Effectiveness of U.S. Humanitarian Relief Efforts in Response to Hurricanes Georges and Mitch

A. Martin Lidy and
James Kunder

Institute for Defense Analyses (IDA)
1801 N. Beauregard Street
Alexandria, VA 22311-1772 USA
e-mail: mlidy@ida.org
jkunder@ida.org

Mr. Lidy retired from the U.S. Army after 20 years of service and continues to work on defense related projects as a civilian. He joined the Institute for Defense Analyses in October 1986 and serves as a Project Leader for tasks supporting the Unified Combatant Commands, the Joint Staff, and the Office of the Secretary of Defense. Recent projects include building an analytical framework for examining smaller-scale contingency issues for the Director, Program Analysis and Evaluation; improving force deployment capabilities and logistics support for the combatant commands for the Joint Staff; reviews of the U.S. European Command's activities during Operations Desert Shield/Storm and Joint Endeavor/Joint Guard; and developing concepts, materials, and providing support for joint and combined movement and humanitarian relief exercises conducted by the European Command (Agile Lion), Atlantic Command/Allied Command Atlantic (Cooperative Safeguard), and Southern Command (Blue Advance). Mr. Lidy also deployed to Bosnia in November 1995 as a member of the team that assessed the Federation forces and recommended to the Secretary of Defense actions to equip and train them. His military service with troops included assignments as a fixed and rotary wing aviator, staff officer, and commander of aviation units within infantry divisions and non-divisional aircraft maintenance and supply units in Europe and Vietnam, and he has more than 1,250 combat flight hours. He is a graduate of the United States Military Academy and received an MS in Operations Research from the Georgia Institute of Technology.

Mr. Kunder is an adjunct research staff member at the Institute for Defense Analyses, focusing on smaller-scale contingency operations and civil-military relations. He has managed or evaluated humanitarian assistance and disaster relief operations in more than twenty nations while serving as director of the Office of U.S. Foreign Disaster Assistance and vice president of Save the Children Federation. Mr. Kunder is a consultant to the United Nations, the U.S. government, U.S. military organizations, and research institutions. A former infantry officer in the U.S. Marine Corps, Mr. Kunder has degrees from Harvard University and Georgetown University, and pursued doctoral studies at The George Washington University.

ABSTRACT

This paper examines a large scale U.S. military disaster/humanitarian operation in response to two unusually severe hurricanes that struck the Western Hemisphere in 1998, Hurricanes Georges and Mitch. Using these two storms as case studies, IDA – at the request of the

Office of the Secretary of Defense – (1) assessed the overall capacity of the U.S. Department of Defense (DoD) to respond to large-scale foreign disasters; (2) identified areas within DoD that need improvement; and, (3) recommended specific measures to enhance United States Government (USG) response capabilities for future humanitarian assistance operations. The paper provides a synopsis of the storms' damage, the international and USG responses, and DoD's operations.

Of particular interest for Cornwallis VI, this paper outlines the unique methodology developed by IDA during its research to organize the myriad, sometimes conflicting, observations on and data points related to the disaster response operations. Combining participant-observer approaches with consensus techniques, analysts distilled 69 major Findings from more than 5,000 discrete "lessons identified" to evaluate the military response to the storms. In addition, the paper examines measures of effectiveness (MOEs) applicable to military forces responding to foreign natural disasters, focusing on quantifiable MOEs. The research also examines major structural issues constraining DoD's ability to respond effectively to foreign disasters, especially the mechanisms for translating civilian needs into military assets, in order to manage the crisis. Finally, the paper looks at recommendations for assessing the nature and severity of natural disasters, especially to reconcile civilian and military assessments.

BACKGROUND

In the fall of 1998, two unusually severe hurricanes, Georges and Mitch, struck the Western Hemisphere within a month, causing extensive damage in nations within U.S. Southern Command's (SOUTHCOM's) area of responsibility (AOR). U.S. military forces mounted large-scale responses to these disasters, in conjunction with the affected countries, civilian relief agencies of the United States government, foreign governments, the UN, non-governmental organizations (NGOs), private businesses, and individuals. The Commander-in-Chief, U.S. Southern Command (USCINCSO) created two joint task forces (JTFs) for disaster response, reoriented the mission of a third JTF toward relief efforts, and employed more than 7,000 U.S. military personnel deployed to the region to assist with the response to the damage caused by these events. In total, DoD expended more than $200 million for relief and rehabilitation following these storms.

Because U.S. military forces are likely to be called upon in the future to provide humanitarian assistance following foreign natural disasters, the Office of the Assistant Secretary of Defense for Special Operations and Low-Intensity Conflict, Office of Peacekeeping and Humanitarian Assistance (PK/HA), requested that the Institute for Defense Analyses (IDA) examine the U.S. military's capacity to respond to foreign natural disasters. Specifically, IDA was tasked with examining the DoD response to these two storms as case studies in order to:

- Assess the capacity of U.S. DoD to respond to large-scale natural disasters as part of a major international effort.
- Identify areas within DoD that need improvement.
- Recommend specific measures to enhance USG response capabilities for future humanitarian assistance operations.

