EXAMINING USTRANSCOM'S ROLE AS A LEAD ENABLING AGENCY DURING HUMANITARIAN AND DISASTER RELIEF EVENTS OCCURING OUTSIDE THE CONTIGUOUS UNITED STATES

GRADUATE RESEARCH PAPER

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Abstract

While forecasting the next conflict is fraught with uncertainty, the US Department of Defense (DOD) retains a robust logistics capability in its Transportation Command (TRANSCOM) in order to quickly respond to an array of global events. Humanitarian Logistics (HL) literature has repeatedly pronounced the importance of coordination, communication, and overall logistics capability to a successful disaster relief effort. However, a capabilities-to-execution gap exists in that TRANSCOM is not doctrinally positioned during a humanitarian assistance and disaster relief (HA/DR) operation to be in a command and control role where its unique capabilities can be fully utilized. Four recent DOD HA/DR cases and the HL literature are analyzed to identify critical capabilities in disaster response. These capabilities are compared to the unique and organic capabilities of TRANSCOM. A model for closing the capabilities-to-execution gap is presented in which TRANSCOM acts as a functional first responder in establishing key logistics, communications, and coordination networks prior to being subsumed by the traditional military command structure. Extension of this model to the civilian sector forms a basis for the extension of general HL theory.

To those men and women called upon to assist strangers in a time of need

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Kaz Kostrubala

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I. Introduction

When considering supply chains, perhaps none are more dynamic or uncertain than those formed in support of HA/DR events. Typically, these supply chains and the organizations which manage them are operating globally and face unique political, chronological and geographic barriers throughout the response window. Uniquely positioned to overcome these barriers, the United States Military and the Transportation Command (USTRANSCOM) in particular, have played crucial roles in four selected humanitarian response efforts spanning the past 12 years. As the Air component of USTRANSCOM, Air Mobility Command (AMC) serves as a potential first responder to these global events with its unique global reach capability (President Obama, 2010). A capability successfully demonstrated in all four operations studied.

A chief assumption of this paper is that disasters will continue to occur around the world at more or less the same rate we've observed in the past…about 500 annually (Van Wassenhove, 2006). The goal of the HA/DR mission is to reduce the number of people impacted or killed by these disasters which current estimates place at an annual 200 million and 75 thousand, respectively (Van Wassenhove, 2006). Unfortunately, this is a goal which grows in complexity with annual increases to global population, interdependency and urban density. While no panacea exists, extensive literature on the subject points to one focus area in particular: logistics. Across the board, HA/DR

operations are 80% logistics and although HA/DR Supply Chains contain some peculiarities not shared with their commercial analogues, the overall concepts found within the field of supply chain management apply quite well (Van Wassenhove, 2006).

The aim of this study is to determine whether or not the DoD can optimize its HA/DR response by aligning logistics processes and structure with available literature and best practice. This begins with understanding how the DoD has historically operated with its chief customer in this area: The United States Agency for International Development (USAID). A particularly effective approach to understanding the right type of process for our customer begins with defining the effectiveness or performance of the current organizational response. To do this, we look at case studies and after action reports (AAR) which capture and recommended courses of action and lessons learned associated with a particular HA/DR effort.

Investigating the planning, processes and organizational doctrine established to ensure an effective and efficient response becomes a crucial focus of this research. Through an examination of how the DoD manages the HA/DR logistics across multiple events and years, this paper will evaluate the nature of support the DoD offers to supported agencies and levies expectations based on past performance. Additionally, this paper will catalogue past performance across the four cases studied and determine whether or not it's feasible for the DoD to improve various practices. Is for example, the DoD's role as a first responder a singular product of its global reach capability or does it seek to improve other aspects the HA/DR supply chain? In other words, is using the DoD as a means to an end sufficient or is there more capability within the organization

not currently used? By researching literature, after action reports and conducting interviews with key stakeholders, a juxtaposition of the DoD's capability as a HA/DR global supply chain owner with internationally desired outcomes is expected. The following research questions are addressed in detail: (i) Is the Joint Task Force the most appropriate command structure for OCONUS HA/DR event response? (ii) Can we improve DoD's response to HA/DR events by leveraging key performance indicators and critical success factors common to global supply chains? (iii) Does the DoD organize, train and equip to improve its position as lead enabling (supporting) agency over time?

