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14. ABSTRACT: Immediate response is one of the most fundamental and critically important principles of search and rescue (SAR) doctrine. The window of time that offer victims the best chance of survival after an accident or disaster is generally measured in hours and not days. Although the United States National Guard (NG), Coast Guard (USCG)/Department of Homeland Security (DHS), Department of the Interior (DOI), and Department of Defense (DOD) air assets successfully rescued and evacuated more than 34,000 residents within the first ten days after Hurricane Katrina made landfall on August 29th, 2005, there is compelling evidence that the government did not most efficiently and effectively bring the full potential of America's domestic SAR capability to bear. This paper analyzes federal plans and processes that directly impact the swiftness of the DOD's domestic SAR response to a natural disaster. Moreover, it explains some potential limitations and interoperability shortcomings of DOD's current domestic disaster response structure that could adversely impact the effectiveness of immediate SAR efforts. In short, can Title 10 airborne SAR assets be on-scene quicker and conduct SAR better within the construct of an ad hoc joint task force? Since the scope of the Katrina catastrophe was unprecedented, this disaster will represent an illustrative example from which lessons can be gleaned and applied to future large-scale tragedies or national emergencies where DOD support would be anticipated. The focus of the paper is concentrated on the DOD's ability to rapidly deploy airborne assets and adequately execute SAR and does not specifically address the additional complexities of effectively integrating adjacent SAR mission sets led by other governmental agencies. Finally, the paper will recommend consideration to the creation of an additional standing joint task force to provide the attention, comprehension, and solutions to the complexities that accompany time-critical search and rescue operations of similar scope.				
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**ON A HOT ROOF IN NEW ORLEANS: CAN DOD AIRBORNE ASSETS
EFFICIENTLY DEPLOY AND EFFECTIVELY CONDUCT TIME CRITICAL
SEARCH AND RESCUE WITHIN THE BOUNDS OF CURRENT FEDERAL
PROCESSES AND CONSTRUCT OF AN AD HOC JOINT TASK FORCE?**

By

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Lieutenant Commander / U.S. Navy

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

Signature: _____

10 May 2007

Contents

Katrina – A Disaster of Unprecedented Scope	1
Analysis	4
Turning the Key to DOD’s Domestic SAR Capability	4
Effectiveness – Punctuality is not enough	7
Analytical Conclusions	10
DOD’s Operational Planning Vacuum for Domestic Disasters	10
Sequencing, Synchronizing, and Integrating Resources	12
Local, State, and Federal Interdependence	15
DOD’s Vehicle for Response	16
Standing Joint Task Force – Domestic Rescue	18
Closing Remarks	24
Selected Bibliography	25

List of Illustrations

Figure	Title	Page
1	Federal processes and structures that affect the speed and effectiveness of DOD's SAR response.	3
2	National Incident Management System of the National Response Plan	5
3	DOD's Civil Support Approval Process within the Construct of National Incident Management System	6
4	Standing Joint Task Force Domestic Rescue within the National Incident Management System	20

Abstract

“Time equals lives saved.”¹

-Vice Admiral Thad Allen, USCG – Fall, 2005

On A Hot Roof In New Orleans: Can DOD airborne assets efficiently deploy and effectively conduct time-critical Search and Rescue within the bounds of current federal processes and within the construct of an ad hoc Joint Task Force?

Immediate response is one of the most fundamental and critically important principles of search and rescue (SAR) doctrine. The window of time that offers victims the best chance of survival after an accident or disaster is generally measured in hours and not days.

Although the United States National Guard (NG), Coast Guard (USCG)/Department of Homeland Security (DHS), Department of the Interior (DOI), and Department of Defense (DOD) air assets successfully rescued and evacuated more than 34,000 residents within the first ten days after Hurricane Katrina made landfall on August 29th, 2005,² there is compelling evidence that the government did not most efficiently and effectively bring the full potential of America’s domestic SAR capability to bear. This paper analyzes federal plans and processes that directly impact the swiftness of the DOD’s domestic SAR response to a natural disaster. Moreover, it explains some potential limitations and interoperability shortcomings of DOD’s current domestic disaster response structure that could adversely impact the effectiveness of immediate SAR efforts. In short, can Title 10 airborne SAR assets be on-scene quicker and conduct SAR better within the construct of an ad hoc joint task force? Since the scope of the Katrina catastrophe was unprecedented, this disaster will represent an illustrative example from which lessons can be gleaned and applied to future large-scale tragedies or national emergencies where DOD support would be anticipated. The

¹Frances F Townsend, *The Federal Response to Hurricane Katrina – Lessons Learned*, Washington DC, The Office Homeland Security and Counterterrorism, 2006, 53.

² Admiral Thad Allen, Commandant, U.S. Coast Guard, “Hurricane Katrina Relief Operations” (lecture, Naval War College, NS Newport, RI, 02 April 2007).

focus of the paper is concentrated on the DOD's ability to rapidly deploy airborne assets and adequately execute SAR, and does not specifically address the additional complexities of effectively integrating adjacent SAR mission sets led by other governmental agencies.

Finally, the paper will recommend the creation of an additional standing joint task force to provide the attention, comprehension, and solutions to the complexities that accompany time-critical search and rescue operations of similar scope.

Katrina – A Disaster of Unprecedented Scope

“911 operators were consumed with traumatic calls for rescue. They received thousand upon thousands of frantic and desperate calls.”³

-New Orleans Mayor Ray Nagin - September 2005

Government officials on all levels were ill-prepared for the devastation that Hurricane Katrina wrought on the morning of August 29, 2005. The storm surge and subsequent flooding ultimately resulted in “the largest military deployment within the United States since the Civil War.”⁴ Thousands of local, state, and federal authorities, including citizen volunteers, endured life-threatening conditions to rescue people and animals in the aftermath of the destruction. The storm damaged or destroyed almost every aspect of the city’s infrastructure including critical communication, sanitation, and transportation assets, making the majority of New Orleans uninhabitable. As a result of the storm’s initial impact, subsequent levee failure, and the toxic living conditions created by the nasty brew of oil, sewage, and muddy flood water, over 1,300 people ultimately perished in the wake of the hurricane.⁵ Although the destruction was more conventional, Mississippi also suffered a catastrophe of biblical proportion as entire coastal towns were simply washed into oblivion.

Immediate and robust search and rescue missions were most urgent in New Orleans and its adjacent parishes where tens of thousands of residents required rescue from rooftops after the city’s flood-control system failed.⁶ Shortly after the brunt of the hurricane moved north past Louisiana and Mississippi, Coast Guard assets commenced preplanned SAR operations throughout the Gulf Region. The disaster area fell within the geographic region of

³ Frances F Townsend, *The Federal Response to Hurricane Katrina – Lessons Learned*, 38.

⁴ Thompson, Larry M. and Randy Wietman. “Hurricane Katrina.” (Case Study, Newport, RI: U.S. Naval War College, National Security Decision Making Department, 2006), 9.

