



Communication Voids

The inability of government officials and first responders to communicate during a response to an emergency – whether terrorist attacks, natural disasters, or everyday operations – results in the loss of lives. Problems with communications operability and interoperability constituted one of the main reasons for governments’ failures in response to Katrina. *Operability* refers to the basic functionality of any device (“Is it working?”). *Interoperability* refers to the device’s ability to connect with other devices and share voice or data communications (“Can the police talk to firemen?” or “Can hospitals electronically share patient medical records with emergency health-care providers?”)

While there can be no interoperable communications where no communications exists at all – the situation confronting many first responders in Louisiana and across the Gulf Coast immediately after Katrina – an interoperable communications system may be more resilient than “stove-piped” systems. For example, systems can be built with tower sites that have overlapping coverage so that if a single tower goes down, total coverage is not lost in a particular area.¹

Katrina inflicted widespread destruction on communications and electrical infrastructure. With cellular towers down, land lines submerged, and no power, telephone and wireless communications were largely impossible in the areas most heavily affected by the hurricane.

Mississippi Governor Haley Barbour summed up the lack of communications: “My head of the National Guard might as well have been a Civil War general for the first two or three days because he could only find out what is going on by sending somebody. He did have helicopters instead of horses, so it was a little faster, but the same sort of thing.”² Emergency personnel from across the Gulf Coast have described how the communications breakdown complicated the coordination of federal, state, and local response. For example:

- In New Orleans, Mayor Nagin’s command center at the Hyatt Regency Hotel lost all communications.³ After landfall – though before flooding – Mayor Nagin had to walk across the street to City Hall in order to speak to city emergency managers.⁴ One phone line in the Mayor’s room in the Hyatt would sometimes connect a call out, but could not receive incoming calls.⁵ It was not until Thursday, September 1, three days after landfall, that the Mayor’s command center began to receive e-mails. On Friday, September 2, the White House provided the Mayor with a mobile phone but he had to lean out of storm-damaged rooms at the hotel to get a signal.⁶
- Larry Ingargiola, Director of the Office of Emergency Preparedness for St. Bernard Parish, Louisiana, lost phone and cellular communications on Monday afternoon following landfall. Later that night, the emergency radio system went down; he was left without any communications until August 31. Ingargiola, who went up to the roof of his building with his family when the water started to rise, received word of the levees’ breaching from Louisiana Wildlife and Fisheries (W&F) officials who rode by in boats.⁷
- The Louisiana officials in charge of evacuating the Tulane Medical Center received oral authorization from the State Emergency Operations Center (EOC) to use buses in the possession of the National Guard to evacuate the patients. When the National Guard asked for proof of authorization, the head of the rescue team could not get through to the State EOC on his cell phone. Without

(Left Page)
Ruins in Gulfport, MS
(U.S. Coast Guard photo)

the use of the buses, the rescue team resorted to evacuating the patients in the backs of pick-up trucks, with wheelchairs, stretchers, and other equipment loaded into boats pulled behind the trucks.⁸

- Phil Parr, who was part of the Federal Emergency Management Agency (FEMA) Advance Emergency Response Team at the Superdome, estimated that the lack of effective communications at the Superdome reduced FEMA's effectiveness by 90 percent.⁹
- With the loss of phone and computer capabilities, the only way FEMA officials in Harrison County, Mississippi could track water, food, and other requested relief supplies was to send a police car to the distribution center at Stennis Space Center, located in Hancock County, near Louisiana, so that they could communicate using the police car's radio.¹⁰
- Scott Wells, the Federal Coordinating Officer at the State EOC in Baton Rouge, said that communication with both New Orleans and the FEMA regional office in Denton, Texas, after landfall was so poor that it was like being in a "black hole."¹¹
- Health-care providers' inability to share data complicated the task of caring for thousands of patients and others injured during the storm. Injured citizens from the Gulf Coast were being treated at many different locations, often far from their homes, sometimes in other states. The lack of an interoperable data system often prevented medical personnel from obtaining information about patients, even if their facility had suffered no hurricane damage. To complicate matters further, no continuous records were kept to identify and track patients or the treatment they received. Often the identification-and-tracking system consisted of paper stapled to victims' bed sheets or taped to their bodies.¹² One hospital official found that the only reliable way to confirm that planeloads of new evacuee patients were en route was to check with local air-traffic controllers.¹³

Some private-sector entities, however, were much more successful in dealing with communications problems. The Senate Homeland Security and Governmental Affairs Committee's private-sector hearing featured testimony from companies about the communications challenges they faced, how they overcame them, and how any success they achieved after landfall depended on successful communications, including communications between the field and the company's headquarters, within headquarters, and with state and local emergency operations centers.

In its testimony before the Committee, the Starwood hotel company discussed how it managed events on the ground in New Orleans, backed up by its corporate headquarters, which enabled the company to help approximately 2,100 guests, employees, and their families weather the storm in safety at two hotels.¹⁴ Through effective planning and pre-positioning of phones, Starwood never lost contact with areas outside the affected region. Satellite phones were deployed to the hotels, and Starwood maintained its Internet connection, which permitted employees and guests to communicate with the outside world.¹⁵ (One of its New Orleans hotels had two information-technology employees on-site and battery backups for their computer systems, which enabled the Internet connection.) Through media reports received via the Internet, managers on the ground knew what was going on around them when all other forms of communications had failed. Local responders and journalists sometimes relied on Starwood's communications capabilities since the city's communications system was largely lost.¹⁶

The Wal-Mart retail-merchandise chain stressed the importance of “efficient” communication, and described it as “absolutely the key to success at a higher level.”¹⁷ Wal-Mart developed situational awareness at the local level and passed it quickly to its emergency operations center, which compiled a big picture for the company. The business-unit representatives in the emergency operations center made decisions on tactics and strategies based upon the “big picture” information and then moved aggressively to disseminate objectives back to company response teams and field teams for further dissemination.¹⁸ Wal-Mart determined that the “face-to-face communication at the Emergency Operations Center level, where the decision makers congregate, is the most efficient method of communication.”¹⁹

The Mississippi Power public utility recognized the importance of communications to an effective response, particularly the ability to communicate with thousands of additional workers brought in from outside the region to help with restoration and repairs. Mississippi Power relied on its only viable form of communication – its internal system Southern Linc Wireless.²⁰ This system was designed with considerable redundancy and proved reliable despite suffering catastrophic damage. Within three days, the system was functioning at nearly 100 percent. Mississippi Power told the Committee that it “also installed its own microwave capability to 12 remote staging areas in order to transmit material inventory data into our automated procurement process.”²¹ The company said, “When communication circuits of another company were down, our information technology group would find a way to bypass those circuits and restore critical communications.”²²

The storm and flooding severely damaged both the commercial and public safety communications infrastructure.²³ This created chaos for every aspect of governments’ response – search and rescue, medical care, law enforcement, and provision of commodities. This section addresses each type of infrastructure and then considers the local, state, and federal governments’ efforts to provide emergency and interoperable communications capabilities.