This research focused on the response of DoD organizations and units to Hurricanes Georges and Mitch in fall and winter, 1998. Although the focus of the analysis was on DoD, the USG and international responses in which the DoD efforts were embedded were also considered. The study provided basic information on DoD's response, including a chronology of key events, phases of the operation, organizations engaged, military command and control arrangements, coordination with non-DoD agencies, assessment and requirements determination, deployment/redeployment, missions accomplished, impact on the local populace, and budgetary issues. However, this was not a detailed history of the specific SOUTHCOM operations. The study focused on lessons related to DoD's overall readiness to respond.

THE STORMS AND THE INTERNATIONAL HUMANITARIAN RESPONSE

IMPACT OF HURRICANE GEORGES

The severe meteorological phenomena associated with Georges affected both foreign territories and U.S. territory (especially Puerto Rico) and resulted in a substantial number of deaths and injuries, and widespread property damage. According to the USG's National Oceanic and Atmospheric Administration (NOAA), the 602 deaths caused by Hurricane Georges made it the most deadly storm in the Atlantic Basin in the 20th century. Property damage in the U. S. mainland and territories alone approached $6 billion.

IMPACT OF HURRICANE MITCH

Three weeks after Hurricane Georges dissipated, Hurricane Mitch began its destructive odyssey through the Caribbean Sea, mainland Central America, and the Gulf of Mexico. The winds and precipitation associated with Mitch created a major disaster for Central Americans. Some 9,000 victims lost their lives, and a similar number were missing and presumed dead. Estimates of damage ranged from a minimum of $5 billion to more than $7 billion.

RESPONSE TO GEORGES

INTERNATIONAL RESPONSE

Although the humanitarian response to Hurricane Georges paled in comparison to Mitch just a month later, the Georges relief response was substantial. A long list of donors nations, regional organizations, international organizations, NGOs, and private companies and individuals from within and outside the region provided money, materiel, skilled staff, or transport assets to the affected countries or territories. Foreign relief provided in the

immediate aftermath of Hurricane Georges exceeded $45 million. The USG was the largest single contributor.

USG RESPONSE TO GEORGES

The USG federal disaster response to Hurricane Georges concentrated on the severe damage caused in Puerto Rico, a response managed by the Federal Emergency Management Agency (FEMA), largely outside the scope of this paper. Foreign relief contributions by the USG were made to the eastern Caribbean, the Dominican Republic, and Haiti. USG-sponsored emergency assistance consisted of assessment teams, food aid, shelter supplies, related emergency materiel (such as water containers and blankets), and funding for helicopters and other DoD support aircraft utilized for assessment, search and rescue (SAR), and relief delivery.

RESPONSE TO MITCH

INTERNATIONAL RESPONSE

The international relief effort following Hurricane Mitch was large and complex. Virtually the entire worldwide humanitarian community contributed to the response, including major UN agencies, more than 30 countries inside and outside the region, intergovernmental and international organizations such as the International Federation of the Red Cross, and hundreds of NGOs. The resources provided by this array of contributors were sizeable. The UN recorded contributions from all sources of $403 million by 1 December 1998. Of this amount, the largest percentage went to Honduras, the nation most severely affected, with Nicaragua, El Salvador, and Guatemala receiving substantial aid. As was the case after Hurricane Georges, the USG was the largest single donor to the relief effort. On 4 December 1998, the USG announced its emergency relief to Central America totaled $263 million.

USG RESPONSE TO MITCH

The USG relief and rehabilitation efforts were large and multifaceted. In addition to DoD efforts, other USG programs included food assistance, blankets and shelter materials, water system repairs, and health and sanitation programs. The USG funded assessment teams, deployed Disaster Assistance Response Teams (DARTs) from the Office of U.S. Foreign Disaster Assistance (OFDA) to the region, provided airlift and sealift to Central America, funded U.S. military helicopter transport within affected areas, and financially supported many local relief efforts of host governments, regional organizations such as the Pan-American Health Organization (PAHO), and NGOs. USG interagency coordination was managed through several *ad hoc* mechanisms in Washington and among operational USG agencies in Central America. In Washington, core mechanisms included a task force sponsored by the National Security Council (NSC). Many participants did not find the *ad hoc* USG mechanisms sufficient for a disaster response operation as extensive as the relief activities for Hurricane Mitch.

THE DEPARTMENT OF DEFENSE HUMANITARIAN RESPONSE

GEORGES RESPONSE

PRIMARY LOCATIONS WHERE DOD FORCES ASSISTED

U.S. military assistance focused on Puerto Rico, in support of FEMA, and in the Dominican Republic, in support of the USG's Office of Foreign Disaster Assistance. U.S. military personnel, stationed in Haiti as part of Support Group Haiti, provided limited assistance in that nation. In the eastern Caribbean islands, the U.S. military provided limited but important support.