⁵ Christopher Cooper and Robert Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*. (New York, NY: Times Books, 2006), 22.

⁶ Frances F Townsend, *The Federal Response to Hurricane Katrina – Lessons Learned*, 38.

the Eighth Coast Guard District. Although this command was normally assigned 15 helicopters, within hours of the hurricane passing, the district was allocated 76 additional aircraft to support the extensive SAR efforts.⁷ It was this kind of overt, instant, and enduring response that earned the Coast Guard the nickname “New Orleans Saints” amongst the city’s residents – most certainly a byproduct of the service’s “On-Scene Initiative” doctrine.⁸

The nature of this massive SAR operation was unlike any other in U.S. history. The situation was dynamic and overwhelming. The tremendous number of people that required assistance was just part of the challenge for the initial responders. Prioritizing the 10 mile by 10 mile rescue area that had continuously worsening rescue requirements made it impossible for the Coast Guard to get its collective arms completely around the situation. Sectors could not be searched once then never again. Residents slowly made their way to housetops, sometimes it took survivors days to reach a site where rescuers were even alerted to their distress. Also, it was not uncommon for people to decline immediate assistance, then an hour or two later rethink the logic of a rooftop existence and frantically wave for help. A combination of residential shock, denial, and panic did not make for cooperative rescues.

Despite their deliberate and valiant efforts, Coast Guardsmen, in addition to local and state authorities, were overwhelmed by the scale of the devastation and the associated rescue requirements. On Tuesday, August 30th, United States Northern Command (NORTHCOM) created Joint Task Force Katrina (JTF-K) to provide resources, manpower, and advanced planning, and to bolster the search and rescue, security, and logistic relief efforts. By September 1st, JTF-K formed around the First Army Staff which was commanded by LTG

⁷ Larry M. Thompson and Randy Wietman. “Hurricane Katrina.” 11.

⁸ Allen, “Hurricane Katrina Relief Operations.” If on-scene assets have the capability and capacity to act, that unit must act until the incident is resolved, the asset is relieved by another asset, or that asset reaches a point of culmination when it can no longer act effectively.

Russel Honoré. This ad hoc task force included approximately 3,000 active duty personnel in the disaster area with less than 50 DOD search and rescue helicopter assets. Within four days, that number climbed to over 14,000 personnel⁹ with over 200 airborne assets operating from 13 separate sites within the region.¹⁰ JTF-K's SAR plan was published on September 7th, eight days after the organization was stood up and nine days after the first helicopters had commenced rescue flights.¹¹ The timing and effectiveness of this plan have since come into question.

A closer inspection of the events during Katrina revealed four key processes and structures that directly impacted the speed and effectiveness of a Department of Defense's search and rescue response. However, when "time equals lives saved,"¹² promptness and effectiveness cannot be completely divorced from one another. Figure 1 illustrates how each

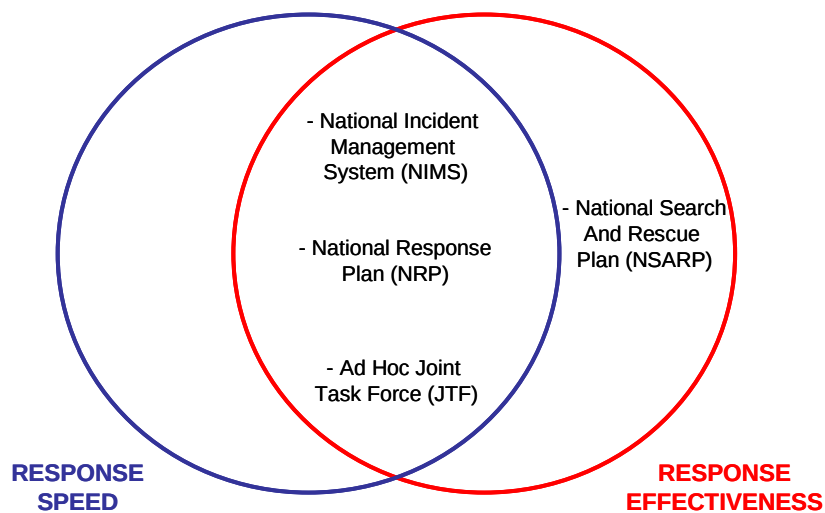


Figure 1. Federal processes and structure that affect the speed and effectiveness of DOD's SAR response.

⁹ Frances F Townsend, *The Federal Response to Hurricane Katrina – Lessons Learned*, 42-43.

¹⁰ Colonel William Dolan, U.S. Army, "Vice Admiral Hull's Inbrief," Powerpoint, 5 September 2005.

¹¹ Opatz, David, CDR, USN, "VAW-77 Lessons Learned from Hurricane Katrina Rescue and Relief Operations," (lessons learned, NAS Atlanta, GA: VAW-77 Operations Department, 2005),3.

¹² Townsend, *The Federal Response to Hurricane Katrina – Lessons Learned*, 53. Quote from Vice Admiral Thad Allen, 2005.

of these plans and designs that enable the DOD response can affect one or both of these qualities. The framework of this paper will investigate the influence of the National Response Plan (NRP), National Incident Management System (NIMS), National Search and Rescue Plan (NSARP), on an ad hoc Joint Task Force's ability to deploy Title 10 airborne SAR assets to a domestic disaster area with the alacrity and efficacy that is expected of our regular forces.

Analysis

Turning the Key to DOD's Domestic SAR Capability

*"We were all watching the evacuation. We knew that it would be among the worst storms ever to hit the United States. But on Monday, the only request the U.S. military received from FEMA was for a half-dozen helicopters."*¹³

- Major General Richard Rowe, NORTHCOM Operations

The guidance for civil support by DOD is governed by the National Response Plan (NRP), a plan that applies to not just federal agencies but to all responders: federal, state, and local.¹⁴ Attempting to streamline the incomplete and confused response after the September 11th attacks, the NRP replaced the former Federal Response Plan¹⁵ nine months before Hurricane Katrina¹⁶ and had only been tested in theory prior to the disaster.¹⁷

Since the preponderance of domestic catastrophes can be adequately handled at the local, state, and federal agencies, the fundamental principles of NRP were designed to empower and enable authorities at these levels. Unless in the direst of circumstances where

¹³ Glasser, Susan and Michael Grunwald, "The Steady Buildup to a City's Chaos," Washington Post, 11 September 2005.

¹⁴ Ivan T. Luke. *Homeland Security – Civil Support: How DOD plugs into the interagency C2 Structure*. NWC 3065A. (Newport, RI: Naval War College Press, 2005), 5.

¹⁵ Ibid., 5.

