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**A POST-HURRICANE ANDREW REVIEW OF TRENDS IN  
DEPARTMENT OF DEFENSE DISASTER RELIEF OPERATIONS**

BY

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A POST-HURRICANE ANDREW REVIEW OF TRENDS IN DEPARTMENT OF  
DEFENSE DISASTER RELIEF OPERATIONS

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## ABSTRACT

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In a three week period in the early Fall of 1992, three hurricanes hit three different parts of the United States causing devastating damage and incredible misery. These storms became a watershed event for federal disaster relief operations. After-action reviews and Congressional hearings spurred the Department of Defense to alter the doctrine, plans, and procedures it used to provide disaster assistance in the United States. With these changes in hand, DoD has since tested its improved concepts on over two dozen occasions. This paper will first analyze the post-disaster after-action reviews and examine the new doctrine. With this groundwork, it will then critique recent DoD responses to the Oklahoma City bombing incident and Hurricane Marilyn, examine their effectiveness, and make recommendations for improvements.

## INTRODUCTION

In a three week period in 1992, three different regions of the United States suffered from the ravages of three major hurricanes. Each storm caused catastrophic damage to the places they hit and brought incredible misery to the people they struck. Hurricane Andrew smashed into southern Florida on August 24th, causing over \$20 billion in damage. Typhoon Omar struck Guam on August 28th and nearly flattened the island. On September 11th, Hurricane Iniki ravaged the Hawaiian Island of Kauai. The Department of Defense (DoD), responding to requests by the Federal Emergency Management Agency (FEMA), deployed joint task forces to each location. In all, over 28,000 soldiers, sailors, marines, airmen, and DoD civilians provided disaster relief to the citizens of these areas.<sup>1</sup>

These storms became a watershed event. After-action reviews and Congressional hearings spurred the Department of Defense to alter the doctrine, plans, and procedures it used to provide disaster assistance in the United States. With these changes in hand, DoD has since tested its improved concepts on over two dozen occasions.<sup>2</sup> This paper will first analyze the post-disaster after-action reviews and examine the new doctrine. With this groundwork, it will then critique two recent DoD responses to the Oklahoma City bombing incident and Hurricane Marilyn, examine their effectiveness, and make recommendations for improvements.

## **BACKGROUND**

Under the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Public Law 100-707), FEMA leads the federal government's response to domestic disasters by providing support to state and local governments. DoD assists FEMA when requested. The Secretary of Defense has designated the Secretary of the Army as his Executive Agent for providing Department of Defense (DoD) resources to federal, state and local authorities.<sup>3</sup> In this general category of support, called Military Support to Civil Authorities (MSCA), domestic disaster relief is but one mission. Other missions include support to wildland fire suppression and civil defense.<sup>4</sup>

While DoD support to such events as Hurricanes Andrew and Iniki is well publicized, the civil response system and DoD's role are not. When a domestic disaster occurs, local civil authorities -- the police, fire department, and rescue organizations -- provide the first response. Depending on the severity of the disaster, county and then state organizations provide the next levels of assistance. Each state's emergency management organization can call upon all state-owned assets, including the National Guard in a State Active Duty status. Sometimes a disaster exceeds the state's capacity to respond. In these cases the governor may request assistance from the federal government through the President. At the direction of the President, FEMA then will make available all appropriate assets of the federal government, including DoD's, for disaster relief. FEMA orchestrates its response using its Federal Response Plan (FRP). The FRP divides disaster relief responsibilities into twelve emergency support functions. DoD has primary responsibility for the "Public Works and Engineering" function and supports other federal agencies for the other eleven functions.<sup>5</sup>

As the Secretary of Defense's Executive Agent, the Secretary of the Army has standing authority to exercise operational control over all DoD components, to include unified commands, all four services and Defense agencies (e.g. Defense Logistics Agency) in providing FEMA with the requested DoD support. The Secretary of the Army has also designated the Army Corps of Engineers' civil works structure as his lead for the FRP's Public Works and Engineering requirements.

The Director of Operations, Readiness, and Mobilization, Office of the Deputy Chief of Staff for Operations and Plans, Headquarters, Department of the Army, serves as the Director of Military Support (DOMS). The DOMS is the director of a multi-service staff that provides support to the Secretary of the Army in his Executive Agent role. Among their many duties, the DOMS' staff has the responsibility to plan, coordinate, and execute the full range of DoD support provided to FEMA in matters relating to domestic support.

The Secretary of the Army provides support through a designated Supported Unified Commander within his assigned area of responsibility. Commander-in-Chief U.S. Pacific Command is the Supported Commander-in-Chief (CINC) for Alaska, Hawaii, and the Pacific territories, including Guam and American Samoa. Commander-in-Chief U.S. Atlantic Command is the Supported CINC for Continental United States, Puerto Rico, and the U.S. Virgin Islands. He often designates the Commander, Forces Command (FORSCOM) as his lead for providing Military Support to Civil Authorities within his area.

Under the FRP, FEMA establishes a Disaster Field Office in a disaster area. The Supported CINC appoints a Defense Coordinating Officer (DCO) to work at the scene with FEMA and other federal agencies. The Defense Coordinating Officer and his staff, the

Defense Coordinating Element, coordinates the activities of all military services and DoD agencies and works with the U.S. Army Corps of Engineers Civil Works organization and the National Guard to provide efficient support for valid DoD requirements.

## **SUMMARY OF LESSONS LEARNED**

In the aftermath of the three catastrophic 1992 disasters, virtually every federal agency involved sought solutions to the problems which occurred. Congress, too, was deeply interested in corrections.

Drawing on input from DoD commands and agencies, the Director of Military Support prepared an after-action report for the Secretary of the Army. This report, the only Department of Defense-level report prepared, was accepted by the Secretary of the Army and forwarded to the Secretary of Defense who approved its recommendations in the Spring of 1993. This report made several recommendations. Most importantly, it suggested the need to review DoD's role in domestic disasters, to clarify the relationships between key players, and to educate military leaders in the federal disaster response system.<sup>6</sup> The report also noted:

- The vast majority of disasters are well within the capabilities of FEMA to respond and manage. However, certain major disasters completely overwhelm FEMA's and other federal agencies' ability to respond. In these cases, the report recommended that DoD immediately deploy an assessment team, and if need be, an initial response force with immediate life sustaining capabilities.<sup>7</sup>

- When Hurricane Andrew struck, DoD did not have any doctrine for the conduct of domestic disaster relief operations. The report recommended that DoD write doctrine to describe its role in the federal disaster system and delineate the relationships between key