General Issue

The Department of State (DoS) and the DoD respond to HA/DR events on a global scale. At times, these events and their effects are relatively small and localized while at other times, these events impact millions of people and world economies. What separates smaller events from larger is traditionally determined by trained representatives from DoS who work in and with Combatant Commands (COCOM) throughout the world. It's the DoS personnel which provide the expertise and continuity of effort within each COCOM necessary for accurate and efficient disaster analysis and response. These relationships are ongoing and Combatant Commands will respond to a number of events within their area of operations throughout any given year. When the event or crisis is of sufficient scale or significance however, a disaster will be declared and the United States Government (USG) has historically tasked the two Departments to work together by executive order where the DoD takes on a supporting role to DoS by way of USAID. These disaster declarations encompass stakeholders from multiple geographies, usually

exceeding both the COCOM Area of Responsibility (AOR) and resources. It is disasters of this magnitude which are the focus of this paper as when this happens, it happens quickly…and is quite complex. Furthermore, there is limited margin for error with regard to the decisions being made and the executed strategy. After all, lives and economies are depending on the correct response. So how well does this process of response work? Are these departments coalescing efficiently and does this produce the appropriate decisions and strategy execution? The general issue is that this is not something measured or generally understood by the DoD and perhaps the DoS. The goal of this paper is to shed light on this issue through analysis of past events and to offer suggested courses of action in the hopes of improving a capability we'll certainly use in the future.

Problem Statement

Unfortunately, HA/DR logistics is a growth industry and given certain qualifications, the United States Military will be called upon to create, support and sustain or manage aspects of the associated supply chains. Unlike commercial supply chains, there's only one chance to get it right, where "right" could be defined by lead times, number of patients evacuated, commodity distribution, quarantine effectiveness or aggregate lives saved or lost. Given this relative certainty of involvement, associated costs and global implications, how should the DoD approach managing this critical supply chain? Perhaps the first consideration paid toward getting it right, is to plan and train with those chief-most responsible for the supply chain and its associated measures of effectiveness. This is a recommended approach in leading humanitarian logistics

literature and occurs daily at each of the COCOMs but is limited by nature of geography, frequency of events within that geography and resource constraints which surface as a result of competing interests or events in the region. This becomes a problem as soon as the scope of response exceeds the capabilities or resources of the COCOM, as studied in the four events in this paper. Another consideration must be that cumulative and formal guidance exists to serve the responsible organizations. Guidance which builds on previous experiences, is authoritative and not directive, globally available and used by each of the COCOMs. This kind of guidance would serve to unify global efforts, trace recurring problems and apply enterprise-wide solutions rather than allow stove piped HA/DR capabilities in each COCOM. The problem is, this kind of guidance does not exist. Joint Publication 3-29 serves primarily as a general overview of organizations involved and the process as-is rather than establish a process or set of standards as a building block for further progress. This contrasts many other publications which provide such guidance. Publications such as 4-10: Operational Contracting Support which shares a need for enterprise resource alignment, or 4.0: Joint Logistics, which has synchronizing efforts outlined in sections titled “Joint Logistics Planning” and “Executing Joint Logistics”. Instead what’s currently available exists within some of the COCOMs but isn’t necessarily known of or used by the others. For example, USPACOM has the Center for Disaster Management and Humanitarian Assistance where PACOM Commanders may access training, reference materials and other quality resources but this is not an option available to CENTCOM. This is a problem. Where can Commanders go for appropriate training which transcends geographic boundaries,

apportioned resources and the PCS cycle? Gaining on the job training while responding to one of these events is the unfortunate reality many military members face.

Research Focus

The boundaries of this study fall between 2000-2015 and specifically target HA/DR events which occur outside the contiguous United States (OCONUS). By beginning at the year 2000, this study accounts for developments in communications technology, which allows for studying whether this particular mission set has been affected by the removal of barriers previously encountered when operating in remote and undeveloped regions. Additionally, the timeline not only provides for ample case studies and after action reports (AAR), but allows for the inclusion of a variety of events. Within this range we find crisis related to tsunami, earthquake and epidemic, directly affecting societies from the third to the first world in terms of development, across three Geographic Combatant Commands at varying distances from the United States. This variety provides the best opportunity to isolate systemic organizational issues from those occurring as a result of unique and isolated circumstance.

Furthermore, by limiting the research to those OCONUS HA/DR events, the nature of the questions posed changes. Resources and manpower, such as State funding, the National Guard and the Federal Emergency Management Agency, which are traditionally earmarked for domestic response, are minimized. This helps to clarify the issues studied and hone overall focus as we remove some of these uniquely state-driven dependencies, processes and relationships with other federal agencies.

Investigative Questions

The following questions served to guide this research:

- **Primary:** Is the Joint Task Force the most appropriate command structure for OCONUS HA/DR event response?
- **Secondary:** Can we optimize the DoD's response to HA/DR by further leveraging TRANSCOM and KPI/CSF identification?
- **Tertiary:** Does the DoD organize, train and equip to improve its position as lead enabling (supporting) agency over time?