¹⁶ Department of Homeland Security, *National Response Plan*, Washington D.C., Department of Homeland Security, December 2004, 1

¹⁷ Allen, "Hurricane Katrina Relief Operations." The Federal Emergency Management Team (FEMA) conducted a large scale exercise (Hurricane Pam) in Baton Rouge in 2004 within the construct of NRP.

the President dictates, the Department Of Defense will not be leading the efforts during civil support missions, but will be assisting another lead civilian agency - “military resources are used to supplement, not replace the capabilities of the civilian agencies.”¹⁸ To enable the most likely first-responders, the authors designed much of the NRP from processes used by firefighters in the western United States; a system that is foreign to most Title 10 personnel and not seamlessly compatible with the structure of the typical DOD response.¹⁹ The National Incident Management System (NIMS) is currently “doctrine” for civilian efforts and uses the Incident Command System (ICS) structure for Command and Control and Emergency Support Functions (ESFs) for tasking.²⁰ Figure 2 depicts the fundamental NIMS

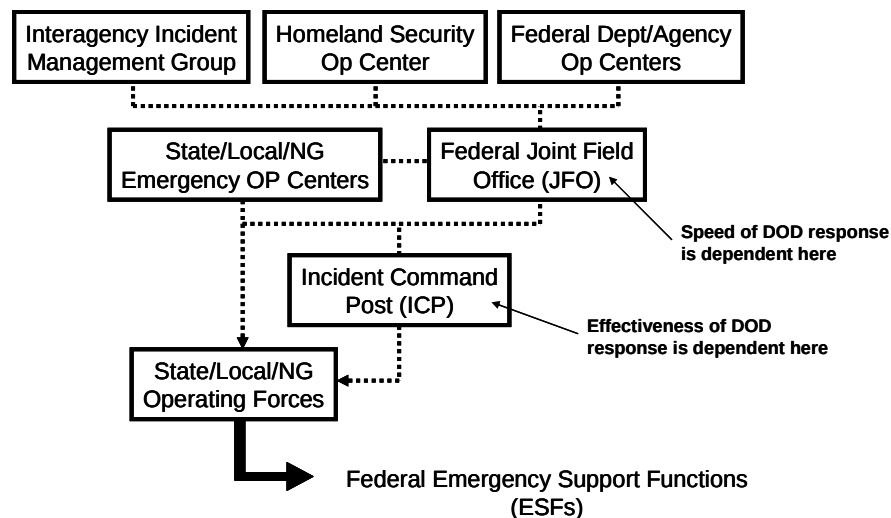


Figure 2. National Incident Management System (NIMS) of the National Response Plan (NRP). (Adapted from Ivan T. Luke, *Homeland Security – Civil Support: How DOD plugs into the interagency C2 Structure*. NWC 3065A. (Newport, RI: Naval War College Press, 2005), 7).

structure that is formed in response to natural disasters such as Hurricane Katrina. Residing at the top level of the diagram, the Interagency Incident Management Group, Homeland Security Operation Center, and Federal Department/Agency Operation Center all focus on

¹⁸ Luke, *Homeland Security – Civil Support: How DOD plugs into the interagency C2 Structure*, 2, 4.

¹⁹ Ibid., 6.

²⁰ Ibid., 6. There are 15 ESFs, with each have a specific agency lead (e.g. ESF #1 is firefighting, ESF#9 is Urban Search and Rescue).

coordination and information flow at the national strategic level. On the other end of the spectrum, the Incident Command Post (ICP) is where tactical efforts are coordinated and managed through the vehicle of the ESFs. The true operational level of this depiction resides at the Emergency Op Centers of the state, local, and National Guard and the Federal Joint Field Office (JFO); however, the majority of the efforts at this level in NIMS are focused on obtaining and managing the influx of personnel required to support the mission. For example, as illustrated in Figure 3, the JFO is normally the source of a request for DOD assistance through a DOD Defense Coordinating Officer (DCO). If the request is justifiable,

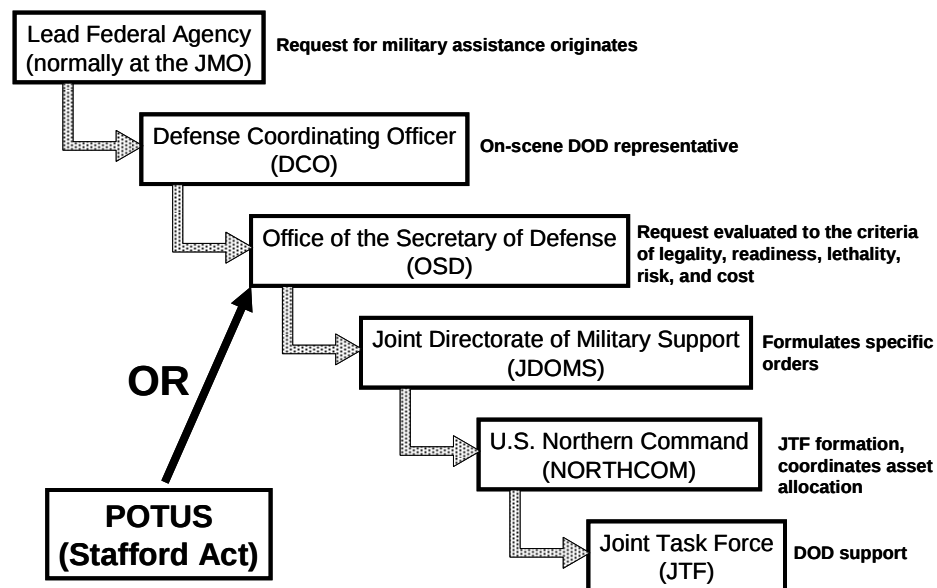


Figure 3. DOD's Civil Support Approval Process within the construct of National Incident Management System (NIMS). (Adapted from Larry M. Thompson and Randy Wietman. "Hurricane Katrina." (Case Study, Newport, RI: U.S. Naval War College, National Security Decision Making Department, 2006), 7.

it is forwarded to the Secretary of Defense where further legality, risk, and cost checks are made before it is approved and forwarded onto the Joint Directorate for Military Support (JDOMS) where specific orders for NORTHCOM will be drafted. Once at the regional command level, forces will be coordinated, typically through Joint Forces Command (JFCOM) and a JTF will be established and deployed as soon as possible. Although

Standing Joint Task Force, Civil Support (SJTF-CS) currently exists and resides at Fort Monroe, VA, it is unlikely that it will ever respond to a natural disaster and the deployed organization will continue to be ad hoc JTFs as was seen after Hurricane Katrina.

The NRP/NIMS process was also designed to accommodate the Stafford Act, where the President can declare a disaster or emergency an Incident of National Significance (INS), even though a formal request for assistance has been initiated by the lead agency.²¹ Invoking this act could certainly save precious time that is critical during an immediate SAR effort; however, it was not used in the aftermath of Hurricane Katrina.