Commercial Communications Infrastructure

BellSouth, the largest local phone company in the region, lost service at 33 of the central offices that route calls.²⁴ This was the first time that water damage had put switching centers out of service on their network.²⁵ Almost 3 million customers were without phone service in the days after landfall and over 20 million calls attempted on Tuesday, August 30, the day after landfall, could not be completed.²⁶ Of the 545 central offices that remained in service, over 180 had to run on generators due to the loss of commercial power.²⁷

Commercial wireless communications also suffered. Over 1,000 of some 7,000 cellular towers in the affected area were knocked out of service.²⁸ Some of the switching centers that connected to cellular towers were flooded, while others were damaged by high winds.²⁹ To restore cellular coverage, cellular providers brought in over 100 portable cellular towers, called cellular on wheels or cellular on light truck, to the Gulf Coast. Each portable tower provided cellular coverage over a limited area on a temporary basis.³⁰

The generators supplying power to the central offices had limited fuel supply,³¹ and needed to be replenished about every three days. BellSouth obtained fuel trucks to top off its generators, proceeding into New Orleans with an armed convoy.³² Other companies had problems obtaining fuel for their generators. For example, Cox Louisiana Telecom LLC, which serves 85,000 customers, had fuel trucks that were destined for switch facilities intercepted by FEMA and turned away. FEMA also took fuel away from technicians with service trucks in the field.³³ In addition, FEMA commandeered a fuel tanker from BellSouth in order to refuel helicopters.³⁴

The commercial sector also had to negotiate security concerns. At BellSouth's main central office on Poydras Street in New Orleans, which serves as a regional hub for multiple telecommunications carriers, reports of violence and looting caused the New Orleans Police Department (NOPD) and Louisiana State Police (LSP) to advise employees to evacuate the building.³⁵ Two days after the evacuation, the FBI and the U.S. Marshals Service provided security so that BellSouth workers could return to the Poydras Street building to fuel the generators, which were running low but never went out of service.³⁶ In an effort to obtain security for all telecommunications providers, the National Communications System (NCS), the federal government's lead agency for the response to communications problems, sought assistance from the Department of Defense (DOD), which forwarded the request to the Louisiana National Guard.³⁷ In the end, however, security arrangements with the Louisiana National Guard fell through.³⁸ Ultimately, telecommunications providers hired private security to protect their workers and supplies.³⁹

Repair workers also had difficulty gaining access to their equipment and facilities in the field because police and National Guard in some cases refused to let them enter the disaster area. MCI sought a letter from Louisiana Governor Kathleen Blanco to access parts of New Orleans based on a requirement from the LSP, and Verizon Wireless wanted access and security for technicians restoring cellular service in New Orleans.⁴⁰ Industry representatives said that their technicians would benefit from having uniform credentialing that is recognized by the multiple law-enforcement agencies operating in a disaster area.⁴¹

Damage to First Responders' Communications Infrastructure

Besides destroying commercial lines, Katrina decimated the towers and electronic equipment that support land mobile-radio systems, the primary means of communication for first responders. This made it difficult for officials at all levels of government to communicate. Officials from NOPD, the Louisiana Department of Wildlife and Fisheries, and the Louisiana National Guard testified that their law-enforcement and search-and-rescue efforts were hindered by the lack of communications.⁴²

Government officials at the Louisiana State EOC in Baton Rouge had trouble communicating with those in the disaster area.⁴³ State and local emergency operations centers were left in a "communications void," often unable to communicate with first responders or to relay requests for assistance up the chain of command.⁴⁴ Part of the problem was serious call congestion on surviving land lines.⁴⁵ BellSouth said that it tried to reroute calls around damaged infrastructure, and the State EOC eventually had more lines installed to provide additional capacity.

In New Orleans, only one tower that was at the airport remained operational: One tower was inundated by the storm surge, while two others had equipment damaged or lost power because of flood waters.⁴⁶ Many police, fire, EMS dispatch centers, and 911 centers were rendered unusable by flood waters.⁴⁷ The ACU-1000 interoperability devices, which provided limited interoperability by patching together different radio systems and were located within the Rosedale Fire Station, had to be abandoned because of flood waters.⁴⁸ Katrina's devastating impact on communications infrastructure around New Orleans forced first responders to rely on five or fewer mutual-aid channels – recognized by multiple agencies as channels to use when the coordinating electronics of the radio system fails – for voice-radio communications.⁴⁹ But around 4,000 people were competing to use that constricted capacity.⁵⁰ The heavy congestion resulted in delays before communications could be established.⁵¹

In St. Bernard Parish, extreme winds damaged communications towers and antennas, while flood waters inundated the 911 call center and forced the evacuation of buildings housing



communications for the Fire and Sheriff's Departments. All voice-radio communications were lost except for very limited radio-to-radio communications.⁵² Plaquemines Parish lost the parish government communications tower and communications center. The Plaquemines Sheriff lost the 911 communications and dispatch center, and all towers. It would be three weeks before Plaquemines Parish had any means of communications. The Jefferson Parish Sheriff's Office lost the main tower supporting its communications system. As a result of this destruction, antennas supporting its communications center were relocated to the boom of a 400-foot crane for months.⁵³