The answers to these questions begin with understanding the nature and quality of HA/DR responses within the window of the study. Additional artifacts such as Joint Staff-level presentations, reports from consultant firms, Contingency Plans (CONPLANS), emails and subject matter expert testimony are also used. Through this analysis, additional questions must be asked in order to provide qualified or quantified justification for answers to the three leading research questions. They are:

- Should TRANSCOM become the lead enabling (supporting) agency within the first 72hrs of an OCONUS HA/DR event?
- Is it possible to improve DOD HA/DR effectiveness by reducing TRANSCOM response time?
- How was NGO/NPOs integration anticipated and resourced?
- What were the pre-planned key process indicators?
- What were the pre-planned critical success factors?
- What critical success factors or key process indicators were reported?
- Were communications handled effectively and efficiently?

As the answers to these questions take form, we must also consider the DoD's doctrinal response. Is there one? Should there be? The answer to this is important as it shapes what the organization considers to be fundamental and enduring with regard to response-driven decisions.

Assumptions/Limitations

Assumptions

The DOD and DOS want to improve their supporting capability during HA/DR events

Simply put, benefits from this research may be of interest to those addressed in the study. In other words, this researcher believes the leadership associated with each organization agrees there is room for improvement. Assuming this creates a common ground between those directly involved in the response and those analyzing it through the various after action reports and lessons learned. Both sides are interested in improving the response whether directly involved or researching it. For example, this researcher would ask those with first-hand experience and those researching: "what was the single biggest barrier to mission accomplishment?" and immediately receive answers regardless of responsibility level within the organization.

Some deliberate plans may never be used

This assumption sets the stage for a value proposition related to the research while at the same time contrasting what we (DOD) plan to do and what we find ourselves actually doing. A significant amount of resources are associated with the creation and management of various plans throughout the Geographic Combatant Commands and serve to answer the question: what if? With this assumption, this researcher asserts that

there is a 100% chance of a major HA/DR event occurring in the near future and seeks to move the nature of the question from "what if" to "when?" This certainty also serves to place a degree of criticality on discovering and addressing systemic issues through the research associated with organizational response.

Key Process Indicators and/or Critical Success Factors Improve Supply Chains

Found predominantly in literature pertaining to commercial logistics, these KPI's and CSF's serve to gauge the effectiveness of a supply chain and ensure success respectively. While KPI's may be thought of as measures and metrics, CSF's are those factors which more closely align with strategic goals and interests. There's no reason to believe that applying both to a HA/DR supply chain would elicit anything different than what's found commercially. This helps to direct the research toward those KPI's or CSF's which the DoD and DoS have the capability to measure and those which are somewhat transferable between differing operations, earthquake vs. epidemic, for example. By shaping the focus accordingly, the research may then distill the myriad of possible indicators and factors into those which offer the greatest return on investment for the organizations using them.

Access to research data is limited

The understanding that a variety of data exists pertaining to DoD HA/DR operations is maintained throughout the research process. Data from the DoS similar to those after action reports or lesson learned reports associated with the DoD, is presumed to exist. Furthermore, the data used for this research is predominantly Air Force-centric and does not include specific perspectives from sister services or NGO's/NPO's not employed by

the United States Government. The knowledge that this limited perspective may not be shared by other agencies involved, serves to cage the recommended courses of action toward those items which affect all parties such as: Joint Doctrine, command and control, communications and holistic logistic operations.

Limitations

Risk aversion

There is scant evidence to suggest that any major HA/DR operation undertaken by the DoD in support of USAID or DoS has failed in any significant way. Indeed, there are numerous reports hailing these operations as overall successes…even by those immersed in the HA/DR logistics community. Inevitably, this leads to the thought: "if it ain't broke…" and the notion that any change to the current method of operations poses more risk than reward. While this limitation serves as a potential deterrent to research it also provides focus. In this case, the focus to understand those challenges which are truly recurring in nature for each organization studied.

Data type

Many reports on military HA/DR operations are classified at levels above this paper and will not be used. This will allow for normal dissemination channels and sharing of information with the widest array of participatory agencies and personnel. Associated limitations occur with the scrutiny and discussion of classified systems the DoD uses to operate such as the Joint Operation Planning and Execution System (JOPES) and related plans which are also classified Secret or Top Secret. Specifically, the contingency plans

associated with HA/DR operations offer additional insight as to the planning quality used by each of the COCOMs…a measurement that without these plans is hard to capture.

II. Literature Review

HA/DR Supply Chains

There are many unknowns related to global HA/DR supply chain operations but it's understood their need will continue to grow as our world integrates and populations grow. (Gooley, 1999; Korpela, 1996; Kunz, Reiner, & Gold, 2000; Overstreet & Hall, 2011; Tomasini, 2009; Van Wassenhove, 2006). As the acronym suggests, these supply chains may exist is support of a humanitarian assistance, disaster relief operation or both and considering the probability that relief will arrive via international effort, a great deal of complexity is added to the system. To better understand the body of work devoted to the study of this complexity, Overstreet (2011) analyzed 51 academic articles in order to shed light on predominate focus areas and found that over 50% of the academic research relates to planning, policies and procedures.