When looking at the national plan as a whole, the challenges for swift DOD response are evident. Forming the command and control (C2) structure within the construct of ICS, routing a DOD assistance request through the NRP/NIMS process, and creating and deploying an ad hoc JTF all have the potential, by design, of adversely impacting a rapid response by DOD airborne SAR assets.

Effectiveness – Punctuality is not enough

“DHS and DOD had created parallel planning and preparedness efforts...The procedures for engaging NORTHCOM and utilizing DOD assets...were not clearly defined.”²²

-John R. Harrald, Ph.D., Director, Institute for Crisis, Disaster, and Risk Management

Although DOD's initial SAR response can certainly bog down with federal processes that move Title 10 assets into an area, timing is not the only aspect of the overarching plans that could potentially limit its effectiveness. A Joint Task Force that is adequately synchronized with the National Incident Management System, a comprehensive National Search and Rescue Plan, and a National Response Plan that is able to integrate all resources

²¹ Thompson and Wietman. “Hurricane Katrina,” 7

²² Senate, Testimony for the Senate Homeland Security Government Affairs Committee Hurricane Katrina: Recommendations for Reform, 109th Cong., 2nd Sess., 2006.

into one coherent effort are all critical to the success of a rapid and concerted search and rescue effort. Once Title 10 assets are on-site, the command and control of these forces is straightforward. JTF personnel will always remain under military control and will never be chopped to the civilian lead agency. Tasking is received via the combatant commander's chain of command and coordinated by a JTF liaison that is typically positioned at the ICP. "Depending on the scope of the operation, liaisons may be at any number of operational subcomponents and civilian agency operations/command centers to coordinate the day to day support,"²³ such as the execution of the National Search and Rescue Plan. Quickly building and maintaining situational awareness is critical during catastrophes where short-notice domestic SAR is required – a daunting challenge for a newly formed ad hoc JTF.

The processes and procedures within the National Search and Rescue Plan, which was last updated two years before the 9/11 tragedy, seemed ill equipped to handle an event of Katrina's magnitude and complexity.²⁴ Within the plan, the Coast Guard was assigned responsibility for providing or arranging maritime search and rescue services, and the Air Force was responsible for providing or arranging non-maritime search and rescue services in the continental United States.²⁵ Katrina's devastation and subsequent flooding in New Orleans attacked NSARP right at this seam. Whereas the Coast Guard was ready for the maritime effort that is normally associated with a hurricane, the Air Force did not anticipate the potential scope of the disaster within the city of New Orleans. As a result, hours after the

²³ Luke, *Homeland Security – Civil Support: How DOD plugs into the interagency C2 Structure*, 9

²⁴ United States Government Accountability Office, *Hurricane Katrina: Better plans and Exercises Needed to Guide the Military's Response to Catastrophic Natural Disasters*, GAO-06-643. Washington DC: Government Accountability Office, 2006, 28.

²⁵ United States Coast Guard. "National Search and Rescue Plan," <http://www.uscg.mil/hq/g-o/g-opr/nsarc/nsp.htm>, (accessed 12 April 2007).

storm, USCG air assets largely found itself alone in the New Orleans' skies over as they conducted SAR over the continental United States.

The National Search and Rescue Plan was not the only incomplete guidance that degraded the full potential of the initial SAR effort. In a report that critically analyzed the federal response, the Government Accountability Office concluded that the National Response Plan, addressed only a portion²⁶ of the search and rescue missions:

While the NRP acknowledges the existence of a National Search and Rescue Plan, the NRP does not specifically address how the Coast Guard and the Air Force organizational responsibilities in the National Search and Rescue Plan coincide with the NRP's urban search and rescue annex.²⁷

Under the NRP, the Federal Emergency Management Agency (FEMA) is the primary agency to coordinate Urban Search and Rescue (US&R) through Emergency Support Function-9. However, because the NRP focuses mostly on US&R, combined with the fact that these units were not consistently trained or adequately equipped to perform rescues in a water environment, specific responsibilities amongst first-responders were not as clear as the NSARP planners had intended.

In the first hours of its existence, as Joint Task Force Katrina tried to get its collective arms around the immediate SAR mission, the two most important documents for guidance, the National Response Plan and National Search and Rescue Plans, proved not only deficient, but were also not entirely compatible with one other – a less than ideal recipe for maximizing the effectiveness of the SAR effort.

²⁶ Department of Homeland Security, *National Response Plan*, 90. The National Response Plan was published in December 2004.

²⁷ United States Government Accountability Office, *Hurricane Katrina: Better plans and Exercises Needed to Guide the Military's Response to Catastrophic Natural Disasters*, 28

Analytical Conclusions

“That was a train wreck that we saw in New Orleans.”²⁸

-Major General John White, Joint Task Force - Rita

Inadequate plans and a less than ideal response structure presented significant challenges to the efficient deployment and effective conduct of time-critical search and rescue by Title 10 air assets in the immediate aftermath of Hurricane Katrina. Highlighted by this catastrophe were some complexities and challenges that should be expected when the military faces a disaster of similar scope. The operational planning corps of the military and the processes that enable efficient response were grossly deficient. Moreover, success during post-catastrophe SAR operations cannot be accomplished without a unity of federal, state, and local competence long before a disaster strikes. Although all branches of services have the capacity to conduct SAR, the Tactics, Techniques, and Procedures (TTPs) that govern their response were dissimilar and were a source of confusion amongst the initial responders. Finally, there was no organization within the military that monitored the pulse of local and state planning proficiency and response readiness throughout the country prior to the incident, nor is one completely devoted to preparing the nation for the next one.

DOD’s Operational Planning Vacuum for Domestic Disasters

The events surrounding Hurricane Katrina identified a critical void in the skill set of operational planning for large-scale disaster response by the military. Although the National Response Plan and National Search and Rescue Plan were deficient in some areas, both documents did provide some sense of strategic vision to guide local, state, and federal authorities. Skipping to the tactical realm, if there is one mission that all services within the

²⁸ Associated Press, “Military to Bush: U.S. Needs Search-Rescue Plan,” MSNBC, 28 September 2005, <http://www.msnbc.msn.com/id/9477781> (accessed 14 April 2007).

Department of Defense train and are capable, it is the mission of search and rescue.