DoD players, especially those on-scene in the disaster area: the Defense Coordinating Officer, the joint task force commander (now called the joint force commander), and the commander of Army Corps of Engineers Civil Works personnel. Synchronization of their activities during future operations will ensure efficient use of DoD resources and unity of effort.<sup>8</sup>

- Reserve volunteers played an important role in all three disaster locations. Because of the variety and types of skills they possess, reserve personnel can provide valuable contributions to disaster relief operations. The report recommended that DoD urge Congress to change Title 10 U.S. Code 673b (b), the provision that prohibits the involuntary call-up of reserves for disaster relief operations, to allow their use during times of catastrophic disasters.<sup>9</sup>

Congress was also deeply concerned about the ability of the federal government to respond to major disasters and ordered a series of General Accounting Office (GAO) investigations. Although most of their reports and testimony before Congress focused on improvements needed by FEMA, several GAO reports recognized the unique contributions of the Department of Defense. One GAO study specifically examined the role of DoD.<sup>10</sup> GAO lauded the efforts of DoD during federal disaster relief operations and, interestingly, made only minor recommendations for improvements. Like the DOMS report, the GAO urged Congress to give DOD authority to activate reserve units for disasters.<sup>11</sup> It also recommended that Congress amend the Stafford Act to allow DOD and other federal agencies to preposition assets in advance of a catastrophic disaster.<sup>12</sup>

GAO also observed that the military is highly effective in responding to the immediate needs of disaster victims.<sup>13</sup> DOD has the equipment, supplies, trained personnel, and leadership for mass care and other disaster relief requirements. To build another quick response capability in another federal organization would be redundant.<sup>14</sup>

As a result of these comments and lessons, DOMS immediately incorporated all applicable lessons learned into planning for future disasters. It included specific guidance on the relationships between the commander of disaster relief forces and Corps of Engineers in its execution of its FRP responsibilities. Making-up for a lack of a federal-level assessment capability, DOMS directed U.S. Pacific Command and U.S. Atlantic Command to be prepared to dispatch assessment teams and make plans to immediately deploy life sustaining assets.<sup>15</sup> Most significantly, DOMS published a manual for Defense Department organizations which describes the DoD system for supporting civil authorities.

## **DEVELOPMENTS IN DOCTRINE**

Immediately following the Fall of 1992 disaster relief efforts, General Sullivan, Army Chief of Staff, directed the Training and Doctrine Command to expedite the writing of sorely needed disaster relief doctrine. As a result, on 1 July 1993 Field Manual 100-19, Domestic Support Operations, became the first of several DoD doctrinal manuals to be published. Since this publication, FEMA has made changes to its response plan and the DOMS and the Joint Staff have also contributed to doctrine. This section will briefly review the pertinent new disaster relief doctrine.

## **Federal Response Plan Changes**

Two years after Hurricane Andrew, FEMA published its first of several changes to its Federal Response Plan.<sup>16</sup> Although the most of the pre-Andrew plan is still in effect, FEMA has instituted a number of improvements, spurred in part by the GAO audits previously discussed. The two most significant changes that affect DoD are summarized below.

First is a change in the primary federal agency responsible for the Urban Search and Rescue emergency support function. FEMA took the lead from DoD as the primary agency in February 1995.<sup>17</sup> This change makes good sense since FEMA controls the bulk of the urban search and rescue resources (the national affiliation of 26 teams) and has developed their employment doctrine. DoD will continue its traditional role of providing transportation and on-scene logistics.<sup>18</sup>

Second, FEMA added a section to its basic plan explaining the concept of employing DoD assets. This up-front notice that DoD will only provide support when other federal resources are not available helps allay any unrealistic expectations.<sup>19</sup> This section also explains how federal agencies may request DoD resources and articulates DCO-level tasking procedures. It also clarifies another point of confusion, that being the role of a joint task force in providing disaster relief and its relationship with the DCO.<sup>20</sup>

### **FM 100-19 Domestic Support Operations**

Field Manual 100-19, Domestic Support Operations, also adopted by the U.S. Marine Corps, fills a void for commanders and staffs at all levels of the military as to the policy, procedures and doctrine for disaster relief and other domestic support missions. This comprehensive document gives a good overview of the different types of domestic support

operations and how DoD should interface with other federal agencies. It also provides a good description of the legal authorities governing Army participation in domestic support operations which should help commanders understand the extent of their authority and prevent misapplication of DoD resources.<sup>21</sup>

Noting that most domestic support operations are logistical in nature, this field manual gives some fundamentals on planning disaster operations. Commanders must ensure that logistics command and control cells arrive early; that deploying units have both internal and external communication systems; and that support and supplies flow smoothly and continuously.<sup>22</sup>

In its chapter on disaster relief planning and execution, FM 100-19 accurately describes the DoD support structure and its operational organizations. Also, reflecting on the lessons learned from Hurricane Andrew, the manual devotes a significant portion on the importance of assessment and suggests some excellent points on which to focus assessment efforts.<sup>23</sup>

The most useful portion of the manual may well be its section on determining when to terminate support. "Disaster assistance operations require that end states or conditions be established to mark the completion of disaster assistance missions."<sup>24</sup> Termination standards should be clearly stated and well understood.

FM 100-19's Appendix A, which lists Disaster Area Essential Elements of Information, has already proven its worth. These elements are routinely reported by Military Affiliate Radio System (MARS) operators across the United States to DOMS and the CINCs, providing a valuable, near real-time source of critical disaster information.<sup>25</sup>

In sum, this document represents the first important step in correcting doctrinal deficiencies listed in after-action reviews. It provides a single source document for those involved in planning or executing domestic disaster relief operations.

**DoD 3025.1M Manual for Civil Emergencies**

The Director of Military Support published this primer on military support to civil authorities in June 1994. The manual establishes doctrine in a number of areas where none previously existed. It assigns responsibilities, prescribes procedures, and provides guidance on how DoD responds to any type of natural or man-made disaster or emergency anywhere within the United States or its possessions.<sup>26</sup>

For each type of disaster or emergency it articulates at length the various DoD plans and authorities to respond.<sup>27</sup> The manual clarifies and amplifies the role and responsibilities of the Defense Coordinating Officer. Implementing one of the after action review recommendations from the 1992 hurricanes, the manual states that the DCO should retain a separate and distinct staff from the joint task force, allowing the DCO to focus on task validation and staff actions at the Disaster Field Office, and leaving the joint force commander free to operate in the disaster area.<sup>28</sup>

An entire chapter is also devoted to the roles and responsibilities of the Emergency Preparedness Liaison Officers (EPLO). These are senior reserve officers who represent their service at FEMA national and regional headquarters, Pacific Command, Atlantic Command, Forces Command, the Continental Armies (CONUSA), and National Guard State Area Commands. Previously restricted to serving only in times of war, they may now volunteer to be a part of the DCO's staff during times of disaster. The full integration of the EPLO into

the military response allows the DCO to maximize his use of DoD resources and take advantage of the EPLO's in-depth knowledge of regional planning.<sup>29</sup>

Overall, DoD Manual 3025.1 is an excellent single source that ties together the multitude of legal authorities, directives and plans that comprise DoD's system of support to civil authorities.