SCOPE AND NATURE OF DOD OPERATIONS, INCLUDING MAIN ASSETS EMPLOYED

The DoD asset in greatest demand following Hurricane Georges was air transport, both strategic lift into the area of operations and theater lift to distribute relief supplies. Another major asset employed was a Disaster Relief Joint Task Force, designated JTF Full Provider. JTF Full Provider conducted operations in support both of Puerto Rico domestic relief operations and foreign disaster assistance. In addition, U.S. military personnel provided management support to disaster operations, including assessment, communications, and logistics expertise, as well as logistics hubs. In Puerto Rico, Naval Station Roosevelt Roads became the logistics hub for FEMA relief operations. In the Dominican Republic, the Military Assistance Advisory Group at the U.S. Embassy provided essential support at Santo Domingo airport for the relief effort.

COMMAND AND CONTROL ARCHITECTURE

U.S. military operations responding to Hurricane Georges were managed primarily through the geographic combatant command, SOUTHCOM, in close coordination with other USG agencies. USCINCSO managed the relief operation consistent with the *Federal Response Plan* for domestic disaster response operations. Judging that additional assets were required, USCINCSO subsequently created JTF Full Provider to apply supplementary resources to Caribbean disaster relief operations, foreign and domestic.

DURATION OF THE RESPONSE

U.S. military forces were significantly engaged in Hurricane Georges relief activities for five weeks, from the time the SOUTHCOM Logistics Response Center (LRC) was activated on 19 September until the FEMA Federal Coordinating Officer formally released DoD from further duties on 27 October.

FINANCIAL RESOURCES AND COORDINATION FACTORS

A substantial portion of DoD relief expenditures following Hurricane Georges was reimbursed by FEMA or OFDA, so that resource generation issues were not significant limiting factors in this operation. Moreover, for the *international* aspects of the relief operation, USG interagency coordination factors had minimal impact on the DoD response. The principal focus during the Hurricane Georges response was the *domestic* disaster response factor: the DoD command and control relationship between Commander, Joint Task Force (CJTF) Full Provider and the designated Defense Coordinating Officer in Puerto Rico.

MITCH RESPONSE

The DoD response to Hurricane Mitch far surpassed the response to Hurricane Georges in scope, complexity, cost, and duration, as well as in the range of policy issues it generated.

PRIMARY LOCATIONS WHERE DOD FORCES ASSISTED

U.S. military personnel conducted significant relief operations in the four Central American countries primarily affected by Hurricane Mitch: Honduras and Nicaragua, the two most seriously affected nations, and Guatemala and El Salvador, which suffered moderate damage. In each of the affected countries, U.S. military units concentrated their activities in specified geographic regions, assigned through discussions with host governments to complement ongoing host nation and other responses, rather than operating country-wide. In addition, U.S. military transport assets based in the United States, air and sea, were employed to move large quantities of personnel and materiel to the area of operations.

SCOPE AND NATURE OF DOD OPERATIONS, INCLUDING MAIN ASSETS EMPLOYED

The scope of the U.S. military disaster relief mission in Central America was very large, ultimately costing $155 million, with a maximum deployment of more than 5,000 military personnel and 63 aircraft. U.S. forces provided services including search and rescue, damage assessments, airfield management, food delivery, immunizations against epidemic diseases, veterinary care, bridge and road reconstruction, water purification, liaison, and planning. During these efforts, DoD personnel interfaced with government officials, international and local NGOs, local and third country military forces, UN agencies, banana plantation owners,

local religious and community leaders, and traumatized villagers. The overall operations consisted of three phases:

- Emergency Relief Phase commencing when the Hurricane struck Central America and continuing through mid-December 1998.
- Rehabilitation Phase commencing in mid-December 1998 and continuing until approximately 26 February 1999.
- Reconstruction Phase (not addressed in IDA's analysis) commencing at the end of the Rehabilitation Phase and continuing into September 1999.

COMMAND AND CONTROL ARCHITECTURE

Following a request for deployment from USCINCSO and approval by the National Command Authorities, the Chairman, Joint Chiefs of Staff (CJCS) issued a deployment order on 4 November for Central America disaster response. From that point, USCINCSO effectively managed the day-to-day DoD relief mission. Initially, USCINCSO utilized the existing JTF Bravo, located at Soto Cano Air Base in Honduras, as his command and control mechanism throughout Central America. By 7 November, USCINCSO had developed an operational concept that included a second JTF, JTF Aguila, for the management of relief operations in El Salvador, Guatemala, and Nicaragua. The creation of the second JTF, operating with subordinate task forces in each of the three countries in its area of responsibility, allowed the commander of JTF Bravo to focus on the massive devastation in Honduras.

DURATION OF THE RESPONSE

From the time the first relief flights departed Soto Cano Air Base on 1 November 1998 until the SOUTHCOM Crisis Action Team terminated its operations on 26 February 1999, a period of nearly four months, U.S. military forces were continuously engaged in disaster relief efforts, albeit at varying levels of intensity. Although the immediate DoD response to save lives was timely, the overall DoD deployment was late relative to the overall relief needs of the stricken populace. Total U.S. military forces deployed across the four nations of Central America would not reach 2,500 until the last days of November, and would not reach their peak until 18 December, one and one-half months after Hurricane Mitch struck.