While there could be many possible explanations for this focus, the resulting published works lend credence to the notion that planning, policies and procedures remains a target rich environment for the study of HA/DR logistics albeit related to the ease of data acquisition or hypothesis generation. As of 2013, fewer than five academic articles have been published pertaining to personnel or information technology and communication respectively, even though both are considered vital to HA/DR supply chain performance (Kunz, Reiner, & Gold, 2000; Long, 1997). Said differently, there appears to be a greater focus on planning a HA/DR supply chain than managing one…a focus which is shared by the DoD. On the surface, this makes sense due to the very nature of HA/DR strategy

formation which is typically unknown prior to event occurrence. The associated risk however, is executing a plan without appropriate measures of effectiveness established beforehand. A risk exacerbated by complexity associated with this particular supply chain.

The Military Fit

One such variable adding to the overall complexity is the life cycle of a HA/DR supply chain. As described by Tomasini (2009), they follow a unique pattern of ramp up, sustainment, and ramp down where coordination based on objectives and stakeholders evolves in concert with the three phases. Of all the phases, the initial ramp-up phase is the most time sensitive as various bottlenecks, discord and environmental unknowns threaten the establishment of a lifesaving logistics effort. This knowledge appears to corroborate the focus within the community toward planning, policies and procedures perhaps because you can't manage what you haven't begun. From a command and control perspective, this has a peculiar effect on the stakeholder's ability to make supply chain decisions. Donini, (1996) explains this phenomenon: "To this end and to expedite solutions, coordination occurs more often by command than consensus due to efficiencies gained through centralization of resources, tasks and information." It's during this coordination by command and ramp up phase, which TRANSCOM historically facilitates or enables the creation of a supply chain. As stated in DoD guidance:

"Normally, military forces operate in the initial stages of disaster relief to fill immediate gaps in assistance; military objectives will be to enable civilian control of disaster relief efforts (HN, international, or other USG departments or agencies)" (JP 3-29, 2014).

Describing how to best facilitate the transition between the phases described by Tomasini or how to "enable civilian control" is not provided. This blurring of lines or lack of the who, what, where, when and why relating to transfer of authority, exists both in military and academic literature. Again, great emphasis is placed on establishing initial ports of debarkation for the logistics effort with little direction provided for follow-on management, time-phased operations or general success factors as they may be applied toward effectiveness. The result, is the lack of a time-phased approach toward establishing the HA/DR supply chain as a manageable capability. The benefits of a time-phased approach will be discussed in greater detail within the proposition section of this paper as it is an operational planning concept with which the military is intimately familiar. Understanding the nature of a HA/DR supply chain encourages awareness of similar processes found outside the DoD.

Benchmarking & Critical Success Factors

Thankfully, in an effort to encapsulate measurements of performance, considerable work has been accomplished comparing HA/DR supply chains to their corporate counterparts. There are many benefits to doing this to include the concept of benchmarking. This search for best practices was discussed by Korpela in his work on

the Analytical Hierarchy Process (AHP). This process is used to address four primary challenges found in corporate logistics: 1) the customer service explosion, 2) time compression, 3) globalization of industry, and 4) organizational integration (Korpela, 1996). The similarity to those problems found in HA/DR supply chains is stark. Compared to HA/DR supply chains, it's perhaps the fourth challenge wherein the majority of complexity is added as a vast number of relationships between supplier and distributor materialize rapidly with minimal pre-execution integration. Korpela also used the AHP in conjunction with those logistics critical success factors (CSF) to produce a framework by which strengths, weaknesses and the performance of enablers could be measured.

CSF's are namely those characteristics, conditions or variables that when properly sustained, maintained or managed can have a significant impact on the success of an organization (Pettit, 2006). While this allows for the theoretical creation of numerous CSF's, all must facilitate the analysis of strengths found within a particular supply chain to meet the overall goal of improving logistics performance (Korpela, 1996). Choosing the correct CSFs and ensuring that they're connected within the overall strategy of disaster relief rather than discrete activities is vital to the performance of the supply chain. Pettit describes this process in depth, including the various drawbacks of applying commercially gleaned CSFs in a HA/DR context:

"The lack of direct transferability of commercial logistics and supply chain solutions is exacerbated by the lack of technical knowledge which exists in many aid agencies as there are an insufficient number of experienced logisticians working in the HA community" (Pettit, Beresford, & Ding-Kuo, 2006)