### **Joint Pub 3.07 Military Operations Other Than War (MOOTW)**

This manual is the first Joint publication possessing techniques and procedures related to domestic disaster relief. It contains some unique disaster relief concepts and doctrine and, as such, is not just a clone of some service doctrine. Like the other documents produced after the Fall 1992 hurricanes, this document helps educate members of DoD on support to civil authorities by correctly describing the authorities and execution systems within DoD and the federal government. It points out that all military operations are driven by political considerations. Political objectives greatly influence military operations other than war from the strategic to the tactical levels, often overriding all other considerations.<sup>30</sup>

Chapter IV is the most useful. It describes detailed planning considerations, most of which are directly applicable to disaster relief operations. Mission analysis and the command estimate are as important in planning MOOTW as they are in war. Unit integrity and the right mix of forces is the best way to accomplish the mission.<sup>31</sup> Given the uniqueness of the MOOTW environment, the joint force commander and subordinates should be flexible in modifying standard command and control arrangements.<sup>32</sup> Interoperability of communication systems is critical and the joint force commander should be prepared to provide

communication links to appropriate federal agencies. Similar to FM 100-19, Joint Pub 3.07 includes a discussion of MOOTW termination criteria.

**Joint Pub 3.07.7 (Draft) Domestic Support Operations**

This draft joint publication on Domestic Support Operations follows FM 100-19 in many respects. As such, it contains limited original doctrine. Like its Army counterpart, it provides a primer on DoD support to federal agencies, with emphasis on military support to civil authorities and civilian law enforcement agencies. The manual integrates planning and employment considerations throughout the publication.

It also gives guidance on command and control. "The Supported CINC may deploy a task force or a JTF (Joint Task Force). [He] may establish a JTF using an existing command headquarters such as an Army corps, a Navy fleet, a Numbered Air Force, or a Marine Expeditionary Force. Due to the short notice associated with a disaster, a ready-made robust headquarters is preferred for the basis of the JTF. CONUSAs are not normally a sufficiently robust command and control headquarters to be a JTF."<sup>33</sup> The manual also includes interesting guidance on rules of engagement<sup>34</sup> and the use of intelligence assets including those found in the Defense Intelligence Agency.<sup>35</sup>

## **REVIEW OF TWO RECENT DISASTERS**

Since the hurricanes of 1992 the U.S. has suffered a number of disasters and DoD has responded to 18 of them.<sup>36</sup> This section will review two of the most significant of these, applying the previously discussed lessons learned and doctrine, and suggest improvements. Although not on the same scale as the 1992 response, both are excellent examples. The first case study is the bombing of the federal building in Oklahoma City in April 1995. Disaster relief operations in the Virgin Islands in the wake of Hurricane Marilyn in September 1995 is the second.

### **Oklahoma City Bombing**

A truck filled with explosives exploded shortly after 9 a.m. on April 19, 1995, at the federal building in Oklahoma City, collapsing the structure's northern face and damaging about 75 other buildings in the vicinity. The blast left over 500 injured and 168 dead including 20 DoD personnel or their family members.<sup>37</sup> President Clinton quickly declared a State of Emergency and FEMA activated seven of its twelve Federal Response Plan emergency support functions including the Corps of Engineers' Public Works and Engineering function.<sup>38</sup>

This disaster had several unique aspects. First, it was a crime scene in which the Department of Justice had the lead. FEMA handled the consequences of the crime and had the lead in disaster relief. Second, because of the preeminent responsibility for federal property, the federal government became immediately involved without the state first requesting aid.<sup>39</sup> As a result, the federal government initiated much of the disaster relief actions and worked very closely with the local and state authorities after the fact.

DoD became involved from the start. Under DoD Directive 3025.1, which authorizes the immediate response to an emergency, the commander of nearby Tinker Air Force Base provided fire fighting assets, medical support and bomb detection teams soon after the blast.<sup>40</sup> The Defense Coordinating Officer arrived at the scene in the late afternoon on the 19th, bringing with him the ability to tap assistance from the entire DoD system. The DCO advised both of the FBI and FEMA on-scene coordinators of DoD capabilities and provided all requested resources. In all, 465 national guardsman and 793 active duty personnel and reserve volunteers provided support. All on-the-ground DoD assets were under the operational control of the DCO with the exception, of course, of the National Guard who, on state active duty, operated under state control. The majority of the participating active duty personnel were from Tinker Air Force Base, the staging area for arriving DoD resources.<sup>41</sup>

Missions fell into three general categories. First was support to the crime scene. Here, DoD provided bomb dogs, an explosive ordnance detection detachment, and Army Criminal Investigation Command assets. The national guard provided site security.

Second, DoD supported rescue efforts. Medevac helicopters and military ground ambulances supplemented civilian medical teams. A casualty assistance team from Fort Sill provided support and members of the Army's only active mortuary affairs unit also deployed to support FEMA's efforts.<sup>42</sup> Most importantly, Tinker AFB provided vital logistics and transportation services to eleven federal urban search and rescue task forces, deployed by Air Force aircraft.<sup>43</sup> The Corps of Engineers provided structural engineers and detection equipment to support the search efforts.

A third mission was material support. DoD provided a wide variety of items to civilian rescue workers and criminal investigators. These items included over 4,000 sets of battle dress uniforms, steeled-toed boots, rain suits, and body bags. The Defense Logistics Agency's representative on the DCO's staff proved invaluable in coordinating these requests.<sup>44</sup>

DoD support to the Oklahoma City bombing validates lessons learned from the 1992 hurricane season. First, DoD employed extensive liaisons which facilitated responsive DoD support. Second, DoD providers understood the newly published doctrine which enabled DoD to provide unhampered, effective assistance. And third, command and control worked well as the DCO, the commander of Tinker Air Force Base (DoD's staging area), and military unit commanders all understood their roles and worked with a common purpose.