Broken utility poles, Mandeville, LA

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The Louisiana State Police Department worked with FEMA to provide support to local departments whose communications capacity had been devastated by the storm. FEMA agreed to pay \$15.9 million to Motorola to repair and augment the regional system and to purchase 600 portable radios. The contract for these repairs was signed approximately two weeks after landfall.⁵⁴

911 Communications

Along with first responder communications, Katrina wreaked havoc on the 911 systems on which the public relies to contact first responders. During the Katrina crisis, 911 was unavailable for untold numbers of victims. At least 38 of the 911 centers in the region lost their ability to function during Katrina.⁵⁵

When 911 systems go down, some call centers still re-route calls to other centers. However, telecommunicators on the receiving end did not have access to maps, data, and other information necessary to direct first responders to callers in need of help.⁵⁶ Also, only the voice is rerouted, while critical data (e.g., electronic information about a call's point of origin) is not. However, in many cases, due to the widespread destruction in Louisiana, even voice signals could not be rerouted. As a result, when citizens dialed 911, they got a busy signal.⁵⁷

Meanwhile, the influx of thousands of first responders into the region greatly increased the workload for 911 call-center operators who were victims of the storm themselves. Some left when their families evacuated. Those remaining operated under tremendous stress.⁵⁸ A North Carolina 911 official helping the response effort in St. Tammany Parish, Louisiana, observed that no plan existed to bring additional, credentialed telecommunicators into the region, and that early Emergency Management Assistance Compact (EMAC) requests for inter-state assistance did not include 911 operators.⁵⁹

Role of the National Communications System

Under the National Response Plan (NRP), Emergency Support Function-2 (ESF-2, Communications) ensures the provision of federal communications support to federal, state, local, tribal, and private-sector response efforts during an Incident of National Significance. The coordinator for ESF-2 activities is the National Communications System (NCS), an interagency consortium managed within the Department of Homeland Security (DHS).⁶⁰ The Deputy Manager and Director of NCS is Peter Fonash, Ph.D.⁶¹

Before Hurricane Katrina, NCS never had to repair the land mobile radio (LMR) systems that are operated by local governments and used by first responders.⁶² In fact, the organization did not have an operational plan to systematically assess an incident's impact on the LMR systems and respond to local governments' communications needs for operability, or interoperability, during emergencies.⁶³ Fonash did not know what communications assets were available across the federal government, nor what communications assets DHS, DOD, or other agencies may have been deploying. "Even the federal agencies themselves, DOD, for example ... didn't even have the control within DOD of all the assets being deployed by DOD because different parts of DOD were deploying assets and there was no central control," he said.⁶⁴ Without knowledge of what communications assets federal agencies were bringing into the area, NCS could not effectively prioritize the use of those assets.⁶⁵

Fonash acknowledged that NCS had inadequate information about the communication situation in the New Orleans area. According to NCS protocol, its headquarters receives such information only when its personnel on the ground have run into "problems [they] can't fix."⁶⁶ The magnitude of the damage in Louisiana proved this system inadequate. Fonash said that NCS staff was "so busy handling the crisis that they were probably not giving us the situational awareness that we should have been getting. . . . We just didn't have enough people down there."⁶⁷ Eventually, Fonash sent additional staff to the region and placed a contact at the Louisiana state EOC.

Several communications assets were not deployed at all, or could have been deployed sooner:

- The U.S. Forest Service maintains over 5,000 radios, the largest civilian cache of radios in the United States, but many remained unused.⁶⁸
- FEMA Mobile Emergency Response Support (MERS) units, which include trucks with satellite capabilities, were at Barksdale Air Force Base in Shreveport, LA, outside the disaster area, during landfall, and did not travel to the State EOC in Baton Rouge until the day after landfall.⁶⁹
- DOD had communications assets, including radio systems, which could have been deployed sooner.⁷⁰
- DHS's Prepositioned Equipment Program (PEP) pods containing communications equipment did not start deploying until a week after landfall.⁷¹

The NCS did identify and provide satellite communications vans to New Orleans City Hall, LSP in Baton Rouge, the Mobile Army Surgical Hospital at the New Orleans Airport, and to the National Guard in Jefferson Parish.⁷² NCS also provided a cellular unit on a truck to the Louisiana State EOC.⁷³ In addition, NCS identified the need to provide a temporary LMR communications solution to the eight-parish area around New Orleans, working with FEMA to initiate the contract.⁷⁴ But most of these NCS assets were not provided until days after the storm struck or were only provided to select locations. Indeed, satellite vans were not en route to the LSP in Baton Rouge until September 1, and high water kept one satellite van from reaching New Orleans City Hall until three days after landfall.⁷⁵

It appears that some requests for the NCS to provide communications capabilities to local governments were not made until a few days after landfall. For example, Colonel Jeff Smith, Louisiana's Acting Deputy Director for Emergency Preparedness, did not submit a form requesting "communications with the affected parish EOCs" until 5 p.m. on September 1 – more than three days after landfall.⁷⁶ Fonash said that he wasn't aware that the state EOC had communications problems until the state made its request on September 1.⁷⁷ An e-mail indicates that Governor Blanco did not ask for assistance with communications until the evening of August 31, two days after landfall; in that case, the federal ESF-2 representative in Baton Rouge met with a state official the next day.⁷⁸ Under the NRP, though, the NCS could have offered assistance even before the state made an official request for help.

Mobile Emergency Response Systems

FEMA's Mobile Emergency Response Support (MERS) division maintains roughly 300 mobile vehicles, most of which provide logistics support to FEMA. MERS units are dispersed throughout the country at five MERS stations. The MERS vehicles range from small sport-utility vehicles to large tractor trailers with expandable conference room space. The deployments are self-sustaining and include fuel, water, and power.⁷⁹

The primary responsibility of MERS is to provide communications capabilities to FEMA, including the Joint Field Office (JFO), the Emergency Response Team A (ERTA), and the Rapid Needs Assessment Team. During a disaster, MERS units may provide some communications support to the state EOC, if requested by the state.⁸⁰ However, MERS does not view this type of assistance to first responders as part of its mission.⁸¹

The MERS Thomasville, GA, detachment (serving FEMA Region IV) and Denton, TX, detachment (serving FEMA Region VI) deployed the weekend before landfall.⁸² Recognizing the power of the storm, over the weekend MERS sent personnel, vehicles, and assets to the disaster area from its other detachments across the country as well as from the MERS National Capital Region team.⁸³ After landfall, MERS equipment also was used to support National Disaster Medical System (NDMS) and Urban Search and Rescue (USAR) efforts and, approximately one week after landfall, helped to build the office for Coast Guard Admiral Thad Allen's command center.⁸⁴

Despite the level of MERS equipment deployed to the Gulf Coast, MERS was overwhelmed by the extent of communications needs, and experienced difficulties in supporting FEMA personnel.