Although each may be operating from a different set of TTPs and may not be as proficient as the Guardsmen who own SAR as a core mission set, Airmen, Soldiers, Sailors, and Marines know how to conduct search and rescue – they just need authorization to deploy to the disaster and a command organization to facilitate overall effectiveness by ensuring unity of effort. Although not ideal, in the absence of specific operational guidance, these tactically savvy aviators will adapt within the tenants of their own guidance and structure, as they did arriving on-scene in New Orleans:

Some teams displayed their own initiative to fill the gap in unified command, determining their own rescue priorities, areas to be searched, and locations to drop off the people they rescued. Unfortunately, in some cases, rescuers were forced to leave people on highways where they were exposed to the elements and in continuing need of transportation, food, and water.²⁹

No concrete guidance existed for military aircrews flying Katrina missions. There was also no way to discern what assets would be available until arriving on-station. Initial on-scene military and other federal C2 platforms and ground units forces that were talking on radios created a rudimentary system of command and control very early in the process. The agencies involved did not really know who was in charge or what their specific command and mission hierarchy was, but at the tactical level, it didn't really matter. While the prevailing command and control structure in the first days of Katrina operations was not ideal, it worked because it was what New Orleans and Mississippi needed: massive and immediate rescue and evacuation operations. Operating with an absence of clear guidance, VAW-77 aircrew set their priorities on rescuing as many people as possible.³⁰

In accordance with the National Search and Rescue Plan, a Joint Search and Rescue Center was established at Tyndall Air Force Base, Florida, to “manage” Hurricane Katrina search and rescue missions; however, this center was not set up until September 4th, six days after Katrina’s landfall.³¹ Moreover, when planners published the JTF-K Search and Rescue

²⁹ Frances Townsend, *The Federal Response to Hurricane Katrina – Lessons Learned*, 38. The tactic of dropping off survivors at intermediate sites by USCG HH-65 crews was sound. The combination of short legs coupled with the technical hoist capability of this limited asset made this a smart tactic and resulted in more rescues per sortie and saved countless lives.

³⁰ CDR David Opatz, USN, “VAW-77 Lessons Learned from Hurricane Katrina Rescue and Relief Operations.” Lessons learned, NAS Atlanta, GA: VAW-77 Operations Department, 2005, 2.

³¹ United States Government Accountability Office. *Hurricane Katrina: Better plans and Exercises Needed to Guide the Military’s Response to Catastrophic Natural Disasters*, 29.

Plan on September 7th, it was immediately criticized by SAR aircrew who had been conducting missions for already more than a week:

The plan as disseminated created a complicated command structure for simple recovery efforts...The ultimate military SAR C2 structure handed down from the JFACC could have inhibited efficient SAR operations if it had been in place at the start of evacuation operations. As it turned out, the JTF-K published the SAR plan appeared after 99.3 percent of the successful rescues/evacuations were already complete.³²

Sequencing, Synchronizing, and Integrating Resources

At the squadron and arguably the wing level of the initial search and rescue response, the effort was certainly sequenced, synchronized, and integrated. However, a critical analysis of the SAR effort from a more strategic perspective has shown that overall it was belated, uncoordinated, and disjointed. From the tactical perspective, a conclusion of this flavor is unpopular – especially from personnel that flew more hours in one week than they normally fly in three months and on missions that were likely more rewarding than anything experienced anywhere, anytime. Americans saved by Americans, by the thousands. Without question, rescue/airlift helicopters, fixed-wing logistic aircraft, E-2, E-3, and P-3 command and control platforms, all executed to their fullest capacity. However, in search and rescue efforts of this magnitude, the whole is greater than the sum of its parts, or in this case, individual aircraft.

To better understand the concept of sequencing, synchronizing, and integrating resources, the analogy of an orchestra is helpful. It is not enough for a conductor to have the right instruments in the ensemble but the musicians must possess the competence of how and when to play (sequencing). Furthermore, the musical piece that is being played must have a consistent enough beat (synchronizing) for late or newly arriving members of the band to

³² CDR David Opatz, USN, “VAW-77 Lessons Learned from Hurricane Katrina Rescue and Relief Operations,” 3-4.

jump in the song (integrating). Finally, it is always less than desirable when the orchestra has to start playing before the music is fully composed and before the conductor even arrives at the music hall. Although notes and some melodies will be played during this concert, in the end, all the audience would hear is noise.

Applying this to the days after Katrina, although the timing of DOD's response has been questioned, there is little evidence that the military did not respond with the right assets. However in the synchronization and integration piece, the military along with other agencies fell short. A fragmented deployment system and lack of a command structure exacerbated communication and coordination issues during the overall initial search and rescue efforts. "While tens of thousands of people were rescued after Katrina through the efforts of the military, civil government, and private rescuers, the lack of clarity in search and rescue plans led to operations that, according to aviation officials, were not as efficient as they could have been."³³

One of the synchronization problems "involved the lack of a coordination mechanism and standardized processes between varying organizations. This led to a duplication of effort in some locations and a lack of response in others."³⁴ Major General John White, a member of the military's Joint Task Force Rita, said that the current plans were so scattered that five helicopters might show up at once to rescue the same person.³⁵

To further complicate the synchronization issue, each agency and department arrived with different TTPs and equipment. Geographic reference systems, operating procedures, communication processes and devices were different depending on the flavor of the asset.

³³ United States Government Accountability Office. *Hurricane Katrina: Better plans and Exercises Needed to Guide the Military's Response to Catastrophic Natural Disasters*, 28.

³⁴ Larry M. Thompson and Randy Wietman. "Hurricane Katrina." 10.

³⁵ Associated Press, "Military to Bush: U.S. Needs Search-Rescue Plan."

Some aircraft preferred latitude and longitude, some latitude and longitude in another format, some the military grid reference system, some were using a type of sector system, and sometimes it just did not matter because the location of a request was passed with a street address.

The separate commands divided the area of operations geographically and supported response efforts separately... Similar issues of bifurcated operations and interoperability challenges were also present between the military and civilian leadership. This lack of interoperable communications was apparent at the tactical level, resulting from the fact that emergency responders, National Guard, and active duty military use different equipment.³⁶

Once JTF-K was deployed, the organization attempted to better synchronize the efforts through processes that were familiar to active duty assets, but less compatible with the situation. As the composer who was late for the concert without fully composed sheets of music, it was difficult for the Joint Task Force to get the SAR effort in some semblance of harmony armed with just a conducting baton.

The primary problem with the JTF-K Air Tasking Order (ATO) and Air Control Order (ACO) was that they were essentially military-only documents. [Coast Guard and Customs and Boarder Patrol P-3] missions were delineated on some ATOs, but there was a distinct lack of integration between military and non-military forces specifically delineated in the JTF-K Special Instructions (SPINS)... Instead of integrating military with other federal forces, JTF-K's control plans focused on executing a wartime combat SAR plan regardless of its applicability or efficiency. While the ATO/ACO/SPINS presented a neat, organized briefing slide, these documents did very little to effectively de-conflict, synergize and manage joint air operations over New Orleans and Mississippi.³⁷

Although this paper focuses primarily on one component of civil search and rescue from a Department of Defense perspective, there were also deficiencies in synchronizing the other subcomponents of civil SAR, maritime and land SAR and also the other major component, Urban Search and Rescue (US&R). The absence of any overarching plan that

³⁶ Frances Townsend, *The Federal Response to Hurricane Katrina – Lessons Learned*, 43.