The DCO made impressive use of liaisons. The DCO spent most of his time coordinating with FEMA and the FBI to ensure that DoD responded to their needs.<sup>45</sup> Liaisons interfaced in other important areas. A subject matter expert from 5th Army Headquarters provided invaluable advice and liaison with other federal agencies. Other liaisons with the FBI and the state national guard worked support issues. DCO contacts at Tinker AFB linked into U.S. Transportation Command (TRANSCOM). Emergency Planning Liaison Officer reservists filled many of these liaison positions.<sup>46</sup> The use of these emergency planners in their new role as now outlined in doctrine was highly successful.

Overall, DoD responders correctly applied the doctrine and lessons learned from previous disasters. One lesson relearned was that the DCO should have on his staff a legal advisor familiar with DoD system of providing support to civil authorities.<sup>47</sup> Because of the

multitude of requests for DoD resources, spanning both support of a criminal operation as well as a disaster, a legal expert on the scene in support of the DCO would have been very helpful. A public affairs officer would have been helpful as well to help handle public relations issues.<sup>48</sup>

### **Hurricane Marilyn**

Tropical Storm Marilyn formed over the Atlantic Ocean on September 13, 1995 reaching hurricane strength the next day. Just before midnight on September 15th it struck the Virgin Islands of St. Croix and St. Thomas with sustained winds of 100 mph and gusts up to 127 mph. St. Thomas was the hardest hit with nearly 80% of its homes damaged or destroyed, forcing thousands to emergency shelters. Its only hospital and a number of other public buildings were also damaged. With hundreds of power poles down, electrical and telephone services were out. As in Hurricane Andrew, the local and territorial emergency management structures were themselves victims, unable to either fully assess the situation or to respond to it.

The federal response began early. By the time the storm struck on the 15th, the Defense Coordinating Element advanced team, Corps of Engineers assessment teams and FEMA's advanced elements were poised in Puerto Rico to deploy to the island after the storm passed. On the 16th, soon after the storm's passage, the Defense Coordinating Officer arrived on St. Thomas.

FEMA ordered the immediate influx of relief supplies and personnel, and the DoD airlift began even before the storm fully cleared the islands. Flights soon arrived virtually

non-stop into hard-hit St. Thomas. By the time DoD closed out operations on October 16th, it had flown 1,043 sorties carrying over 7,000 passengers and 7,000 tons of cargo.<sup>49</sup>

The Defense Coordinating Officer, with operational control of all ground DoD assets, responded to nearly eighty taskings for assistance from FEMA and other federal agencies. At the peak, over 700 active personnel and reserves volunteers from all three services provided a variety of assistance.<sup>50</sup>

The Army played a large role in providing mass care. It provided food, equipment, and ground transportation and assisted at Red Cross shelters. It also deployed an 80-plus bed combat support hospital to St. Thomas to replace its damaged facility while repairs were made.<sup>51</sup>

The Corps of Engineers provided excellent management in the area of Public Works and Engineering. Its contractors and supporting Army reserves engineers and Navy Seabees removed huge amounts of debris. The Corps assessed electrical system damage and provided large power generators for emergency power. It provided over 1.5 million gallons of bottled water and ice<sup>52</sup> and oversaw the repair of 14 public buildings, including schools and the hospital on St. Thomas.<sup>53</sup>

Reviewing this operation in terms of the newly published doctrine and lessons learned from the hurricanes of 1992, DoD demonstrated that it had made excellent progress since the disasters of that year. Some areas still need work. The remainder of this section reviews the operation for these lessons.

First, DoD and FEMA did excellent pre-disaster planning and positioning. DoD operation centers were staffed and running prior to hurricane landfall with warning orders

released. Assessment teams and command and control elements were on or near the Virgin Islands, ready to operate after the storm's passage. The Army provided a low-level reconnaissance aircraft that provided near-real-time damage assessment to FEMA.<sup>54</sup>

Second, this proactive approach had both positive and detrimental consequences. Relief supplies, shipped by air from federal and private organizations, poured into the island within hours of the hurricane's passage. These flights quickly saturated the air facilities on St. Thomas and relief supplies overwhelmed the remaining operational storage and distribution capabilities. Although not the primary responsibility of DoD, it stepped forward to solve the problem. TRANSCOM placed a command and control node at Naval Air Station Roosevelt Roads, the designated DoD staging area, to control all airlift taskings. TRANSCOM then did an excellent job regulating both strategic (into disaster area) and tactical (inter-island) air.<sup>55</sup> At St. Thomas airport, Air Force personnel provided critical airfield management and operational support. They cleared the runway, assisted in air traffic control and unloaded aircraft. DoD deployed the 46th Corps Support Group along with a Defense Logistics Agency team to manage the logistics operations.<sup>56</sup>

Third, disaster relief is, in large part, a logistics exercise, and its management is always a critical function.<sup>57</sup> Although the lead belongs to other federal agencies,<sup>58</sup> DoD, in executing its portion of the relief mission, has a vested interest in the success of logistics movement and management. Future DoD operations can improve in several ways. First, as recommended by the DOMS After Action Review, federal agencies should enter all transportation requirements into the Joint Operation Planning and Execution System (JOPES). Second, the Federal Aviation Administration should implement its 1992 Memorandum of

Agreement with DoD and form a joint Air Traffic Services Cell to control aircraft flow and airfield operations.<sup>59</sup> This existing arrangement will regulate air movement and ensure efficient operations. Lastly, just as DoD pre-positioned command and control structure and assessment teams, DoD should consider early deployment of a logistics command and control element into major disaster areas. This structure would transition to a General Services Administration organization during the latter part of the response operations.

Fourth, DoD command and control continues to be a strength. Recalling the lessons of the 1992 hurricanes, the DCO and other DoD elements deployed with robust communication packages geared for internal and external communication. In the initial stages of relief, the Defense Coordinating Element was basically the only source of information from the island.<sup>60</sup> Controlling air operations from Roosevelt Roads and having the DCO control of on-scene DoD elements streamlined operations. Military engineer units worked directly for the Corps of Engineers, ensuring unity of effort.<sup>61</sup> However, the information management aspect of command and control needed improvement during the early stages of Hurricane Marilyn relief. The DCO is required to have the status of both on-scene and incoming DoD support to federal and state relief agencies. Having visibility of this information was especially critical in the first stages of relief. The status of airlift and logistics is especially crucial. The early arrival of an airlift control node and a logistics management cell would have provided a better picture of relief operations and led to more effective disaster management.