The MERS team assigned to the JFO in Baton Rouge on Saturday, August 27, was in place on Sunday, August 28, although not at the level needed to support the JFO, which eventually grew to more than 2,000 people. After landfall, MERS had to provide additional communications support, including a high-capacity T-1 cable capable of providing hundreds of phone lines.⁸⁵ FEMA employees experienced difficulties calling out of the JFO because

MERS relies largely on local landlines and cellular systems that had failed or were heavily congested.⁸⁶ One MERS technician estimated that eight of every 10 calls failed, noting that FEMA employees relying on landlines “have no higher priority than anybody else, [such as] the guy using the pay phone down at the corner of the street trying to make an outgoing call, and most of the facilities are dead or down or under water.”⁸⁷ MERS therefore had to bring in satellite capabilities to provide a reliable means of getting calls in and out.⁸⁸

Before landfall, FEMA Region IV requested that MERS deploy a detachment to the state EOC in Jackson, MS.⁸⁹ In FEMA Region IV, the MERS unit from Denton, TX, sent support to Baton Rouge pre-landfall for FEMA’s Rapid Needs Assessment teams and the FEMA JFO, but otherwise staged its vehicles and equipment at Barksdale Air Force Base in Louisiana.⁹⁰ These vehicles included the so-called “Red October,” a large tractor-trailer vehicle.⁹¹

Post-landfall, the vehicles staged at Barksdale could not move until the high winds had subsided along the coast. On Tuesday, August 30, the day after landfall, the Barksdale equipment mobilized. A communications vehicle was sent to the Louisiana state EOC.⁹² Red October started out for New Orleans but had to be held in Lafayette, Louisiana on the night of August 30 due to difficulties navigating around debris.⁹³ In the end, Red October did not go to New Orleans because flood levels were too high for it to reach the Superdome.⁹⁴ It eventually went to Baton Rouge, where it served as FEMA Director Michael Brown’s command center.⁹⁵

No MERS vehicles ever reached the Superdome because of flooding, exacerbating problems there. Sandy Coachman, who was part of the FEMA team at the Superdome, said that at one point she could see a MERS vehicle on an overpass on I-10. She could see the driver, and they waved their phones in the air to signal each other, but that was the extent of their ability to communicate.⁹⁶ The failure of a MERS communications vehicle to reach the Superdome cut off any meaningful communications with the EOC in Baton Rouge. Coachman said her satellite phone, cell phone, and Blackberry handheld wireless device all failed to work.⁹⁷ The only way the FEMA team could communicate was by using National Guard phones, which often could not get through to the EOC because of congestion on the system.⁹⁸ It is unclear why FEMA did not instruct MERS to deploy a smaller communications vehicle to the Superdome when the Red October experienced difficulties moving there, or why FEMA did not attempt to airlift smaller MERS equipment (satellite phones in particular) into the Superdome once New Orleans flooded.

The response to Katrina stretched MERS’s resources and exposed the difficulty that MERS would encounter in responding to simultaneous catastrophes in different parts of the country. When Hurricane Rita hit, MERS Chief William Milani had to negotiate with the Federal Coordinating Officers directing the federal response in the Katrina region to get MERS assets released from areas devastated by Katrina, and also had to contract out for additional assets. Given that the response to Katrina essentially stripped bare all five MERS detachments, Chief Milani was uncertain how MERS could have responded if another major disaster occurred during the response to Katrina.⁹⁹

Satellite Communications

Satellite phones don’t rely on the ground-based infrastructure necessary for land mobile radio, land-line, and cellular communications. But there is anecdotal evidence that satellite communications experienced their own problems: New Orleans Mayor Ray Nagin said that he had “a huge box of satellite phones that did not work.”¹⁰⁰ In Mississippi, a FEMA employee, Mike Beeman, said that satellite phone connections were “sporadic.”¹⁰¹ And while

wireless Blackberry devices worked, batteries were hard to recharge because of the lack of commercial electricity.¹⁰²

The problems with satellite phones do not appear to have been caused by the phones themselves or the satellite networks; rather, a combination of user error and buildings or other objects obstructing satellite signals are the more likely culprits. In fact, NCS was not aware of any problems with the satellite phone networks.¹⁰³ And Walt Gorman, a vice-president at Globalstar, which supplied many satellite phones to the federal government, Louisiana, and Mississippi, said that users with difficulty operating satellite phones probably did not know how to use them properly because they had not received training. Therefore, users may have had problems putting them in the correct mode, directing the antennae, or dialing the correct numbers.¹⁰⁴

Louisiana supplied satellite phones to New Orleans parishes a few years ago, but after the state stopped paying for the satellite monthly service fee, all but three parishes discontinued the service and returned the phones to the state.¹⁰⁵ These satellite phones might have been useful if they had been available during Katrina. To fill the communications gap, Louisiana tried to bring in communications trailers with transmitters to restore cellular communications, but those efforts were hampered by the flooding.¹⁰⁶

In Mississippi, all Mississippi Emergency Management Agency (MEMA) personnel had mobile satellite radios for communications; satellite radios permanently mounted in the three coastal counties were available as well. After Katrina struck, this was often the only functional form of communications in the state.¹⁰⁷ Satellite worked so well that MEMA purchased additional portable satellite phones for state emergency response teams.¹⁰⁸ Even though coastal county EOCs had satellite capability, the strong winds of Katrina shifted their antennas, resulting in failed communications.¹⁰⁹ In addition, MEMA deployed a mobile communications unit and Pearl River County had a mobile communications trailer that it purchased with DHS grants, which allowed it to communicate after Katrina.¹¹⁰