³⁷ CDR David Opatz, USN, "VAW-77 Lessons Learned from Hurricane Katrina Rescue and Relief Operations," 4.

incorporated all aspects of search and rescue was also a source of coordination problems both on land and in the air.³⁸

Another example of poor synchronization was with the post-rescue and support guidance. “When successful rescues were made, there was no formal direction on where to take those rescued. Too often rescuers had to leave victims at drop-off points and landing zones that had insufficient logistics, medical, and communications resources, such as atop the I-10 cloverleaf near the Superdome.”³⁹ As a result of the lack of clear search and rescue guidance, the aviation portion of the military search and rescue operations did not possess the harmony that would cultivate the full integration of a wide variety of capabilities. The active duty military was not fully integrated with the helicopter search and rescue operations of the Coast Guard, other rescuers, and supporting agencies.⁴⁰

Local, State, and Federal Interdependence

Another unambiguous conclusion that can be drawn from the Katrina experience is that an operation of this scope cannot be successful without an equal level of effort in planning, training, and executing from all participants. The active duty military cannot do it alone or be divorced from local efforts – for they will be dependent on them. “One of the most important constraints on the military’s ability to manage domestic disaster response, particularly in the early stages, is the nation’s reliance on local control.”⁴¹ Moreover, it is likely that it will be a local or state agency that will initiate the request to the Defense Coordinating Officer for assistance – a critical component to the alacrity of an active duty response.

³⁸ Frances Townsend, *The Federal Response to Hurricane Katrina – Lessons Learned*, 38.

³⁹ *Ibid.*, 54.

⁴⁰ United States Government Accountability Office. *Hurricane Katrina: Better plans and Exercises Needed to Guide the Military’s Response to Catastrophic Natural Disasters*, 29.

⁴¹ Larry M. Thompson and Randy Wietman. “Hurricane Katrina.” 9.

Conducting a simulated exercise is one method to refining plans and training local, state, and federal personnel to most efficiently meet the necessary requirements of disaster response. For example, FEMA conducted a large scale hurricane exercise in Louisiana a year prior to Katrina, called “Exercise Pam.”⁴² The scenario featured an imaginary hurricane and used realistic weather and damage information developed by the National Weather Service. However, not even the planners of Exercise Pam imagined the worst-case scenario of the complete failure of New Orleans’ flood-control system – the possibility of the surrounding levees being compromised was never seriously considered.⁴³ Furthermore, “many of the resulting ‘plans’ lacked a true understanding of the scope of requirements – for example, what was needed for search and rescue.”⁴⁴ Without a robust active duty corps of participants, the exercise likely left many local, state, and federal agencies with unrealistic expectations of the nation’s response capability.

DOD’s Vehicle for Response

The Federal response to Hurricane Katrina demonstrated that the Department of Defense has the capability to play a critical role in the national response to catastrophic events. There was no better vehicle at the time than an ad hoc Joint Task Force to respond to a short-notice, unprecedented catastrophe of this magnitude. In retrospect and anticipating domestic disasters of similar scope, it is apparent that an ad hoc JTF brings numerous external and internal shortcomings that are a challenge to its immediate impact to a response. It is interesting that neither Congressional nor White House reports commented on the

⁴² Select Bipartisan Committee to Investigate the Preparation for and the Response to Hurricane Katrina. Congressional Report 109-377, *A Failure of Initiative*, Washington DC, U.S. Government Printing Office, 2006, 81-83.

⁴³ Christopher Cooper and Robert Block, *Disaster: Hurricane Katrina and the Failure of Homeland Security*, 223.

⁴⁴ Larry M. Thompson and Randy Wietman. “Hurricane Katrina.” 2-3.

limitations to which the Department of Defense responds to disasters. It is not unlikely however that the shortcomings of an ad hoc JTF were lost amongst the more blatant and public failings at the local, state, and federal agency levels.

As discussed earlier in the paper, an ad hoc JTF will likely not be the lead agency in a disaster relief effort in a disaster of equivalent scope to Katrina (unless the event is on the scale of an immense nuclear or biological accident or attack). Additionally, this task force would likely find itself in another complex environment where multiple levels of government and numerous agencies are conducting parallel efforts. With little, but growing, situational awareness, this task force will look to husband its search and rescue resources and model guidance and direction based on the SAR experts of the situation, the Coast Guard. However, by this time, a week has passed since the catastrophe and the search and rescue assets from all departments and agencies of the government have switched from the rescue of survivors to the recovery of victims.

Applying an ad hoc Joint Task Force to an incident similar to Katrina, the Joint Force Commander will again be arriving on-scene without two pre-conditions to which all leaders are accustomed: situational awareness and control. As a result, DOD airborne assets cannot efficiently deploy and effectively conduct time-critical Search and Rescue within the bounds of current federal processes and within the construct of an ad hoc Joint Task Force. However, an additional question now presents itself. “Is there an alternative to the ad hoc Joint Task Force that would make the situation more palatable for a military commander and ultimately a more timely and effective search and rescue effort?”

Standing Joint Task Force – Domestic Rescue

“We need to do this right...to determine what changes should be made to meet contingencies of the nature we have experienced, whether it is a natural disaster or...a terrorist attack in the future,”⁴⁵

-Senator John Warner, R-VA, Chairman of the Senate Armed Services Committee

Imagine for a moment what the quality of the national response would have been in 2005 if instead of a hurricane striking the Gulf Coast a massive earthquake had decimated Des Moines, Iowa and it most of its transportation infrastructure. How long would it have taken to get a concerted and effective airborne SAR effort overhead a city in the Midwest? Applying a timeline to this scenario based on the Defense Department’s performance in Katrina, it likely would not be soon enough and robust enough for the public – especially without the immediate and overt response provided by the Coast Guard.

As mentioned earlier in the paper, this is a daunting scenario for any ad hoc task force commander. Prior to combat operations, the leadership and staff generally know where they are going, why they are going, with what partners they are operating, and more than likely, how they are going to accomplish the strategic objective of the operation – an immense amount of situational awareness and of course, complete control.

The Standing Joint Task Force (SJTF) concept was designed to build and maintain situational awareness and provide the C2 for the prosecution of specific operational requirements. Currently NORTHCOM maintains five SJTFs throughout the country as described in table 1. Mission sets of these forces range from defense of the nation’s capital to assisting other agencies in protecting the nation’s borders. Of interest, Joint Task Force

⁴⁵ Maze, Rick, “Katrina Could Prompt Major Military Revisions,” Navy Times, 13 September 2005, <http://www.navytimes.com/> (accessed 20 April 2007).