Lastly, priority changes made by federal decision makers at different locations sent ripples throughout the DoD system. As in the past DoD played a major part role, not in

making major decisions, but in implementing them. For the first 24-48 hours after the storm, decisions about disaster aid were made from locations other than the disaster scene. Although the DCO arrived within hours after the hurricane passed St Thomas, key FEMA officials didn't start arriving for another one or two days.<sup>62</sup> As a result, federal officials, relying on second and third-hand information, had different ideas about disaster requirements. The effect was a constant shift in priorities, changing up to five times within a 24 hour period.<sup>63</sup> Consequently, DoD was in a reactive mode. To improve future performance federal decision makers must get on the ground early. Another recommendation is to learn from the past and tailor the package of initial FEMA relief resources accordingly. This package needs to be loaded in JOPES for quick execution.<sup>64</sup>

## **CONCLUSION AND RECOMMENDATIONS**

DoD has made significant improvements since the fall of 1992. Most of these improvements were spurred by needs identified after the devastating hurricanes of that year. Overall, DoD now has a sound and effective system that has increased the effectiveness of federal interagency disaster relief operations. The Director of Military Support and his staff have a well established and well practiced process for responding to domestic support issues and no change is necessary in the location of this function within DoD.

Organized in four parts, this section makes some conclusions and recommendations for improving the DoD system of providing military support to domestic civil authorities. The first part summarizes post-Hurricane Andrew improvements, and the second identifies the setting or conditions that would prompt massive DoD involvement in federal disaster relief. The third and fourth parts make recommendations on improving the DoD response system.

### **Summary of Improvements**

Below is a short summary of improvements in the DoD system made since 1992:

- Shifted the responsibility for the FRP's Urban Search and Rescue Emergency Support Function to FEMA, the agency with the resources to respond in this area.

- Defined the role of the Emergency Planning Liaison Officers for military operations other than war.

- Further refined the role and procedures of the Defense Coordinating Officer. Documented in doctrine his relationship with a joint force commander and civil authorities.

- Improved the responsiveness of disaster assessments. DoD now participates in support of FEMA in one national level and three regional level assessment teams that deploy in anticipation of, or soon after, a major disaster.

- Clarified the use of the Defense Emergency Response Fund for domestic emergencies.<sup>65</sup>

- Significantly improved communications by leveraging information technologies.

Examples include the widespread use by DoD and federal responders of:

-- Geographic information systems which contain geological and infrastructure information

-- Internet web sites to post status reports and information

-- Standardized emergency management systems

-- The use by DoD of the Military Affiliate Radio System to pass disaster spot reports.

- Greatly improved the availability of doctrine in area of domestic disaster relief.

### **Conditions that Prompt Massive DoD Involvement in Disaster Relief**

Analyzing DoD involvement in disasters in the 1990's reveals conclusions about the types and magnitudes of disasters that will likely invoke a significant DoD response.<sup>66</sup>

Articulation of these conditions may help planners and decision makers anticipate when FEMA will call for massive DoD support.

DoD will become highly involved if:

1. The disaster is catastrophic. A catastrophic disaster is one that overwhelms the ability of state, local, and volunteer agencies to adequately provide victims with such life-sustaining mass care services as food, shelter, and medical assistance within the first 12-24 hours after it strikes.<sup>67</sup>

2. The response to the disaster requires the rapid air transportation of relief resources. Rapid air transportation is needed when the disaster occurs in a remote area or in a resource-intensive life-saving effort.

*First Case: Catastrophic Disasters*

The key determining factor is when the local and state emergency management structures are themselves victims and unable to assess the situation and adequately respond. The implication is that this would happen when a catastrophic disaster takes place in densely populated areas. The most likely situation is a hurricane of sustained winds over 131 mph or an earthquake of intensity 7.0 or above that strikes a major urban area. These would be catastrophic in nature in this environment and require a massive DoD response.<sup>68</sup>

In catastrophic disasters, DoD will likely provide Hurricane Andrew-levels of support and predominately operate in urban or suburban terrain. This should be incorporated into planning assumptions. A critical consequence of a catastrophic disaster is that the information transmission system (telephone, radio, television, electrical power grid) is severely damaged. As a result, damage assessment is severely hampered which affects the

orchestration of follow-on relief. Quick establishment of an information transmission system will facilitate all other aspects of disaster relief. An ideal solution would be for assessment teams and disaster responders to deploy with global cellular telephones.

*Second Case: Requirements for Rapid Air Transport*

A disaster does not have to be catastrophic to spur the requirement for DoD resources. Both the Oklahoma City bombing and Hurricane Marilyn are recent examples that required the use of massive DoD airlift.

Remote major disasters, particularly on U.S. island possessions, can't take advantage of mutual aid agreements<sup>69</sup> and must therefore rely almost exclusively on air transport for the initial disaster response. Besides the Virgin Islands, DoD experienced this in the aftermath of hurricanes on American Samoa (1991), Guam (1991 and 1992), the Marshall Islands (1991), and Hawaii (1992). DoD with its strategic air assets moved both DoD and federal resources to these locations. The bottom line, if a major disaster strikes an U.S. island possession, DoD will have a major role in disaster relief.

The second situation is when the federal government is involved in an intense life-saving effort. This phenomena could be after a terrorist incident like Oklahoma City, or a severe earthquake that strikes a small city or town, collapsing a number of buildings and leaving people trapped and injured. DoD will become involved because it has agreed to transport civilian federal emergency response teams and other resources. Specifically, DoD transports Disaster Medical Assistance Teams and Urban Search and Rescue task forces to disaster areas and supports them logistically at the scene.

## **Recommendations to Improve the DoD Response System**

DoD's response to 18 disasters since the hurricanes of 1992 unequivocally demonstrates the excellence of the DoD system. However, work remains in this important area. Below are several recommendations for improvement:

- Urge improvement of the federal disaster relief exercise plan through training exercises. This area is the primary responsibility of FEMA. All components of DoD are aware of the benefits of training and exercising prior to actual mission execution. DoD and federal responders in Oklahoma City benefited greatly from an exercise held the previous year.<sup>70</sup> The federal government must develop a five-year exercise plan, resource it, and conduct exercises.

- Hurricane Marilyn reemphasized the need for DoD to work with other federal agencies to improve air traffic flow and control into disaster areas. Also, DoD must be prepared to deploy early on a logistics command and control structure into major disasters to manage the massive influx of relief supplies.

- Continue to seek Congressional authorization to allow the use of military reserve forces for disaster relief.

- Continue development of doctrine, tactics, techniques, and procedures.

This last area is especially noteworthy. Since 1992, DoD has developed or is developing no less than five manuals (three are joint publications) relating directly or indirectly to domestic military support.<sup>71</sup> These publications have greatly aided the education of military and federal leaders on DoD's roles in domestic support operations.