To summarize, identifying CSFs is for naught if the personnel managing the process lack the knowledge to execute. Tying this notion back into the fourth challenge presented by the AHP, may then lead to the integration of willing but untrained process managers. Training issues like these highlight a broader problem found within temporary supply chains: where to invest? It's not particularly surprising that a significant contribution toward the overall HA/DR supply chain effort is shouldered by volunteers. Kunz addresses the two most commonly pursued investment solutions: 1) pre-positioning relief inventory in countries prone to disasters, 2) investing in disaster management capabilities (DMC) related people and processes (Kunz, Reiner, & Gold, 2000). These DMCs may include training staff to be prepared to operate in a new country, developing and disseminating best practices on the basis of past disasters, educating the local population, pre-negotiating agreements with suppliers and governments, harmonizing procedures with local government requirements, or securing cooperation with local governments and NGOs (Kunz, Reiner, & Gold, 2000). Additionally, Kunz's research demonstrated that these DMCs fit directly into Van Wassenhove's five key elements of intangible preparedness activities (appendix 1). While investing in both pre-positioned inventories and DMC resulted in positive results for beneficiaries, investing in DMC

reduced lead times by up to 67% at a significantly lower cost than prepositioned inventories (Kunz, Reiner, & Gold, 2000).

Targeting Investment

Literature suggests HA/DR supply chains have a predictable but temporary life-cycle, managed by agencies comprised of largely untrained individuals who would benefit from CSF identification and DMC investment prior to event occurrence. Which organizations then, from a customer perspective, would illicit the greatest return on investment along these lines? When considering OCONUS HA/DR supply chains, the United States Government has proven willing and capable of responding to a variety of disasters with the Departments of State and Defense chief-most involved. Furthermore, these agencies maintain organic capabilities critical to the establishment and management of HA/DR supply chains on a routine basis. From Joint Publication 3-29: Foreign Humanitarian Assistance, the acknowledgement of these capabilities and the organizations which manage them are clearly stated and rest with the establishment of relationships between a Joint Task Force created by the DoD and USAID, managed by the DoS (JP 3-29, 2014). Literature associated with both organizations offer additional insight as to where and how various capabilities are managed.

Beginning with the capability to provide adequate Command and Control during crisis, we consider official guidance from both the DoD and DoS. Inherent to this capability is the authority to execute strategy and the responsibility to manage execution.

From the standpoint of the DoD, this capability is assumed by both USAID and the Department of State where both are seen as separate supported agencies during a HA/DR effort…despite the most recent organizational chart placing USAID under the Secretary of State (Appendix 2). To clarify, the DoD states that either organization may be supported depending on the nature of the operation and direction given by the USG (JP 3-29, 2014). This has led to several interfaces occurring between DoS and DoD when considering interagency coordination before an event occurs. The significance of these interfaces addresses the potential focus areas for investment in DMC.

DoD Overview

Determining how the TRANSCOM plans for HA/DR events sets the stage for an appropriate literature review. What processes are supposed to be established to ensure an effective and efficient response and among those processes, what are the critical success factors the Command measures? As the answers to these questions combine with recommendations from current literature, case studies and various interviews with key stakeholders, it becomes clear that not only the TRANSCOM but the DoD lack established processes which might result in the establishment or management of CSF's within the supply chain. The next task is to then understand the value of these practices within supply chains which currently exist and compare and contrast those to what might be created in response to a HA/DR operation. The ultimate goal is understanding how to measure performance and determining if this measurement may be applied to operations historically carried out by the DoD and DoS.

Focus: Why Performance Measurement

A significant reason for researching whether or not various practices, benchmarks or processes may be transferrable between a commercial and HA/DR supply chain is due to some simple but dramatic differences between them. One stand-out in particular, is that HA/DR supply chains are not driven by market forces (Van Wassenhove, 2006). What's similar however is that a customer still exists and a supply chain is used to deliver goods or aid from point of origin to point of consumption. Having the ability to measure various key processes and indicators throughout the supply chain can have a tremendous impact on the success of the overall mission, regardless of it being by driven by a humanitarian or profit oriented strategy. Also, for both HA/DR and commercial enterprise, logistics provides a rich source of data, provided one knows what to measure. Data which may be used to make decisions before message traffic from the customer is received and understood or projecting demand which is never sent but understood from well-established practice. Decisions such as optimizing distribution nodes and networks, mode selection or push-pull boundaries. Another reason for studying performance measurement related to logistics is the cost incurred by the United States Government and participating agencies. Unlike commercial supply chains, expenses are uniquely skewed with HA/DR efforts, as the supply chain most often represents the greatest percentage of overall costs (Van Wassenhove, 2006). Interestingly, these are costs not associated with price as in traditional supply chains and these costs aren't always related to procurement or the organization transporting them but are often sunk costs incurred by humanitarian donors. While not all of these donations

are solicited, it's these donors which demand transparency and performance measurement to ensure their donations of aid are actually reaching those in need. This transparency can have major ramifications toward the lead agencies: DoD and DoS. As seen with the Haiti earthquake response effort, the external demand grew so rapidly that it began to directly affect the supply chain in several negative ways. In several instances these negative effects could have been mitigated if the process owners had known how to measure performance indicators and critical success factors. As it was however, many processes were not in place and the overall response suffered.