FINANCIAL RESOURCES AND COORDINATION FACTORS

The U.S. General Accounting Office estimated total DoD costs at approximately $155 million during the Emergency Relief Phase and Resolution Phase operations on which IDA's analysis was focused. In order to compile this level of resources, DoD was directed to draw upon a variety of authorities and accounts, including Drawdown Authority; Overseas Humanitarian, Disaster, and Civic Action Funds; CJCS Commander-in-Chief Initiative

Funds; and OFDA funds. The DoD response to Hurricane Mitch highlighted a number of coordination factors, as well. Within the USG, intense humanitarian and political interest in launching a sizable and high-profile relief effort was not matched by a comparable level of operational coordination among USG civilian and military agencies. Coordination problems occurred in gathering and validating damage assessment data, shaping the overall USG response, establishing relief priorities, managing public affairs (including publicly donated commodities), sourcing adequate funding, and transitioning from relief to reconstruction programs. Coordination problems stretched beyond the USG interagency system to relations with other nations and international relief agencies that responded to the Mitch disaster.

EVALUATION METHODOLOGY

A huge amount of information is available on DoD's response to the 1998 hurricanes, both from primary sources (message traffic, participant interviews) as well as secondary sources such as after-action reports or analysts' writings. Consequently, the study team was faced with serious methodological issues in evaluating the U.S. military response. In order to process information, develop substantiated findings, and make valid recommendations, IDA developed an inductive methodology, combining participant-observer and consensus techniques, which may be applicable in retrospective evaluation of other crisis responses. The evaluation methodology consisted of distilling Findings from primary and secondary sources, and using those Findings to drive concrete Recommendations for changes in doctrine or process. The system is shown in Figure 1.

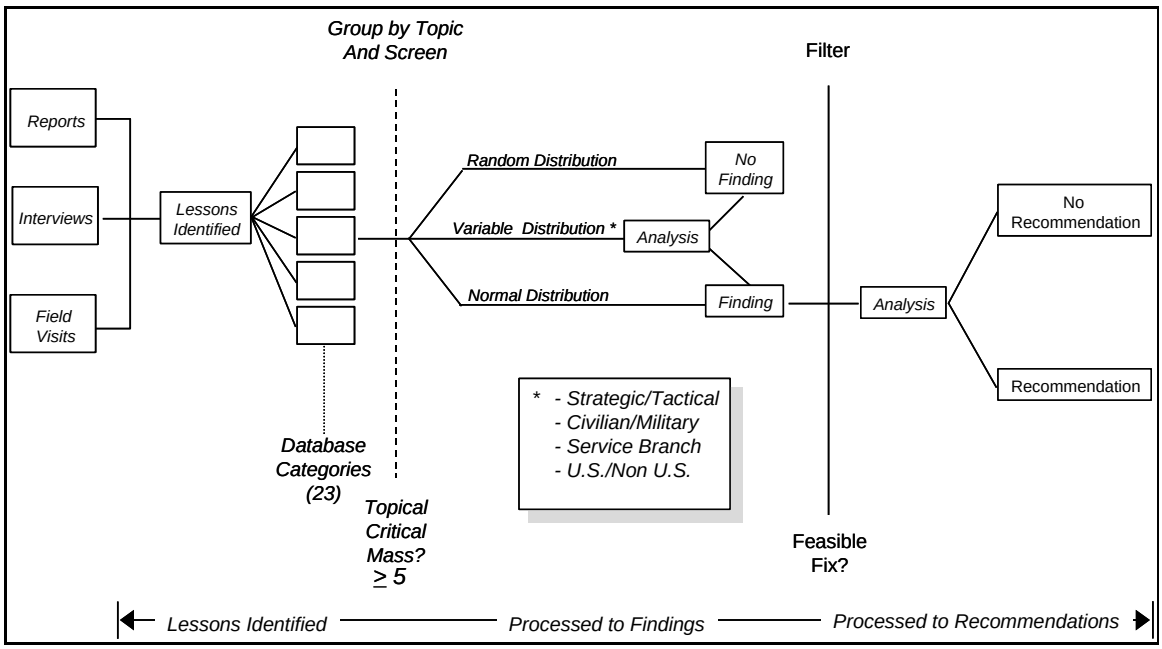

Figure 1: Analytical Framework.

Data or observations derived from information sources were captured as "lessons identified" (LIs) quanta of information, identified in reports on or by participants in the hurricane relief operations, which were relevant to whether or not DoD relief operations were effectively conducted or whether improvements could be made. When data or observations were recorded repeatedly (generally, more than five times) as LIs on a particular topic, the set

of LIs was examined to determine if reports and/or interviewees' comments (1) tended to agree as to the nature of the issue ("normal distribution"); (2) showed no discernable pattern as to the nature of the issue ("random distribution"); or, (3) provided conflicting views as to the nature of the issue ("variable distribution").