Civil Support (JTF-CS) currently is designed to support any designated Lead Agency for domestic chemical, biological, radiological, nuclear, or high-yield explosive (CBRNE)

Table 1. NORTHCOM's Standing Joint Task Forces (SJTFs)

SJTF	STATION	MISSION
JFHQ-NCR	Fort McNair, Washington, D.C	Joint Forces Headquarters National Capital Region: Responsible for land-based homeland defense, defense support of civil authorities, and incident management in the National Capital Region
JTF-AK	Elmendorf Air Force Base, AK	Joint Task Force Alaska: Coordinates the land defense of Alaska as well as defense support of its civil authorities.
JTF-CS	Fort Monroe, VA	Integrates DoD support to the designated Lead Agency for domestic chemical, biological, radiological, nuclear, or high-yield explosive (CBRNE) consequence management operations.
JTF-N	Biggs Army Airfield, Fort Bliss, TX	Joint Task Force North: Supports our nation's federal law enforcement agencies in the interdiction of suspected transnational threats within and along the approaches to the continental United States.
SJFHQ-N	Peterson Air Force Base, Colorado Springs, CO	Standing Joint Forces Headquarters North: Maintains situational awareness of the U.S. Northern Command Area of Responsibility to enable rapid transition to a contingency response posture. When directed, SJFHQ-N rapidly deploys a joint command and control element to support homeland defense and civil support operations to deter, prevent, defeat and mitigate crises in the USNORTHCOM AOR.
Proposed SJTF		
SJTF-DR	?	Joint Task Force Domestic Rescue: Sequences, synchronizes, and integrates, DOD support to the designated lead agency during natural domestic disasters.

Adapted from U.S. Northern Command's Website (<http://www.northcom.mil>)

consequence management operation. In overly-devastating cases, this JTF will be the lead response agency – a potential scenario of even larger proportions than Katrina. Based on the mission set of this task force, consideration should be given to creating a new SJTF for domestic natural disasters that is modeled after JTF-CS. This new task force, called Standing Joint Task Force Domestic Rescue (SJTF-DR), could leverage already established relationships of JTF-CS at the local, state, and interdepartmental/agency levels of government and have the primary mission of sequencing, synchronizing, and integrating

DOD support of the designated lead agency during natural domestic disasters. Figure 4 depicts how this task force will operate within the National Incident Management System. Although the Operation Centers, the Federal Joint Field Office, and Incident Command Post

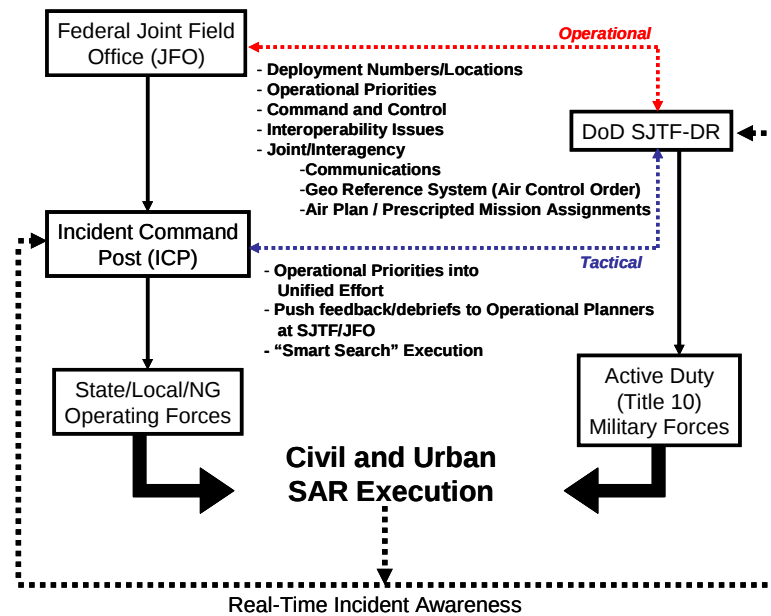


Figure 4. Standing Joint Task Force Domestic Rescue (JTF-DR) within the National Incident Management System (NIMS). (Adapted from Ivan T. Luke, *Homeland Security – Civil Support: How DOD plugs into the interagency C2 Structure*. NWC 3065A. (Newport, RI: Naval War College Press, 2005), 7).

would not be fully functional until a disaster has occurred, a standing joint task force would have had opportunities to establish strategic, operational, and tactical relationships long before the disaster was even forecast.

It has become popular to suggest amongst the services within the Department of Defense that the majority of the recommendations from Katrina have been already implemented and no change to the current structure of NORTHCOM is required. Such a view is questionable, shortsighted, and ignores the real work that the country requires. Admittedly, since the crisis, the Defense Department has responded to internal Katrina lessons learned and post-action reports from almost every level of government and has

unquestionably made progress in streamlining some of its own processes to allow for a quicker and more effective response by active duty SAR assets. For example, NORTHCOM is currently coordinating with local and state authorities in every region of the United States to determine sites to be added to a “smart search” database.⁴⁶ The concept of this database is to catalogue any site (e.g. hospitals, nursing homes) where lives are vitally dependent on such things as electricity, oxygen, running water. No response or rescue plan had ever conceived of such a database prior to the Hurricane Katrina when the country learned a now seemingly obvious lesson - recovery at these sites is time critical.

Furthermore, in an effort to better synchronize the airborne search and rescue mission immediately after a disaster, NORTHCOM has also conceived the concept of Prescribed Mission Assignments (PMAs). PMAs are essentially requests for support from FEMA that have been vetted through DOD. Although the specific chain for the request process remains the same, PMAs are designed to allocate the right amount of forces to meet FEMA’s requirements in both time and space.⁴⁷

Although tools and technology are a favorite fix of the military, NORTHCOM is treating the symptoms rather than the root cause of the problem with these efforts. One of the most disconcerting issues that the military faces in a domestic response scenario is the fact that local and state preparedness and proficiency differ from region to region throughout America. Not surprisingly, the current most disaster-prepared region within the continental United States is the Gulf Coast region, where areas such as the Midwest states are lagging in their readiness.⁴⁸ Since the success of a combined effort is dependent on all components of

⁴⁶ Colonel Joseph Sokal, USNORTHCOM HQs SJFHQ-N, telephone call with author, 25 April 2007.

⁴⁷ Captain Fred M. Midgette, USCG, NORAD USNORTHCOM, email message to author, 25 April 2007.

⁴⁸ Colonel Joseph Sokal, USNORTHCOM HQs SJFHQ-N, telephone call with author, 25 April 2007.

the response, it is in the Defense Department's best interest to foster and encourage an acceptable level of local and state proficiency throughout the country. A concerted and dedicated effort by a standing joint task force has the potential of being a significant catalyst to get these regions to this level of competence. Some regions will always be "more ready" than other, but at least SJTF-DR would be aware of the strengths and shortcoming of their potential crisis partners.