Pre-Landfall Attempts to Improve Louisiana's Public-Safety Communications Infrastructure

The problem of interoperable communications was brought to the nation's attention on September 11, 2001, when police and firefighters at the World Trade Center had difficulty communicating with each other. However, it is a long-standing problem. According to David Boyd, head of project SAFECOM, an "umbrella" DHS program designed to coordinate federal efforts to promote interoperability, the inability to communicate effectively across jurisdictions and disciplines was a problem in the Air Florida crash in Washington, D.C., in 1982; in New York City when the World Trade Center was first attacked in 1993 and again on September 11, 2001; and when the Murrah Federal Building was destroyed in Oklahoma City in 1995. Sixty thousand individual local jurisdictions – including police, fire, and emergency medical services – finance, own, operate, and maintain over 90 percent of the nation's public safety wireless infrastructure.¹¹¹

As in most states, parishes in the New Orleans area and state agencies maintain different communication systems, which make it difficult for public safety agencies to communicate during everyday emergencies, let alone disasters on the scale of Katrina.

The State of Louisiana operates on a statewide analog wireless system installed in 1996. It supports voice communication only. This system is presently used by approximately 70 agencies with 10,000 subscribers. This system consists of 46 tower sites and 28 dispatch consoles. The LSP operate an aging data network that cannot support additional users. The Louisiana Total-

ly Interoperable Environmental (LATIE) Strategic Plan says that while “this system was quite sophisticated for its time, advances in technology have rendered it virtually obsolete.”¹¹²

Large parts of the communications systems in southeastern Louisiana are outdated and have been in various stages of disrepair for several years. In Orleans Parish the communications system is an 800 MHz system, which supports police, fire, EMS and the Office of Emergency Preparedness. (MHz (Megahertz) denotes the frequency on which the equipment operates and public safety radio equipment often can only operate on a specific frequency.) The age of the equipment created problems in getting technical support.¹¹³

In St. Bernard Parish, the 400 MHz communications system is so old that it must be maintained by purchasing repair parts through the eBay auction site on the Internet.¹¹⁴ Various volunteer fire departments have other types of communications systems. Jefferson Parish has an 800 MHz “Motorola Digital Smart Zone System” for the Sheriff’s Office, but the rest of the parish agencies use an analog system, which makes it nearly impossible to communicate with the Sheriff’s Office. In Plaquemines Parish, the Sheriff’s Department uses an 800 MHz analog system that cannot communicate with digital systems.¹¹⁵

According to FG Dowden, who works on interoperable communications and other issues for the New Orleans Office of Homeland Security, the only interoperable system in use in southeastern Louisiana prior to the storm was between the NOPD and the Jefferson Parish Sheriff’s Office; it used “console patches” to connect their 800 MHz controllers, which provided a degree of interoperability.¹¹⁶

ACU-1000 units also provided limited interoperability. The ACU-1000, which is manufactured by JPS Raytheon, acts as a converter between radios from each system. But it can support only a limited number of channels for communications, and it requires a person to manually configure the connections with the radios.¹¹⁷

Well before Katrina struck, Louisiana agencies encountered funding problems as they sought to enhance communications interoperability. In 2004 and again in January 2005, the Louisiana State Police attempted to secure \$105 million to upgrade its communications infrastructure from an outdated, 800 MHz analog system which is no longer supported by the vendor to a modern 700 MHz digital interoperable network. That amount was considered an “inexpensive” way to connect existing operating systems in the state to a common, statewide network. The State Police sought funding from Congress, via earmark requests to Louisiana’s Congressional delegation, as well as through Louisiana’s state budget process and grant opportunities with DHS’ Office of Domestic Preparedness, but was not successful.¹¹⁸

The greater New Orleans area also analyzed options for creating a region-wide, modern 800 MHz system, well before Katrina struck. However, estimates ranged as high as \$45 million, which local officials considered “cost prohibitive.”¹¹⁹ Just buying compatible radios for New Orleans Parish alone would cost almost \$20 million.¹²⁰ Therefore, the region developed a plan for a region-wide system involving all four parishes in the region, which would be phased in over time.¹²¹

According to Dowden, New Orleans applied for and received a grant through the Community Oriented Policing Services (COPS) program at the Department of Justice (DOJ) that would have provided interoperability for the four-parish region by upgrading St. Bernard Parish and Plaquemines Parish to 800 MHz trunk radio systems and providing bridging technology between two or more of the 800 MHz systems (which Orleans and Jefferson Parishes already had).¹²² This grant also would have allowed some of the systems to have P-25 compliant technology (an interoperability standard designed by the government and private industry). However, the project was 18 months from completion when Katrina struck.¹²³ If

the project had been completed by the initial time table, the loss of communication towers might not have been quite as significant because there probably would have been at least two towers fully operational from the new system.¹²⁴

New Orleans has a “tactical interoperability plan” developed pursuant to DHS grant guidance, but this plan was developed around an improvised-explosive-device scenario, not for an event of widespread destruction like that caused by a hurricane. According to Col. Dowden, a catastrophic hurricane plan “takes into account all of the assets within the region, and then pre-scripts what you would do in the event you lose specific towers or capabilities.”¹²⁵ Even though the risk of major hurricanes striking New Orleans was well known, that kind of communications plan had never been developed.

In addition to funding, interoperability also always raises technical and policy issues. As Colonel Joseph Booth of the LSP put it, “there’s always issues about who’s going to control it, who’s making decisions, what technology to go with, what capabilities, what kind of local control there is.”¹²⁶

1 Committee staff interview of FG Dowden, U.S. Marine Corps (Ret.), Regional Liaison, New Orleans Department of Homeland Security and Public Safety, LA, conducted on Nov. 11, 2005, transcript p. 50.

2 Testimony of Gov. Haley Barbour, Mississippi, before the U.S. Senate, Committee on Homeland Security and Governmental Affairs, hearing on *The Role of the Governors in Managing the Catastrophe*, Feb. 2, 2006.

3 Committee staff interview of Sally Forman, Communications Director, City of New Orleans, LA, conducted on Jan. 10, 2006, transcript pp.120-121.