If all the reports or interviewee comments tended to agree as to the nature of a specific issue, then these results were characterized as a "Finding." On the other hand, when a set of reports or data showed no discernable pattern for example, when five sources expressed five varying opinions on an issue no Finding was established. In a third case, if comments and reports on an issue comprised two or more conflicting sets of observations if half the sources felt that a program worked well, for example, and half felt it was weak then IDA analysts examined the sources more closely to determine if a Finding could be established. In those 69 cases where a Finding was established related to DoD's capacity to respond to large-scale natural disasters, these Findings were used to identify areas needing improvement and to generate one or more "Recommendations" or specific measures to enhance DoD response capabilities for future humanitarian operations. In order to assess DoD capacity and performance, a filter of seven questions was applied to each Finding. They are:

1. Was the DoD action based on a sound and accurate assessment of conditions at the disaster site?

2. Was the DoD action governed by visible, quantifiable measures of effectiveness (MOEs)?

3. Was the DoD action well coordinated with other USG agencies and international disaster responders, at headquarters and in the AOR?

4. Was the DoD action timely?

5. Was the DoD action effective, based on the needs of disaster victims?

6. Was the DoD action consistent with existing DoD or USG doctrine and procedures?

7. Was the DoD action cost-effective, both in terms of accomplishing the mission at the lowest feasible budget cost and in terms of deploying the assets best aligned with mission requirements?

Each Recommendation generated by this process met five criteria: (1) the Recommendation evolved from the observations of those personnel involved in the Hurricanes Georges and Mitch responses; (2) the Recommendation addressed a specific Finding identified in the research; (3) the Recommendation was intended to improve the appropriateness, timeliness, or effectiveness of DoD's response to natural disasters, based on interpretation of established practice in disaster response and DoD doctrine; (4) the Recommendation was addressed to a specific component of the U.S. Department of Defense for action; and, (5) the Recommendation consisted of a discrete, concrete, and feasible action item. In most cases, Recommendations for improvement pertained to internal DoD processes or systems. In cases where the problem identified or recommended improvement related to the larger USG interagency system or to the international disaster response system, the Recommendations encouraged DoD to propose reforms in these systems.

The study identified Findings in 23 categories relevant to DoD disaster response operations. These categories are listed in Table 1.

Category	Code	Category	Code
Assessment Issues	AI	Helicopter Support	HS
Command and Control	CC	Information Support	IS
DoD Internal Coordination	CD	Legal Affairs	LA
Interface with Host Nations	CH	Logistics Support (less	LS
Interagency Operations (USG)	CI	transportation and movement	
Communications and Computers	CK	control)	
Interface with Non-USG	CN	Transportation and Movement	LT
Organizations and Governments		Control	
Doctrine and Procedures	DP	Medical Support	MS
Engineering Support	ES	Organization and Training	OT
Financial Operations	FO	Public Affairs, including	PA
Force Protection and Security	FP	Donations	
Humanitarian Operations (non-	HO	Personnel Support	PS
engineering; non-medical)		Reserve Forces	RF
		Special Operations Forces	SF

Table 1: Study Categories.

Findings were used to identify areas needing improvement and to generate one or more Recommendations to enhance DoD response capabilities for humanitarian operations. In keeping with the purpose of IDA's research, the analysis of each Finding was conducted in order to assess DoD's overall capability to respond to foreign natural disasters globally, not to "grade" any element of the DoD performance in Hurricanes Georges and Mitch *per se*.

MEASURES OF EFFECTIVENESS DURING DISASTER OPERATIONS

MEASURES OF EFFECTIVENESS APPLIED TO ANALYZE DOD OPERATIONS

> *While acknowledging there were deficiencies in planning, limitations in command and control, an excessive employment of personnel, and other aspects of disaster response that could be improved, the fact remains that joint U.S. military forces of up to 5,000 personnel played significant roles in alleviating human suffering and responding to the needs of sister nations of the Americas.* Twelfth Air Force History of Hurricane Mitch

As the Twelfth Air Force quote suggests, neither in Hurricane Mitch nor in DoD's response to any natural disaster can relief operations be rated "effective" or "ineffective" across the board, according to a universally accepted scale. Because no universally accepted scale is employed by analysts, even rigorously quantified data on relief operations can be interpreted differently by different observers. For example, SOUTHCOM reported that U.S. military forces reconstructed 162 miles (262 km) of roads and 13 bridges in the affected countries following Hurricane Mitch, a substantial accomplishment considering the logistical

challenges involved in deploying forces and equipment from CONUS into an austere, minimally accessible area of operations. On the other hand, critics have pointed out that these construction projects amounted to less than two percent of the highways damaged in Honduras and Nicaragua alone, and about four percent to six percent of the bridges damaged or destroyed in the four affected countries. By that calculation, critics asked whether the scale of the results justified the large-scale, expensive deployment of U.S. military engineering units to Central America.