## **Recommendations for Improving Joint Publication 3-07.7 Domestic Support Operations**

Possibly the most significant of the publications will be Joint Publication 3-07.7, Domestic Support Operations, now under development. Because the nature of domestic support operations will now always be joint, DoD responders will likely turn to this publication for doctrine and other guidance. However, the following are suggestions to make this publication even more comprehensive:<sup>72</sup>

- Incorporate the principles of interagency operations as outlined in Joint Publication 3-08.<sup>73</sup> It outlines excellent steps for effective operations at the operational and joint task force levels. Since all domestic support operations will also be interagency operations, its inclusion would be appropriate and beneficial to the user.

- Include campaign planning fundamentals as they apply to operations other than war. Pub 3-07.7 contains some excellent doctrine on termination and turn-over of operations to civilian authorities. However, inclusion of other principles of campaign planning (center of gravity, decisive points, culmination, lines of operations, etc.) would improve this manual.

- Provide a comprehensive discussion of DoD's role in the provision of mass care, one of DoD's most likely on-the-ground roles during a catastrophic disaster.

- Amplify the role of the U.S. Army Corps of Engineers, as DoD's lead for the Federal Response Plan's "Public Works and Engineering" emergency support function. Specifically, write into doctrine what is already articulated in DOMS-issued planning orders: The U.S. Army Corps of Engineers will exercise operational control of DoD assets that directly perform public works and engineering.

- Include a description of the Incident Command System, which FEMA and many local and State response organizations use for emergency management.

- Change the three phases or stages of operations (response, recovery, and restoration) to be consistent with the Federal Response Plan.

## *ENDNOTES*

1. Director of Military Support, Hurricane Andrew, Typhoon Omar, Hurricane Iniki After-Action Report, Report to the Secretary of the Army, The Department of Defense Executive Agent (Washington, D.C.: February 1993), p. 4.
2. Corey Gruber, Lieutenant Colonel, U.S. Army, "Summary of DoD Military Support to Civil Authorities/Military Support to Civil Disturbances, 1992-1995," Information Paper for the Director of Military Support (November 8, 1995), 1-3.
3. U.S. Department of Defense, Department of Defense Directive 3025.1 Military Support to Civil Authorities (MSCA), (Washington, D.C.: January 15, 1993), p. 1.
4. The Secretary of the Army is also the DoD Executive Agent for supporting other federal agencies to assist in law enforcement, quelling civil disturbances, and responding to immigration emergencies and postal strikes. Principal Deputy Under Secretary of Defense, DoD 3025.1-M: Manual for Civil Emergencies, (Washington, D.C.: June 2, 1994), pp. iii-iv.
5. U.S. Federal Emergency Management Agency, Federal Response Plan, with Changes 1-9 (Washington, D.C.: April 1992), 3.
6. Hurricane Andrew, Typhoon Omar, Hurricane Iniki After-Action Report, pp. i-ii.
7. Hurricane Andrew, Typhoon Omar, Hurricane Iniki After-Action Report, p. 9.
8. Hurricane Andrew, Typhoon Omar, Hurricane Iniki After-Action Report, p. 8.
9. Hurricane Andrew, Typhoon Omar, Hurricane Iniki After-Action Report, p. 11.
10. U.S. General Accounting Office, DISASTER ASSISTANCE: DOD's Support for Hurricanes Andrew and Iniki and Typhoon Omar, GAO/NSID-93-180, (Washington, D.C.: June 18, 1993).
11. DISASTER ASSISTANCE: DOD's Support for Hurricanes Andrew and Iniki and Typhoon Omar, p. 6.
12. DISASTER ASSISTANCE: DOD's Support for Hurricanes Andrew and Iniki and Typhoon Omar, p. 9.
13. DISASTER ASSISTANCE: DOD's Support for Hurricanes Andrew and Iniki and Typhoon Omar, p. 2.
14. U.S. General Accounting Office, DISASTER MANAGEMENT: Improving the Nation's Response to Catastrophic Disasters, GAO/RCED-93-186 (Washington, D.C.: July 23, 1993), pp. 7-8.

15. Because improvements made by FEMA and other federal agencies, DOMS discontinued the need for an independent DoD assessment team in 1995. Instead, DoD will augment FEMA teams as needed. From Director of Military Support message, "SEVERE WEATHER PLANNING ORDER," (Washington, D.C.: 051118Z JUN 95), p. 4.
16. Notice of Change, Change 1, to U.S. Federal Emergency Management Agency, Federal Response Plan (Washington, D.C.: August 30, 1994) p.1.
17. Notice of Change, Change 2, to U.S. Federal Emergency Management Agency, Federal Response Plan (Washington, D.C.: February 3, 1995) p.1.
18. "SEVERE WEATHER PLANNING ORDER," p. 6.
19. Notice of Change, Change 9, to U.S. Federal Emergency Management Agency, Federal Response Plan (Washington, D.C.: November 10, 1995) p.11.
20. Notice of Change, Change 9, p.12.
21. For example, during Hurricane Hugo relief in September 1989, Marines from Camp LeJeune deployed to South Carolina and operated without approval of the Secretary of Defense or his Executive Agent. Interview with Dutch Thomas, Lieutenant Colonel, U.S. Army, Operations Officer for the Director of Military Support, held at the Army Operations Center, the Pentagon, Washington, D.C. December 16, 1995.
22. U.S. Department of the Army, Field Manual 100-19, Fleet Marine Force Manual 7-10: Domestic Support Operations, (Washington, D.C.: July 1, 1993) pp. 4-1,2.
23. FM 100-19, P. 5-4.
24. FM 100-19, P. 5-6.
25. Thomas interview.
26. DoD 3025.1-M, p. 1-1.
27. DoD 3025.1-M, p. 3-1.
28. DoD 3025.1-M, p. 4-4.
29. DoD 3025.1-M, p. 1-10.
30. U.S. Joint Chiefs of Staff, Joint Publication 3-07: Joint Doctrine for Military Operations Other Than War (Washington, D.C.: June 16, 1995), pp. I-1,2.
31. Joint Publication 3-07, p. IV-1.
32. Joint Publication 3-07, p. IV-4.