DoD Involvement

A critical enabling partner in HA/DR operations is the United States Government, specifically the Department of State (DoS) and the Department of Defense (DoD). While the DoS has several established agencies such as USAID and the Office of Foreign Disaster Relief whose primary mission set revolves around HA/DR operations in general, the DoD does not have this established as a primary mission. Due to DoD's global reach however, the capability brought to the table in time of need, can't be ignored. The primary Command responsible for this type of response has historically fallen to the United States Transportation Command. Due to these operations taking on priorities outside TRANSCOM's primary mission set, the DoD response has been akin to a fire fighting mentality with little effort paid toward looking at HA/DR through the lens of strategic supply chain management. Additionally, just as humanitarian supply chain development practices lag commercial sectors by about 15 years, the DoD does also...but with much less muscle memory maintained within the organization (Van Wassenhove,

2006). Literature found within the DoD explains why this may be occurring but nonetheless, this leads to fundamental lack of preparedness which is crucial to mitigating the effects of these disasters.

Within TRANSCOM, AMC bears the brunt of the initial logistics response due to time criticality. However, defining the current processes associated with AMC's HA/DR response is difficult simply because of the lack of an established or existing process. Currently the process exists to task a response force without linking a desired end state for the customer to any strategic level effort. Specifically, AMC historically tasks a Contingency Response Wing, assigning a 12-hour time limit for those forces to assess the situation, develop the appropriate product mix and physically deploy. Given certain geographies, this particular capability is globally unmatched. At the same time, there's a Geographic Combatant Command effort to also establish relief efforts, coordinate with non-governmental/non-profit organizations and establish appropriate lines of communication. A particularly effective approach to creating the right type of process for our customer begins with defining the effectiveness of the current organizational response. To assist in this regard, we look at case studies and after action reports (AAR) which affords those most intimately involved the time to reflect, review and recommend with regard to a particular HA/DR effort.

Following a review of the case studies and AARs related to these events, it's clear that the TRANSCOM excels in specific areas related to HA/DR. Many of the capabilities brought to the table are also those needed in wartime, capabilities such as site

assessment, capacity and throughput improvements as well as many other general airfield improvements. With Operations Unified Response and United Assistance, a Joint Task Force Port Opening (JTF-PO) team was deployed and demonstrated just how quickly the DoD could assist the international efforts. In Liberia alone, a JTF-PO team doubled the existing aircraft capacity of Roberts International Airport and was responsible for enabling 24/7 all-weather operations, both of which had a tremendous impact on overall operational capacity and throughput (Barnson, 2014). Capacity and throughput however aren't effective at measuring success. Also noted within these AARs are multiple problems with communications systems, command and control and interaction with external agencies. What seems to have been significant friction areas in Haiti resurfaced in Liberia (CRG, 2010; JTF-PO, 2014).

Analysis

The JTF-PO organizations aren't the only ones responding to an HA/DR operation within the DoD. The Geographic Combatant Command is also responding and at times repeating the same processes by those within TRANSCOM (Barnson, 2014). This enterprise-wide effort demonstrates multiple redundant and reactionary processes which lead to many of the problems addressed in this paper and although the CRWs provide a world-class capability, these forces aren't leveraged as a lead integrating agency. In fact, during the critical first days of response, AMC lacks a single coordinating authority for the overall effort instead relying on situation reports (SITREPS) from the field though which requests for information (RFIs) are addressed and issues resolved. This isn't due to lack of capacity or capability however as

TRANSCOM's JTF-PO's have proven to be optimally positioned for the provision of a tactical sight picture and also exist within a contiguous chain of command. As it stands currently, at no point in the process is there a lead agency responsible for the establishment of a common operating picture (COP) which includes measurements of success (critical success factors) or key process indicators (KPI). Resultantly, the customer and organization suffer.