Some critics have also proposed that the shortcomings of an ad hoc JTF were addressed with the SJFHQ concept which was developed to resolve the many diverse issues associated with establishing a new JTF headquarters. This transformational headquarters construct was designed to provide USNORTHCOM with an informed and in-place command and control capability, reducing the "ad hoc" nature of traditional JTF headquarters by immediately providing situational awareness to the newly forming organization.⁴⁹ Although a novel concept on paper, the standing joint task force sent by both NORTHCOM and Joint Forces Command (JFCOM) during the days after Katrina provided very little to LTG Russel Honoré and his staff in prosecuting immediate search and rescue.⁵⁰ A combination of limited knowledge of the particulars of the mission and their less than punctual arrival added little value to the SAR effort, and in some sense, complicated it.⁵¹ Looking back specifically to this time, JTF-K's lack of situational awareness during the days following the disaster seems less of a lack of awareness on the particulars of the incident and more of a lack of awareness on how to make the national response strategy really work – something that none of the deployed SJTFs possessed either. Certainly the national plans are not perfect, but the DOD,

⁴⁹ Unites States Northern Command Website, <http://www.northcom.mil>, (accessed 2 May 07).

⁵⁰ Miles, Donna. "Core Elements Improve Crisis Response, Combat Ops," <http://www.jfcom.mil/newslink/storyarchive/2006/no032306.htm>, (accessed 20 April 2007).

⁵¹ CDR David Opatz, USN, "VAW-77 Lessons Learned from Hurricane Katrina Rescue and Relief Operations," 4.

specifically NORTHCOM, has the capacity to fill these voids in knowledge prior to the next national catastrophe. NORTHCOM must be an active participant and should work with local, state, interdepartmental, and interagency partners in learning their languages, revising existing plans, ensuring a functional operational structure - including within regions - and establishing a clear, accountable process for all national preparedness efforts. Geographic combatant commanders abroad make the forging of relationships with countries within their area of responsibility one of their highest priorities. They recognize that building partnerships in peace facilitates smoother communications and operations when conflict arises. If these commanders stationed overseas make partnerships a priority in the spirit of American interests, it is not an illogical expectation for NORTHCOM to actively forge domestic relationships here in the United States in the name of American lives.

Improving the processes that govern the quality of a federal search and rescue response, while simultaneously forging and sustaining healthy interagency, interdepartmental, and inter-level partnerships is a monumental task – even for U.S. Northern Command. It is not a part time job. Unlike military units whose readiness is governed by deployment cycles, participants of the National Response Plan must be ready all the time. If DOD chooses to deploy to the next disaster under the auspices of its current paradigm, while one standing joint task force is educating the ad hoc joint task force, active duty search and rescue commands will be again left without the guidance and direction to most efficiently do their job. Only a truly dedicated SJTF can fully immerse the DOD into the dynamic complexities of a combined, interdepartmental, and interagency effort and enable a swift and fully effective search and rescue capability for the United States.

Closing Remarks

“The night Katrina struck, Coast Guard helicopter crews from Mobile conducted search and rescue operations on the Coast. These fearless young men, who hung from helicopters on ropes, dangling through the air in the dark that first night, pulled people off of roofs and out of trees.”⁵²

-Mississippi Governor Haley Barbour – Fall 2005

Although a fragmented deployment system and lack of an integrated and responsive command structure exacerbated coordination issues during the initial search and rescue efforts, the Defense Department did demonstrate the capability to play a critical role in the Nation’s response to catastrophic events. Katrina showed that when “local first responders are overwhelmed or incapacitated, the job of filling that gap falls to the military.”⁵³ With a dedicated command organization that vigilantly prepares itself and other participants and refines the national plans that govern the speed and efficiency of the response, future active duty SAR missions will be “as immediate and heroic”⁵⁴ as the Coast Guard’s response to Katrina.

⁵² Frances F Townsend, *The Federal Response to Hurricane Katrina – Lessons Learned*, 38

⁵³ Sappenfield, Mark, “Battle Brews Over a Bigger Military Role,” *Christian Science Monitor*, 13 December 2005, 3.

⁵⁴ Larry M. Thompson and Randy Wietman. “Hurricane Katrina.” 11.

Selected Bibliography

- Allen, Admiral Thad, Commandant, U.S. Coast Guard. "Hurricane Katrina Relief Operations." Lecture. Naval War College, NS Newport, RI, 02 April 2007.
- Associated Press. "Military to Bush: U.S. Needs Search-Rescue Plan." *MSNBC*, 28 September 2005. <http://www.msnbc.msn.com/id/9477781> (accessed 14 April 2007).
- Cooper, Christopher and Robert Block. *Disaster: Hurricane Katrina and the Failure of Homeland Security*. New York, NY: Times Books, 2006.
- Department of Homeland Security. *National Response Plan*. Washington D.C.: Department of Homeland Security, December 2004.
- Department Of Homeland Security and Federal Emergency Management Agency. *Hurricane Katrina Situation Brief*, September 6, 2006.
- Dolan, Colonel William, U.S. Army. "Vice Admiral Hull's Inbrief." Powerpoint. 05 September 2005.
- Glasser, Susan and Michael Grunwald. "The Steady Buildup to a City's Chaos." *Washington Post*, 11 September 2005.
- Luke, Ivan T. *Homeland Security – Civil Support: How DOD plugs into the Interagency C2 Structure*. NWC 3065A. Newport, RI: Naval War College Press, 2005.
- Maze, Richard. "Katrina Could Prompt Major Military Revisions," <http://www.navytimes.com/story.php?f=1-292925-1100656.php> (accessed September 14, 2005).
- Miles, Donna. "Core Elements Improve Crisis Response, Combat Ops." <http://www.jfcom.mil/newslink/storyarchive/2006/no032306.htm>, (accessed April 20, 2007).
- Opatz, David, CDR, USN. "VAW-77 Lessons Learned from Hurricane Katrina Rescue and Relief Operations." Lessons learned, NAS Atlanta, GA: VAW-77 Operations Department, 2005.
- Sappenfield, Mark. "Battle Brews Over a Bigger Military Role," *Christian Science Monitor*, 13 December 2005.

Select Bipartisan Committee to Investigate the Preparation for and the Response to Hurricane Katrina. *Congressional Report 109-377: A Failure of Initiative*. Washington DC, U.S. Government Printing Office, 2006.

Thompson, Larry M. and Randy Wietman. "Hurricane Katrina." Case Study, Newport, RI: U.S. Naval War College, National Security Decision Making Department, 2006.

Townsend, Frances F. *The Federal Response to Hurricane Katrina – Lessons Learned*. Washington DC: The Office Homeland Security and Counterterrorism, 2006.

United States Coast Guard. "National Search and Rescue Plan."
<http://www.uscg.mil/hq/g-o/g-opr/nsarc/nsp.htm>, (accessed 12 April 2007).

United States Government Accountability Office. *Hurricane Katrina: Better plans and Exercises Needed to Guide the Military's Response to Catastrophic Natural Disasters*. GAO-06-643. Washington DC: Government Accountability Office, May 2006.

United States Northern Command. "United States Northern Command Support to Hurricane Katrina Disaster Relief," Colorado Springs, CO: U.S. Northern Command Press Release, August 31, 2005.