33. U.S. Joint Chiefs of Staff, Joint Publication 3-07.7: Joint Tactics, Techniques, and Procedures for Domestic Support Operations (Draft) (Washington, D.C.: 15 August 1995), p. II-13.
34. Joint Publication 3-07.7, p. II-16.
35. Joint Publication 3-07.7, p. II-36.
36. Corey Gruber, 2,3.
37. Memorandum to Commander, Forces Command from Commander, Fifth United States Army, Subject: "After Action Report, Oklahoma Bombing Incident of 19 April 1995," (Fort Sam Houston, Texas: August 17, 1995) Enclosure 2 to Enclosure 1, p. 1.
38. U.S. Federal Emergency Management Agency, Oklahoma City Bombing Briefing Book (Oklahoma City, Oklahoma: 23 April 1995) p.1.
39. "After Action Report, Oklahoma Bombing Incident of 19 April 1995," Enclosure 1, p. 2.
40. Stewart H. Bornhoft, Colonel, U.S. Army, "DPW Leads Response to Bombing," The Army Engineer Magazine, August-September, 1995, p. 12.
41. "After Action Report, Oklahoma Bombing Incident of 19 April 1995," Enclosure 2 to Enclosure 1, p. 1.
42. Specialist Tonya Riley-Rodriguez, CPT Gena Ellis and MAJ Ron Wilkerson, U.S. Army, "Easing a City's Pain," Soldiers, June 1995, p. 7.
43. Federal Response Plan, p. 9-4. With its unique air deployment capabilities, DoD has agreed to expeditiously transport federal Urban Search and Rescue Teams to the scene of a disaster.
44. "After Action Report, Oklahoma Bombing Incident of 19 April 1995," Enclosure 2 to Enclosure 1, p. 1.
45. Bornhoft, p. 14.
46. "After Action Report, Oklahoma Bombing Incident of 19 April 1995," p. 4.
47. Hurricane Andrew, Typhoon Omar, Hurricane Iniki After-Action Report, p. 12.
48. "After Action Report, Oklahoma Bombing Incident of 19 April 1995," p. 4.
49. U.S. Department of Defense, Disaster Response Assessment: A Report to the Secretary of the Army (Washington, D.C.: November 17, 1995), p. 18.

50. In addition to active duty personnel and reserve volunteers, almost 600 national guardsmen on state active duty provided disaster relief. From the U.S. Federal Emergency Management Agency "Headquarters Emergency Support Team (EST) [Hurricane Marilyn] Situation Report," Number 14P (Washington, D.C.: 6:00 a.m. EDT, September 23, 1995) p. 6.
51. U.S. Federal Emergency Management Agency, "Headquarters Emergency Support Team (EST) [Hurricane Marilyn] Situation Report," Number 18P (Washington, D.C.: 6:00 p.m. EDT, September 26, 1995) p. 1.
52. U.S. Federal Emergency Management Agency, "Headquarters Emergency Support Team (EST) [Hurricane Marilyn] Situation Report," Number 19P (Washington, D.C.: 6:00 p.m. EDT, September 27, 1995), p. 3.
53. Disaster Response Assessment: A Report to the Secretary of the Army, pp. 17-19.
54. Disaster Response Assessment: A Report to the Secretary of the Army, p. 20.
55. Disaster Response Assessment: A Report to the Secretary of the Army, p. 64.
56. This lesson is well documented. During Hurricane Hugo relief in September 1989, an infantry battalion from Fort Stewart provided command and control. During Hurricane Andrew, the Army Material Command performed this function. Disaster Response Assessment: A Report to the Secretary of the Army, pp. 37-39.
57. FM 100-19, P. 4-1.
58. Federal Response Plan, p. 7-9.
59. During Hurricane Andrew relief, the U.S. Army Transportation Center at Fort Eustis deployed a Joint Movement Control Center. This model would do well when ground and sea-borne, in addition to air transportation assets, are deployed. Disaster Response Assessment: A Report to the Secretary of the Army, p. 41.
60. Interview with Corey Gruber, Lieutenant Colonel, U.S. Army, Plans Officer for the Director of Military Support, held at the Army Operations Center, the Pentagon, Washington, D.C. January 22, 1996.
61. "Headquarters Emergency Support Team (EST) [Hurricane Marilyn] Situation Report," Number 14P, p. 4.
62. The DCO arrived at 0911 hours on September 16th, the FEMA Director arrived on or before 1110 hours on the 17th, and the Federal Coordinating Officer arrived between 0600 and 1000 hours on the 18th. From Disaster Response Assessment: A Report to the Secretary of the Army, pp. 61, 66, and 69.

63. Disaster Response Assessment: A Report to the Secretary of the Army, p. 33.
64. Disaster Response Assessment: A Report to the Secretary of the Army, p. 33.
65. DoD 3025.1-M, p. 9-1.
66. The basis for conclusions in this section stem, in part, from my experience at DOMS. During this period of July 1991 to June 1993 I was one of the five member staff of the Director of Military Support. In December 1991 typhoons and cyclones devastated U.S. possessions in the Pacific. Riots struck Los Angeles in late April 1992. And just prior to the three hurricanes of the fall of 1992, DoD was poised to deploy military personnel to fires raging in the Western U.S. Since June 1993, DoD has been involved in the response to 18 additional disasters.
67. Judy A. England-Joseph, "DISASTER MANAGEMENT: Recent Disasters Demonstrate the Need to Improve the Nation's Response Strategy," U.S. General Accounting Office. Testimony before the Subcommittee on Investigations and Oversight, Committee on Public Works and Transportation, U.S. House of Representatives, March 2, 1993, p. 3.
68. On the other hand, note that the multi-billion dollar 1993 Mid-West flood that spread the disaster over a largely rural multi-state area resulted in a very modest commitment of DoD resources. From the U.S. Army Corps of Engineers, Headquarters USACE After Action Report for Midwest Flood of 1993 (Washington, D.C.: November 1994) pp. 1-9.
69. Mutual Aid agreements are commitments between local communities to share emergency response resources when the affected community's assets are overwhelmed.
70. "After Action Report, Oklahoma Bombing Incident of 19 April 1995," p. 5.
71. In addition to FM 100-19, DoD 3025.1-M, Joint Pub 3-07, and Joint Pub 3-07.7 (Draft), Joint Pub 3-08, Interagency Coordination During Joint Operations, is under development.
72. These suggestions were electronically mailed (EMAIled) to LTC Corey Gruber of DOMS on February 21, 1996.
73. Based on a review found in U.S. Joint Chiefs of Staff, Joint Publication: Joint Doctrine Capstone and Keystone Primer (Washington, D.C.: 25 May 1995) pp. 43-49.



## BIBLIOGRAPHY

Bornhoft, Stewart H., Colonel, U.S. Army. "DPW Leads Response to Bombing," The Army Engineer Magazine. August-September, 1995, pp. 12-16.

Chairman, Joint Chiefs of Staff. National Military Strategy of the United States of America: A Strategy of Flexible and Selective Engagement. Washington, DC: 1995.

