG and all organizations must immediately expand circuit and bandwidth capacity in the areas affected by the incident. In the case of Hurricane Katrina, bandwidth capacity should have been increased days prior to the hurricane's landfall because there was adequate warning of the pending disaster. The NG and DoD forces should develop and maintain scaleable and flexible deployable packages of capabilities and functions to support civilian authorities and provide robust command and control of military responders.[37] Each state Joint Task Force Headquarters should have several of these packages available. These organizations should have access to unmanned vehicles (UAVs) with communications suites on board that will enable better radio coverage in the affected areas. There should also be access to situational awareness from video taken by the UAV. The current transformation of the Army and NG will assist the states with tactical communications. In the new structure almost all of the brigade-level units and higher are supported by an organic tactical signal company. Consequently, in the future more states will have signal companies in their NG units. This capacity will enable a governor to preposition assets in affected areas before predicted disasters occur.

States most vulnerable to disasters should have more of these deployable packages distributed at key locations within the state. The commercial communications infrastructure should be utilized to its fullest. All available communications means should be utilized during an emergency. Organizations and programs like High-Frequency Radio Program, the Telecommunications Service Priority (TSP) Program, Government Emergency Telecommunications Service (GETS), and Wireless Priority Service (WPS) should be requested to provide service to personnel working in the disaster area. Cellular companies should

maintain mobile portable cellular towers in all FEMA regions. The mobile portable cellular towers can be deployed on short notice to respond and assist in the immediate re-establishment of some cellular service.

Communications are vital at every level in any response to a natural disaster or similar incident. Interoperability and standardization are two critical keys to the successful establishment of a communications network after a disaster. Skilled network planners are needed to establish response networks effectively. Also, large quantities of equipment must be available to respond to a massive event when the commercial infrastructure is damaged or destroyed. Only through continual planning, coordination and development of standards will some of the communications problems encountered in responding to Hurricane Katrina be overcome. Funds must be allocated at all levels to purchase packages of deployable and effective communications equipment to facilitate effective response and to mitigate human suffering and property loss in future disasters.

National disasters will continue to increase in number and destructiveness due to current weather trends and the ever growing number of people living in the coastal areas. First responders, state and federal governments and the NG are working to improve response time in order to minimize loss of life and damage to property. This SRP demonstrates why the NG is a primary player in natural disasters. Many organizations responding to such events are using the lessons learned from Hurricane Katrina to improve in problem areas identified.

The destruction caused by Hurricane Katrina increased dramatically due to communications failures. Communications in Louisiana and Mississippi were disrupted for four days and two days respectively. The communications failures caused undue death and destruction in these areas. The first responders were unable to coordinate search and rescue operations efficiently and effectively without communications to guide them to the locations needing assistance. Supplies and assistance from other states could not be delivered in a timely manner without communications.

Lack of interoperability of communications equipment presented another problem during Hurricane Katrina. The interoperability problem has been identified in many exercises and among many organizations for years. Local responders, state and federal agencies and DoD forces have different types of equipment. The equipment simply can not “talk to” each other. Homeland Security and many other agencies are attempting to solve this problem. The solutions will require enforcement of common standards as well as funding to enable these organizations to acquire compatible communications equipment. Competing priorities among organizations makes it difficult to secure adequate funding.

In conclusion, this SRP cites some solutions to the communications and interoperability problems. Homeland Security should be the organization that sets the standards for interoperability for all responders to disasters and catastrophic events. DHS should set the standards and have the authority and staff to enforce these standards to assure the safety of the American public. Funds from the federal, state and local governments should be provided to all key organizations that participate in these activities. It will require a team effort among all organizations to overcome the interoperability challenge. Destruction of infrastructure during a hurricane can be overcome. Civilian phone companies should have portable cell towers available in those regions susceptible to hurricanes and other natural disasters. The NG should have greater access to satellite phones and tactical signal communications in those regions. All organizations should incorporate Government Emergency Telecommunications Service (GETS), and Wireless Priority Service (WPS), as well as other methods of communications during exercises and rehearsals for these types of events. The solutions set forth in this SRP would facilitate the efficient and effective response in a catastrophic event and alleviate a great deal of human pain, suffering and loss of life and property in the next catastrophic event in the United States.

Endnotes

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