Command Relationships: DoD & DoS

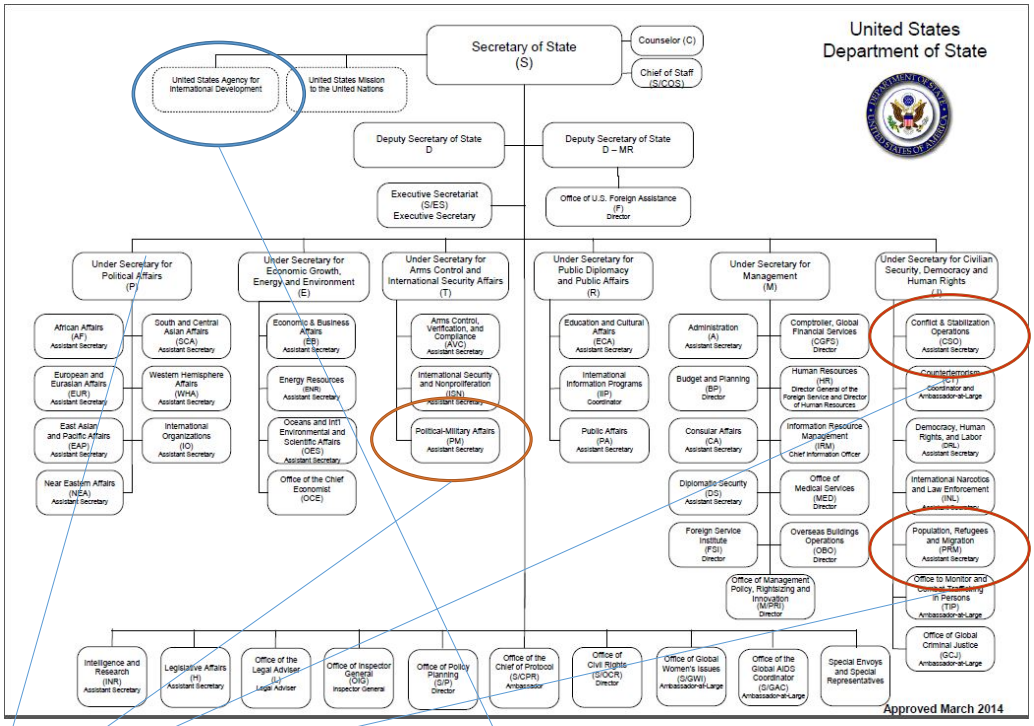
Within USAID, the principle interface begins with the Office of US Foreign Disaster Assistance (OFDA) and the Office of Civilian Military Cooperation (CMC) of which both are cited as: "key offices that interact with DOD during Foreign Humanitarian Assistance operations" (JP 3-29, 2014). These offices fall under the Bureau for Democracy, Conflict, and Humanitarian Assistance (DCHA) which is one of ten total functional and central bureaus (appendix 3). What's unique to the OFDA is the "delegated responsibility to provide international disaster and HA and coordinate the USG response to declared disasters in foreign countries" (JP 3-29, 2014). Again, from the DoD perspective it's this office which is responsible for formulating the overall strategy and interfacing with other agencies, NGO's and foreign offices to support the effort. When we look at the primary interface between the DoS and DoD however, the waters muddy.

According to the DoD, the Bureau of Political-Military Affairs (PM) is the principal link between DOD and DOS (JP 3-29, 2014). Specifically, this bureau is a sub-

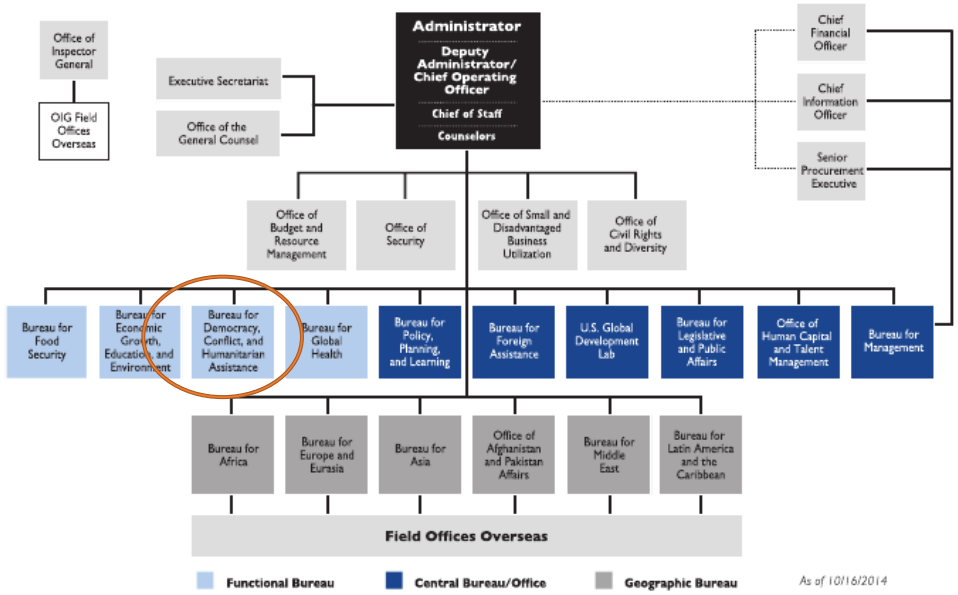
branch of the Arms Control and International Security Affairs Department and has no direct line of coordination or authority to USAID yet their role is crucial to strategy development to the overall HA/DR effort prior to event occurrence. Outside of this department rests two functional bureaus both heavily involved with HA: The Bureau of Population, Refugees, and Migration (PRM) and the Bureau of Conflict and Stabilization Operations (CSO) which "engages in conflict prevention, crisis response, and stabilization, aiming to address the underlying causes of destabilizing violence" (JP 3-29, 2014). The Under Secretary for Civilian Security, Democracy, and Human Rights oversees these functional bureaus and has no lines of authority to USAID or the Bureau of Political-Military Affairs.