Commander, Forces Command. "FORSCOM PLANNING ORDER - SEVERE WEATHER DISASTER RELIEF OPERATIONS." COMFORSCOM Message. Fort McPherson, Georgia: 061923Z JUN 95.

Director of Military Support. DOMS Business Plan. Washington, D.C.: December 15, 1995.

Director of Military Support. Hurricane Andrew, Typhoon Omar, Hurricane Iniki After-Action Report. Report to the Secretary of the Army, The Department of Defense Executive Agent. Washington, D.C.: February 1993.

Director of Military Support. "SEVERE WEATHER PLANNING ORDER." DIRMILSPT Message. The Pentagon, Washington, D.C.: 051118Z JUN 95.

England-Joseph, Judy A. "DISASTER MANAGEMENT: Recent Disasters Demonstrate the Need to Improve the Nation's Response Strategy." U.S. General Accounting Office. Testimony Before the Subcommittee on Investigations and Oversight, Committee on Public Works and Transportation, U.S. House of Representatives, March 2, 1993.

England-Joseph, Judy A. "DISASTER ASSISTANCE: Information on Expenditures and Proposals to Improve Effectiveness and Reduce Future Costs." U.S. General Accounting Office. Testimony Before the Subcommittee on VA, HUD, and Independent Agencies, Committee on Appropriations, United States Senate, March 16, 1995.

Gruber, Corey, Lieutenant Colonel, U.S. Army, Plans Officer for the Director of Military Support. Interview held at the Army Operations Center, the Pentagon, Washington, D.C. January 22, 1996.

Gruber, Corey, Lieutenant Colonel, U.S. Army. "Summary of DoD Military Support to Civil Authorities/Military Support to Civil Disturbances, 1992-1995." Information Paper for the Director of Military Support. November 8, 1995.

Headquarters, Fifth United States Army. "After Action Report, Oklahoma Bombing Incident of 19 April 1995." Fort Sam Houston, Texas: August 17, 1995.

Kendall, Michelle D, Department of the Army Civilian. "Exercise Planning/Overview Information." Information Paper for the Director of Military Support. 7 November 1995.

Lewis, Christopher. "Ridge inspects flood damage." The Patriot-News. Harrisburg, PA, January 25, 1996, A8.

McCluster, Dennis, SGT. and SPC Christine Lett, U.S. Army. "The Virgin Islands Battle Back," Soldiers. November 1995, pp. 4-5.

Nunn, Sam, Senator. Domestic Missions for the Armed Forces. Carlisle Barracks, PA: Strategic Studies Institute, U.S. Army War College, February 1993.

Perry, William J., U.S. Secretary of Defense. Memorandum Subject: Military Assistance to Civil Authorities. Washington, D.C. 12 December 1995.

Principal Deputy Under Secretary of Defense. DoD 3025.1-M: Manual for Civil Emergencies. Washington, D.C.: June 2, 1994.

Riley-Rodriguez, Tonya, SPC, CPT Gena Ellis and MAJ Ron Wilkerson, U.S. Army. "Easing a City's Pain," Soldiers. June 1995, pp. 6-7.

Schrader, John Y. The Army's Role in Domestic Disaster Support: An Assessment of Policy Choices. Santa Monica, CA: RAND, 1993.

Thomas, Dutch, Lieutenant Colonel, U.S. Army, Operations Officer for the Director of Military Support. Interview held at the Army Operations Center, the Pentagon, Washington, D.C. December 16, 1995.

U.S. Army Corps of Engineers. Headquarters USACE After Action Report for Midwest Flood of 1993. Washington, D.C.: November 1994.

U.S. Department of the Army, Headquarters, Fifth United States Army. "After Action Report, Oklahoma Bombing Incident of 19 April 1995." Fort Sam Houston, Texas: August 17, 1995.

U.S. Department of the Army. Field Manual 100-1: The Army. Washington, D.C.: June 14, 1994.

U.S. Department of the Army. Field Manual 100-5: Operations. Washington, D.C.: June 14, 1993.

U.S. Department of the Army. Field Manual 100-19, Fleet Marine Force Manual 7-10: Domestic Support Operations. Washington, D.C.: July 1, 1993.

U.S. Department of Defense. Department of Defense Directive 3025.1 Military Support to Civil Authorities (MSCA). Washington, D.C.: January 15, 1993.

U.S. Department of Defense. Disaster Response Assessment: A Report to the Secretary of the Army. Washington, D.C.: November 17, 1995.

U.S. Federal Emergency Management Agency. Federal Response Plan, with Changes 1-9. Washington, D.C.: April 1992.

U.S. Federal Emergency Management Agency. "Headquarters Emergency Support Team (EST) [Hurricane Marilyn] Situation Report," Number 14P, Washington, D.C.: 6:00 a.m. EDT, September 23, 1995.

U.S. Federal Emergency Management Agency. "Headquarters Emergency Support Team (EST) [Hurricane Marilyn] Situation Report," Number 18P, Washington, D.C.: 6:00 p.m. EDT, September 26, 1995.

U.S. Federal Emergency Management Agency. "Headquarters Emergency Support Team (EST) [Hurricane Marilyn] Situation Report," Number 19P, Washington, D.C.: 6:00 p.m. EDT, September 27, 1995.

U.S. Federal Emergency Management Agency. Oklahoma City Bombing Briefing Book. Oklahoma City, Oklahoma: 23 April 1995.

U.S. Joint Chiefs of Staff. Joint Publication: Joint Doctrine Capstone and Keystone Primer. Washington, D.C.: 25 May 1995.

U.S. Joint Chiefs of Staff. Joint Publication 3-07: Joint Doctrine for Military Operations Other Than War. Washington, D.C.: June 16, 1995.

U.S. Joint Chiefs of Staff. Joint Publication 3-07.7: Joint Tactics, Techniques, and Procedures for Domestic Support Operations (Draft). Washington, D.C.: 15 August 1995.

U.S. Joint Chiefs of Staff. Joint Publication 5-00.2: Joint Task Force Planning Guidance and Procedures. Washington, D.C.: 3 September 1991.

U.S. General Accounting Office. DISASTER ASSISTANCE: DOD's Support for Hurricanes Andrew and Iniki and Typhoon Omar. GAO/NSID-93-180. Washington, D.C., June 18, 1993.

U.S. General Accounting Office. DISASTER MANAGEMENT: Improving the Nation's Response to Catastrophic Disasters. GAO/RCED-93-186. Washington, D.C.: July 23, 1993.

White, John P. Report of the Commission on Roles and Missions of the Armed Forces. Arlington, VA: May 24, 1995.

Witt, James L. Response 93 After-Action Report. Federal Emergency Management Agency. Washington, D.C. January 1994