4 Forman interview, Jan. 10, 2006, p. 68.

5 Forman interview, Jan. 10, 2006, p. 101.

6 Forman interview, Jan. 10, 2006, p. 121.

7 Committee staff interview of Larry Ingargiola, Director, Homeland Security and Emergency Preparedness, St. Bernard Parish, LA, Oct. 26, 2005, transcript pp. 91-93, 103-104.

8 Testimony of Lt. Col. Keith LaCaze, Assistant Administrator, Law Enforcement Division, Louisiana Department of Wildlife and Fisheries, before the U.S. Senate, Committee on Homeland Security and Governmental Affairs, hearing on *Hurricane Katrina: Urban Search and Rescue in a Catastrophe*, Jan. 30, 2006.

9 Committee staff interview of Phil Parr, Federal Coordinating Officer, Region I, Federal Emergency Management Association (FEMA), conducted on Nov. 15, 2005, transcript p. 28.

10 Committee staff interview of Michael Beeman, Director, Preparedness Division, Region II, FEMA, conducted on Jan. 20, 2006, transcript p. 71.

11 Committee staff interview of Scott Wells, Deputy Federal Coordinating Officer for Hurricane Katrina in Louisiana, FEMA, conducted on Nov. 14, 2005, transcript p. 116.

12 Committee staff interview of Knox Andress, RN, Christus Schumpert Health System, Shreveport, LA, conducted on, Mar. 10, 2006 (untranscribed).

13 Andress interview, Mar. 10, 2006.

14 Written Statement of Kevin T. Regan, Regional Vice President of Operations, Starwood Hotels & Resorts Worldwide, Inc., for the U.S. Senate, Committee on Homeland Security and Governmental Affairs, hearing on *Hurricane Katrina: What Can Government Learn From Private Sector's Response?*, Nov. 16, 2005, p. 5.

15 Written Statement of Regan, Senate Committee hearing, Nov. 16, 2006, p. 6.

16 Committee staff interview of Kevin Regan, Regional Vice President of Operations, Starwood Hotels & Resorts Worldwide, Inc., conducted on Nov. 3, 2006 (untranscribed).

17 Written Statement of Jason Jackson, Wal-Mart Stores, Inc., for the U.S. Senate, Committee on Homeland Security and Governmental Affairs, hearing on *Hurricane Katrina: What Can Government Learn From Private Sector's Response?*, Nov. 16, 2005.

18 Written Statement of Jackson, Senate Committee hearing, Nov. 16, 2005.

19 Written Statement of David Ratcliffe, Southern Company, for the U.S. Senate, Committee on Homeland Security and

- Governmental Affairs, hearing on *Hurricane Katrina: What Can Government Learn From the Private Sector's Response?*, Nov. 16, 2005.
- 20 Written Statement of Radcliffe, Senate Committee hearing, Nov. 16, 2005, pp. 4-5.
- 21 Written Statement of Radcliffe, Senate Committee hearing, Nov. 16, 2005, p. 5.
- 22 Written Statement of Radcliffe, Senate Committee hearing, Nov. 16, 2005, p. 5.
- 23 The White House report on Katrina aptly concluded, "The complete devastation of the communications infrastructure left emergency responders and citizens without a reliable network across which they could coordinate." U.S. Assistant to the President for Homeland Security and Counterterrorism, *The Federal Response to Hurricane Katrina Lessons Learned*. Washington: Government Printing Office, Feb. 2006, p. 55.
- 24 Written Statement of William Smith, Chief Technology Officer, BellSouth, for the U.S. Senate, Committee on Homeland Security and Governmental Affairs, hearing on *Managing Law Enforcement and Communications in a Catastrophe*, Feb. 6, 2006, p. 4.
- 25 Written Statement of Peter M. Fonash, Ph.D., Deputy Manager, National Communications System, U.S. Department of Homeland Security, for the U.S. Senate, Committee on Homeland Security and Governmental Affairs, hearing on *Managing Law Enforcement and Communications in a Catastrophe*, Feb. 6, 2006, p. 6.
- 26 Written Statement of Fonash, Senate Committee hearing, Feb. 6, 2006, p. 1; Federal Communications Commission, *Consumers Out of Service*. Provided to Committee.
- 27 Written Statement of Fonash, Senate Committee hearing, Feb. 6, 2006, p.1; Written statement of Smith, Senate Committee hearing, Feb. 6, 2006, p. 4.
- 28 Committee staff interview of Christopher Guttman-McCabe, Vice President, Regulatory Affairs, CTIA, conducted on Jan. 24, 2006, transcript p. 20.
- 29 Guttman-McCabe interview, Jan. 24, 2006, p. 21.
- 30 Guttman-McCabe interview, Jan. 24, 2006, pp. 11-12.
- 31 Committee staff interview of William Smith, Chief Technology Officer, BellSouth, Inc., conducted on Jan. 25, 2006 (untranscribed).
- 32 Smith interview, Jan. 25, 2006.
- 33 Kay Jackson, e-mail to La Public Service Commission, Sept. 20, 2005, 6:08 p.m. Provided to Committee.
- 34 Smith interview, Jan. 25, 2006.
- 35 Written Statement of Smith, Senate Committee hearing, Feb. 6, 2006, p. 8.
- 36 Written Statement of Smith, Senate Committee hearing, Feb. 6, 2006, p. 8; Written statement of Fonash, Senate Committee hearing, Feb. 6, 2006, p. 7.
- 37 Tom Wetherald, e-mail to Peter Fonash, Sept. 3, 2005, 9:37 p.m. Provided to Committee; filed as Bates nos. DHS-INFP-0002-0000737 through 0000738. *See also*: Committee staff interview of Jeffrey Glick, Chief of Critical Infrastructure Protection, National Communications System, conducted on Feb. 3, 2006, transcript p. 60 (explaining NCS's efforts to work through the NRCC and ESF-13 process as well as with the National Guard).
- 38 Glick interview, Feb. 3, 2006, p. 60
- 39 Guttman-McCabe interview, Jan. 24, 2006, p. 25.
- 40 Kim Hunter Reed, e-mail to Jeanne Wright and others, Aug. 30, 2005, 1:57 p.m. Provided to Committee; Brian Edgington, e-mail to LA Public Service Commission, Sept. 2, 2005, 7:20 p.m. Provided to Committee; Michael Vitenas, e-mail to LA Public Service Commission, Sept. 2, 2005, 5:10 p.m. Provided to Committee.
- 41 Guttman-McCabe interview, Jan 24, 2006, p. 28.
- 42 Testimony of Warren Riley, Superintendent, New Orleans Police Department, LA, before the U.S. Senate, Committee on Homeland Security and Governmental Affairs, hearing on *Managing Law Enforcement and Communications in a Catastrophe*, Feb. 6, 2006; Testimony of Capt. Timothy Bayard, Commander, Vice and Narcotics Squad, New Orleans Police Department, LA, before the U.S. Senate, Committee on Homeland Security and Governmental Affairs, hearing on *Managing Law Enforcement and Communications in a Catastrophe*, Feb. 6, 2006; Testimony of Lt. Col. Keith LaCaze, Assistant Administrator, Law Enforcement Division, Louisiana Department of Wildlife and Fisheries, before the U.S. Senate, Committee on Homeland Security and Governmental Affairs hearing on *Managing Law Enforcement and Communications in a Catastrophe*, Feb. 6, 2006; Testimony of Brig. Gen. Brod Veillon, Assistant Adjutant General, Louisiana National Guard, before the U.S. Senate, Committee on Homeland Security and Governmental Affairs, hearing on *Managing Law Enforcement and Communications in a Catastrophe*, Feb. 6, 2006.
- 43 FEMA's Federal Coordinating Officer for Louisiana, William Lokey, said there were problems making calls in and out of the State EOC. Committee staff interview of William Lokey, Federal Coordinating Officer for Hurricane Katrina in Louisiana, FEMA, conducted on Jan. 20, 2006, transcript p. 6.
- 44 Wells interview, Nov. 14, 2006, p. 116
- 45 Glick interview, Feb. 3, 2006, pp. 29-20.