Beyond such issues of quantifying and evaluating the scale of operations, IDA's analysis of the 1998 hurricanes suggests that attempts to measure effectiveness of natural disaster relief operations raise even more fundamental questions about the objectives of such missions. The formal guidance of the USG National Command Authorities and the geographic combatant commander to U.S. military forces engaged in disaster response operations emphasized the importance of reducing human suffering and promoting recovery from the storm. CINCSO's operations order defined the mission's purpose as follows: "to conduct disaster relief (DR) operations in support of United States relief efforts in the CENTAM [Central American] region in order to mitigate near-term human suffering and accelerate long-term regional recovery." However, interviews with numerous USG officials, civilian and military, who were engaged in the relief operations suggested that at least four other motivations guided U.S. policymakers formulating the Hurricane Mitch response. These included:

- The international political goal of supporting democratic nations in Central America, especially those fragile democracies emerging from decades of conflict.

- The domestic political goal of displaying the region's importance to the large number of U.S. citizens of Central American ancestry or origin.

- The domestic political goal of preventing dramatically higher levels of immigration into the United States by desperate disaster victims.

- The goal of continuing SOUTHCOM's theater engagement objective of "cooperative opportunities…to create conditions that support the development of institutions which advance democracy and regional stability."

Recognizing that defining measures of effectiveness will be an issue in any foreign disaster assistance operation, IDA's research established seven criteria to measure effectiveness in such operations. The criteria were:

1. Was the DoD action based on a sound and accurate assessment of conditions at the disaster site?

2. Was the DoD action governed by quantifiable measures of effectiveness that were known to planners and operational commanders? That is, did those personnel actually planning and conducting the operations have explicit guidance on what goals they were to accomplish among the many needs encountered during a large-scale natural disaster?
3. Was the DoD action well coordinated with other USG agencies and international disaster responders, including with the policymakers at the home

headquarters of these agencies and their operational representatives in the AO?

4. Was the DoD action timely according to the needs of disaster victims, given logistical barriers and competing priorities?

5. Was the DoD action effective, based on the highest priority needs of disaster victims? That is, recognizing that political and theater engagement priorities may also have played a role in defining missions, did the mission remain sufficiently focused on the requirements of disaster victims? And, did U.S. military forces address the highest priority needs of those victims?

6. Was the DoD action consistent with existing USG and/or DoD doctrine and procedures?

7. Was the DoD action cost-effective, both in terms of accomplishing the mission at the lowest feasible budget cost, and in terms of deploying the assets best aligned with mission requirements?

As noted above, no single, definitive MOE can be applied in all cases to determine whether a disaster relief operation was conducted effectively. Applying these seven measures of effectiveness, however, provided a useful set of standards against which to measure the response to the 1998 hurricanes, as well as future DoD operations. In tabular form, as illustrated in Table 2, these seven MOEs can be utilized as a tool, not only for post-event evaluation, but also to guide planners of future disaster relief operations.

Measure of Effectiveness	**Scale**
Were the disaster relief operations:	*Effective ----------Ineffective*
Based on sound data and assessment?	*Yes----------No*
Defined by quantifiable MOEs?	*Yes ----------No*
Well coordinated with other responders?	*Yes----------No*
Timely, based on needs of victims?	*Yes----------No*
Effective in meeting victims' priorities?	*Yes----------No*
Consistent with existing doctrine?	*Yes----------No*
At lowest cost, consistent with mission?	*Yes----------No*
Conducted with units tailored to mission?	*Yes----------No*

Table 2: MOEs in Foreign Disaster Assistance Operations.

INCORPORATING QUANTIFIABLE MEASURES OF EFFECTIVENESS INTO DOD PLANNING AND OPERATIONS

Quantifiable MOEs that relate mission effectiveness to attainment of a specific humanitarian end state such as "potable water provided for 50,000 victims for two weeks" may have particular utility for military planners and commanders in future foreign disaster operations, based on this analysis of Hurricanes Georges and Mitch. The scale and breadth of those crises created a virtually endless list of potential humanitarian tasks, and considerable initial uncertainty over which agencies would be responsible for which relief missions. Moreover,

as DoD planners quickly discovered, the overall rehabilitation and reconstruction of Central America following Hurricane Mitch was to be a process measured, not in months, but in years if not decades, and U.S. military forces tasked with the national defense could not reasonably be expected to stay on station for much of that recovery period. Similar conditions are likely to prevail in future large-scale, rapid-onset natural disasters. Under those conditions, more widespread use of quantifiable MOEs in planning and conducting operations may assist in defining mission success and in fixing the mission end state.

When U.S. military forces are engaged in large-scale foreign disaster assistance operations that are likely to be of long duration, definition by DoD planners of quantifiable MOEs for operations by U.S. forces might be appropriate. Standard MOEs for food, water, health, shelter, care of displaced persons, and similar categories of assistance are available through publications such as OFDA's *Field Operations Guide,* the SPHERE standards developed by coalitions of non-governmental organizations, and through consultations with civilian organizations such as PAHO. Discussions with host nation ministries with technical expertise, such as ministries of health, public welfare, and public works, are another source of disaster response MOEs, especially those related to when conditions of normalcy have returned. A major recommendation to DoD growing out of the IDA research was: "Better use can be made of disaster relief 'measures of effectiveness' – especially quantifiable MOEs – for mission and redeployment planning."

MAJOR ISSUES AFFECTING DOD'S ABILITY TO RESPOND TO FOREIGN DISASTERS

IDA's analysis of the 1998 hurricanes suggested that senior policymakers at U.S. DoD must address certain overarching policy questions or structural issues that systemically constrain the U.S. military's disaster response performance. These structural issues may hamper the civilian-military management of future crises and, therefore, are highlighted in this paper. These higher order policy issues include:

> *The USG interagency response system for large-scale foreign disasters, within which DoD relief operations are embedded, is fundamentally flawed. The USG foreign disaster response system requires fundamental reform, for which the domestic Federal Response Plan provides a useful model.*

If there is a single consensus finding supported by the many reports and interviews examined for the hurricane study, it is that the USG system for managing large-scale, rapid-onset foreign disasters is seriously inadequate. The current USG process is characterized by absence of formal doctrine, uncertain leadership or direction, lack of serious contingency planning, and unclear reporting relationships and funding arrangements. In short, virtually all the elements that should characterize an efficient emergency response system are missing.

> *Modest, well-designed investments in force management prior to a disaster declaration can substantially improve DoD readiness and rapidity of response.*

IDA's Findings and Recommendations conclude that an integrated series of force management enhancements, many of which are in themselves relatively modest, can produce a significant improvement in DoD's capability to conduct foreign disaster relief operations.

In their most distilled form, the Findings and Recommendations regarding force management argued that DoD can and should provide, at the disaster scene, commanders and staffs more familiar with disaster missions and units more capable in humanitarian operations, and that these outcomes are doable and affordable. For example, recognizing that JTFs will be widely used by the U.S. military in order to manage disaster relief operations, force management reforms are attainable in four categories related to JTFs:

- Pre-designating Humanitarian Assistance/Disaster Response (HA/DR) JTFs.
- Pre-designating JTF commanders.
- Pre-designating JTF headquarters.
- Pre-designating task units for HA/DR missions.

IDA concluded that other force management improvements can be made in the areas of preparing forward-stationed forces, training, personnel support, and mobilization of Reserve Component forces.

> *DoD's coordination with multiple responding entities can and should be substantially improved, both in the U.S. military's overall approach to disaster response operations and, specifically, at the scene of a foreign disaster.*

The Findings and Recommendations compiled for the study suggest that the sound principle of military coordination with civilian relief agencies, while not violated during Hurricane Georges and Mitch operations, was treated as an ancillary rather than central portion of the disaster relief operations. Notably absent from the humanitarian relief architecture in the four most seriously affected nations following Hurricane Mitch was a Humanitarian Operations Center (HOC), maintained by the international community during the relief phase of operations. Nor was a Civil-Military Operations Center (CMOC) or other formal civil-military coordination center created during this phase of operations. An important issue emanating from the Hurricane Mitch experience is the essentiality of devoting focused, visible resources to civilian-military coordination efforts on the ground during rapid-onset natural disasters overseas where military forces support civil authorities.

> *Effective, timely response to large-scale, rapid-onset disasters demands more reliable funding mechanisms, within DoD and within the USG interagency system.*

A critical requirement for launching an effective, timely USG response to disasters is the assurance that legislative authority and financial resources will be available to undergird the mission. As currently structured, the USG interagency system has sufficient overall resources to meet probable overseas relief needs, but insufficient contingency plans exist for how, and under what conditions, those resources will be made available for DoD or other USG disaster response operations. Interagency uncertainty during the early stages of the Mitch response over which agency would cover the costs of relief efforts likely contributed to delays in the USG response, and certainly bred a degree of confusion in the interagency planning process. The Findings and Recommendations of the study argue for more reliable funding mechanisms for overseas disaster response.

The process of translating humanitarian needs encountered during disasters into U.S. military forces and capabilities to meet those needs can be improved.

An especially critical issue related to the topic of this conference – *Analysis for Evaluation, Assessment and Crisis Management* – is the question of how essentially civilian needs and priorities can be translated during crisis operations into the deployment of military units that are configured primarily for fighting wars. During the 1998 hurricane season, U.S. military planners at supported, supporting, and subordinate commands, including at the JTF level, expended a great deal of effort to determine accurately the humanitarian needs in the affected region, and to express those requirements in terms of military capabilities to be deployed.

In the main, however, DoD planners faced a gap in doctrine and tools to assist their planning efforts, and had to rely primarily on individual experience and the application in the HA/DR environment of planning tools normally used for calculating combat needs, in order to arrive at military force requirements. Although U.S. military joint doctrine provides a great deal of guidance on planning processes, in general, and substantial guidance on planning factors for SSCs, the complex and, for military planners, somewhat arcane procedure for translating civilian humanitarian needs into military capabilities and, ultimately, units remains an understudied, little understood topic.