- 46 Testimony of FG Dowden, Regional Liason, New Orleans Department of Homeland Security, LA, before the U.S. Senate, Committee on Homeland Security and Governmental Affairs, hearing on *Managing Law Enforcement and Communications in a Catastrophe*, Feb. 6, 2006; Col. Dowden interview, Jan. 26, 2006.
- 47 Dowden, Senate Committee hearing, Feb. 6, 2006.
- 48 Dowden, Senate Committee hearing, Feb. 6, 2006; Dowden interview, Nov. 11, 2005, pp. 33-34.
- 49 Dowden, Senate Committee hearing, Feb. 6, 2006.
- 50 Dowden interview, Jan. 26, 2006.
- 51 Dowden interview, Nov. 11, 2005, pp. 33-34.
- 52 Dowden, Senate Committee hearing, Feb. 6, 2006.
- 53 Dowden, Senate Committee hearing, Feb. 6, 2006.
- 54 Committee staff interview of Lt. Col. Mark Oxley, Chief of Staff, Louisiana State Police, and Lt. Col. Joseph Booth, Deputy Superintendent, Crisis Response and Special Operations, Louisiana State Police, conducted on Dec. 9, 2005, transcript pp. 78-79.
- 55 Written Statement of Kevin J. Martin, Chairman, Federal Communications Commission, for the U.S. House, Committee on Energy and Commerce, Subcommittee on Telecommunications and the Internet, hearing on *Public Safety Communications from 9/11 to Katrina: Critical Public Policy Lessons*, Sept. 29, 2005, p. 2.
- 56 Committee staff interview of Craig Whittington, 911 Coordinator for Guilford Metro 911, Greensboro, NC, Mar. 13, 2006 (untranscribed).
- 57 Whittington interview, Mar. 13, 2006.
- 58 Whittington interview, Mar. 13, 2006.
- 59 Whittington interview, Mar. 13, 2006.
- 60 U.S. Department of Homeland Security, *National Response Plan*. Washington: Government Printing Office, Dec. 2004, pp. ESF #2-1 through 2-3.
- 61 Fonash interview, Jan. 27, 2006, p. 4.
- 62 Fonash interview, Jan. 27, 2006, p. 37.
- 63 Fonash interview, Jan. 27, 2006, pp. 50-51.
- 64 Fonash interview, Jan. 27, 2006, p. 60.
- 65 Fonash interview, Jan. 27, 2006, p. 62.
- 66 Fonash interview, Jan. 27, 2006, p. 116.
- 67 Fonash interview, Jan. 27, 2006, pp. 118-120.
- 68 Written Statement of Mark Rey, Under Secretary, Natural Resources and Environment, U.S. Department of Agriculture, for the U.S. House, Committee on Homeland Security, Subcommittee on Emergency Preparedness, Science, and Technology, hearing on *Ensuring Operability During Catastrophic Events*, Oct. 26, 2005, p. 3.
- 69 Committee staff interview of William Milani, Chief, Mobile Operations Section, Logistics Branch, FEMA, conducted on Jan. 12, 2006, transcript p. 59.
- 70 U.S. Department of Defense, "DOD Support to Hurricane Katrina," Executive Summary. Provided to Committee; filed as Bates no. 00614 ("DOD provided 1500 mobile radios . . . ; radios arrived September 6 and given to the 82nd Airborne at the New Orleans Airport."). When the DOD troops returned to their home stations, they provided 1500 of their radios to the National Guard troops. Committee staff interview of Col. James Kohlman, U.S. Army, U.S. Northern Command, U.S. Department of Defense, conducted on Dec. 6, 2005, transcript pp. 20, 39.
- 71 Marc Short, e-mail to Matt Mayer, Sept. 5, 2005, 10:51 a.m. Provided to Committee, filed as Bates no. DHS-FRNT-0010-0000386.
- 72 Written Statement of Fonash, Senate Committee hearing, Feb. 6, 2006, p. 6.
- 73 Written Statement of Fonash, Senate Committee hearing, Feb. 6, 2006, p. 6.
- 74 Written Statement of Fonash, Senate Committee hearing, Feb. 6, 2006, p. 7.
- 75 National Communications System, "National Communications System Response to Hurricane Katrina." Provided to Committee; filed as Bates no. DHS-INFP-0001-0000672.
- 76 FEMA, Action Request Form, Sept. 1, 2005. Provided to Committee.
- 77 Fonash interview, Jan. 27, 2006, p. 114.
- 78 Thomas Falvey, e-mail to Peter Fonash, Sept. 1, 2005, 2:25 p.m. Provided to Committee; filed as Bates nos. DHS-INFP-0002-0000026 through 0000027.
- 79 Milani interview, Jan. 12, 2006, pp. 7-9, 23-25.
- 80 Milani interview, Jan. 12, 2006, pp. 19-23.