There are a number of useful initiatives, approaches, tools, and models that could assist U.S. military planners in translating disaster relief needs into military capabilities. In preparing for the Hurricane Mitch response, DoD planners would have benefited from (1) a consolidated USG needs assessment that specified requirements in terms of humanitarian "service modules" that could be translated into either civilian or military capabilities; (2) a consequence assessment tool permitting quantifiable estimates of civilian need; and (3) a planning tool to translate humanitarian requirements into specific capabilities of U.S. military units.

On the last point, for example, planning tools for military response to humanitarian crises could be structured akin to the current Joint Electronic Battlebook (JEB) available to U.S. military planners. The JEB, a planning tool maintained by U.S. Joint Forces Command, provides information for military planners on selected unit capabilities and non-unit supply or equipment assets available through DoD sources. Its purpose is to provide readily available information on unit capabilities, equipment, and supply assets to U.S. military planners – an important capability when planning for rapid-onset foreign disasters. However, the current JEB is oriented toward combat operations and does not organize data in a format that is most useful to planners preparing for disaster relief operations. Moreover, most military planners interviewed for this study were not familiar with the capability or operation of the JEB. This hurricane research suggests that the development of planning tools oriented toward crisis response could substantially streamline military deployments in support of civilian crisis response agencies.

CONDUCTING EFFECTIVE ASSESSMENTS OF CONDITIONS AND NEEDS

The first step in organizing a successful response to managing a crisis response is developing an accurate picture of conditions at the crisis site. IDA's research into Hurricanes Georges and Mitch found a series of issues related to civilian and military assessments processes following crises, and the reconciling of assessment data. Four major Findings fell into this category. They were:

1. DoD, other USG agencies, and many other sources each generated damage and needs assessments following Hurricane Mitch. It was often unclear which of these assessments was authoritative, or how the assessments related to each other.

2. In order to guide the USG disaster response effectively, DoD and other USG post-disaster assessment teams should be trained in assessment skills, should be ready to be dispatched to the affected areas immediately, should receive transport support to and within affected, areas, and should report promptly. In addition, assessment support should be provided to USG personnel – military and civilian – already in the affected areas, who will often be able to provide initial, preliminary assessment information.

3. Developing an overall picture of storm damage in the SOUTHCOM AOR in the immediate aftermath of Hurricane Mitch was a significant challenge. In general, within DoD, post-disaster assessment data were not always shared with all commands, staffs, and units that required those data.

4. Additional interagency coordination is required to define more clearly the goals and objectives of USG assessment teams, and to standardize reporting formats.

This latter Finding relating to definition and standardization is especially applicable to a wide range of crisis circumstances. Following Hurricane Mitch, some USG assessment teams were examining the level of damage from the storm, some were examining immediate life-saving relief needs, and others were studying the requirements for rebuilding infrastructure and other longer-term requirements. These different approaches, the timing of the reports, and varying methodologies used to develop them hindered effective planning for the USG's relief and rehabilitation efforts. Absence of shared baselines and standardized methodologies hampered the process of developing a shared picture of the crisis and bedeviled attempts to establish priorities. Although several assessment systems have been developed and promoted by individual USG agencies, no one system is accepted government-wide.

Of particular concern to U.S. military planners, USG assessment data and reports do not consistently define humanitarian requirements in formats easily translatable into DoD capabilities that could meet those requirements. In some instances following Mitch, assessment reports were too general or primarily of historical, rather than operational, utility. In short, this research concluded that clarifying and standardizing assessment processes is an issue requiring additional investment, within and outside the USG, in order to improve the management of crises.

CONCLUSION

In summary, the U.S. military responses to the twin hurricane crises in late 1998 provided a rich source of data and issues related to evaluation of response effectiveness, to assessment, and to crisis management. This paper summarizes research conducted on those storms by the Institute for Defense Analyses, and explicates IDA's methodology for translating large amounts of diverse data into an evaluation system for the U.S. DoD response. The techniques developed for this study may be translatable into evaluation systems for similar disaster response studies.

In addition, the analysis of the crisis responses in 1998 illustrated how measures of effectiveness can be applied, retrospectively and prospectively, to monitor and evaluate a disaster response. IDA's preliminary work on quantifiable MOEs in disaster response may also be applicable in other environments.

In order to identify measures to manage crisis responses more effectively, this research focused on a number of major structural impediments that faced the U.S. military in 1998. IDA identified the development of techniques and tools for translating civilian requirements into military capabilities as a major, recurring gap in disaster response. The search for such techniques and tools – which require both military and civilian input – provides both a useful research agenda and a venue for civilian-military cooperation.

Finally, this study identified improved assessment methodology as a key issue in preparing an adequate crisis response. Research on Hurricanes Georges and Mitch suggested that a unified civilian-military vision of assessment objectives, and techniques for reconciling assessment findings, are critical to launching an effective crisis management system.