- 81 Milani interview, Jan. 12, 2006, pp. 28, 129.
- 82 Milani interview, Jan. 12, 2006, p. 49.
- 83 Milani interview, Jan. 12, 2006, pp. 24, 53-54.
- 84 Milani interview, Jan. 12, 2006, pp. 96, 99, 103-04.
- 85 Committee staff interview of James Attaway, Telecommunications Specialist, Mobile Emergency Response System, Region VI, FEMA, conducted on Jan. 13, 2006, transcript p. 27; Milani interview, Jan. 12, 2006, pp. 56-57.
- 86 Attaway interview, Jan. 13, 2006, pp. 9, 12-13; Milani interview, Jan. 12, 2006, p. 60.
- 87 Attaway interview, Jan. 13, 2006, p. 29.
- 88 Attaway interview, Jan. 13, 2006, pp. 28-29.
- 89 Milani interview, Jan. 12, 2006, pp. 52-53.
- 90 Attaway interview, Jan. 13, 2006, pp. 19, 79; Milani interview, Jan. 12, 2006, pp. 53-54.
- 91 Milani interview, Jan. 12, 2006, p. 59.
- 92 Milani interview, Jan. 12, 2006, p. 59.
- 93 Milani interview, Jan. 12, 2006, pp. 59, 70.
- 94 Milani interview, Jan. 12, 2006, p. 70.
- 95 Milani interview, Jan. 12, 2006, pp. 95-96.
- 96 Committee staff interview of Sandy Coachman, Federal Coordinating Officer, Region VI, FEMA, conducted on Nov. 16, 2005, transcript pp. 16-18.
- 97 Coachman interview, Nov. 16, 2005, pp. 16-18.
- 98 Coachman interview, Nov. 16, 2005, p. 18.
- 99 Milani interview, Jan. 12, 2006, pp. 78-79.
- 100 Testimony of Mayor C. Ray Nagin, City of New Orleans, LA, before the U.S. Senate, Committee on Homeland Security and Governmental Affairs, hearing on *Managing the Crisis and Evacuating New Orleans*, Feb. 1, 2006.
- 101 Beeman interview, Jan. 20, 2006, p. 85.
- 102 Dowden interview, Nov. 11, 2005, p. 194.
- 103 Fonash interview, Jan. 27, 2006, p. 152.
- 104 Walt Gorman, Vice President, Globalstar, e-mail to Rob Strayer, Senate Committee staff member, Mar. 8, 2006, 1:23 p.m.
- 105 U.S. House, Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, *A Failure of Initiative*. Washington: Government Printing Office, 2006, pp. 172-173 [hereinafter U.S. House, *A Failure of Initiative*].
- 106 Col. Dowden Interview, Nov. 11, 2005, p. 195.
- 107 U.S. House, *A Failure of Initiative*, p. 172; Testimony of Robert R. Latham, Jr., Executive Director, Mississippi Emergency Management Agency (MEMA), before the U.S. House, Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, hearing on *Hurricane Katrina: Preparedness and Response by the State of Mississippi*, Dec. 7, 2005.
- 108 U.S. House, *A Failure of Initiative*, p. 173; Latham, House Select Committee hearing, Dec. 7, 2005; Committee staff interview of William Brown, Operations Chief, MEMA, conducted on Jan. 26, 2006.
- 109 Written Statement of Robert R. Latham Jr., Executive Director, MEMA, for the U.S. House, Select Bipartisan Committee to Investigate the Preparation for and Response to Hurricane Katrina, hearing on *Hurricane Katrina: Preparedness and Response by the State of Mississippi*, Dec. 7, 2005, pp. 3-4.
- 110 U.S. House, *A Failure of Initiative*, p. 172; Committee staff interview of Michael Brown, former Director, FEMA, conducted on Jan. 26, 2006, pp. 16-17.
- 111 Testimony of David Boyd, Director, SAFECOM, Office of Interoperability and Compatibility, U.S. Department of Homeland Security, before the U.S. House, Committee on Homeland Security, Subcommittee on Emergency Preparedness, Science and Technology, hearing on *Ensuring Operability During Catastrophic Events*, Oct. 26, 2005.
- 112 Louisiana Totally Interoperable Environment Strategic Plan (LATIE), Executive Summary, p. 3. Provided to Committee.
- 113 Dowden interview, Nov. 11, 2005, pp. 11-12.
- 114 Dowden interview, Nov. 11, 2005, p. 15.
- 115 Dowden interview, Nov. 11, 2005, pp. 12-13.
- 116 Dowden interview, Nov. 11, 2005, p. 13.

- 117 Dowden interview, Nov. 11, 2005, pp. 32-34.
- 118 Lt. Col. Oxley and Lt. Col. Booth interview, Dec. 9, 2005, pp. 48, 51, 54.
- 119 Written Statement of Dowden, Senate Committee hearing, Feb. 6, 2006, p. 3.
- 120 Dowden interview, Nov. 11, 2005, p. 41.
- 121 Written Statement of Dowden, Senate Committee hearing, Feb. 6, 2006, p. 3.
- 122 Written Statement of Dowden, Senate Committee hearing, Feb. 6, 2006, p. 2.
- 123 Dowden interview, Nov. 11, 2005, p. 211.
- 124 Dowden interview, Nov. 11, 2005, p. 49.
- 125 Dowden interview, Nov. 11, 2005, p. 201.
- 126 Booth interview, Dec. 9, 2005, p. 68.