These relationships represent the current organizational interfaces by which the formation of Command and Control strategy is expected to occur (fig 1).

DoD



USAID



(Figure 1: DoD & DoS Organizational Interface)

Additionally, according to DoD policy, the primary entity responsible for

understanding these relationships during a HA/DR event are the GCC commanders, staff

and planning cells. This is important to overall DMC investment in the form of training and strategic planning due to the specific experience and capabilities these agencies maintain. An example of such capabilities, which closely align with the concepts associated with critical success factors and subsequent value to HA/DR operations may be found within USAID. In the USAID Field Operations Guide, we see considerable focus paid toward HA/DR strategic-level assessments, which are notably absent in comparable DoD guidance (USAID, 2005). USAID provides 9 reasons why initial assessments matter to include making "recommendations…that identify and prioritize the actions and resources needed for immediate response" which truly sets the stage for the both effective strategic level efforts and establishment of unified Command and Control efforts (USAID, 2005). These reasons are followed by guidance which allows for the completion of successful assessments and closely mirrors the value proposition associated with CSF's applied toward HA/DR supply chain operations. Specifically listed are eight keys or factors which allow for the completion of a successful assessment (appendix 4). Several of these correspond to CSF's found in HA/DR supply chains such as (i) distinguishing between emergency and chronic needs and (ii) assessing needs and vulnerabilities in relation to capacities. Unfortunately, USAID's Field Operation's Guide uses vague and conditional terminology when referring to the DoD interface in their Appendix F entitled: Working with the Military in the Field. Specifically, the DoD force structure and basic capabilities are described but leave out crucial items necessary to command and control such as communication pathways, command and control authorities, (fig. 2) common-user capabilities or preferred service selection given various

logistics supplies, services and support (USAID, 2005). The following chart outlines those capabilities possessed by the DoS and DoD with regard to HA/DR operations:

Capabilities Matrix

Capabilities Matrix for USG HADR Operations

	Strategic Planning	On-site Assessment	Command & Control	Organic Global Response	Total Supply Chain Engagement
DoS					
Political Military Affairs	++	-	+	-	-
Conflict and Stabilization Operations	++	-	+	-	-
Population, Refugees & Migration	++	-	+	-	-
Office of U.S. Foreign Disaster Assistance	++	++	+	-	+
DoD					
Geographic Combatant Command	+	-	+	-	+
USTRANSCOM	-	-	+	++	++

Key

Capability

- \- Not possessed
- \+ Created in response/JIT
- ++ Inherent

(Figure 2: Capabilities Matrix for USG HA/DR Operations)

US Transportation Command possesses the unique strategic capability to respond globally in response a variety of events…the fastest of which is strategic airlift provided by AMC. In the four cases studied in this paper, this capability was used every time. To understand the efficacy of the AMC supply chain and their inherent responsibility, we must understand the importance and relevance of critical success factors. Namely, those

characteristics, conditions or variables that when properly sustained, maintained or managed can have a significant impact on the success of an organization (Pettit, 2006). While there are numerous critical success factors in any supply chain, seven appear most frequently in humanitarian assistance post-response assessments: effective distribution, strategic planning, inventory management, transportation and capacity planning, information management, human resource management, and supplier relationships and sourcing.

Effective distribution comprises the tasks which allow AMC to deliver the right product to the right person at the right time. In the case of HA/DR, the product is the logistic supplies, support and services provided by AMC to the nation or peoples affected within the fastest time possible, historically a one-week time horizon. In events past, AMC and by extension TRANSCOM has chosen to measure successful delivery to an Aerial Port of Debarkation (APOD) and not the true customer. With typical Joint Task Force Port Opening Operations, the United States Army serves as the final distribution manager to those in need, extending out a limited distance from the APOD. The effectiveness of the Army element is not captured within the Air Force AAR's and suggests a lack of transcendent KPI's or CSF's. This is a problem for TRANSCOM as to make distribution truly effective, the organization must receive information from the customer and it's in this area where AMC's distribution process specifically breaks down. As a key stakeholder in the overall logistics process and perhaps the one organization which incurs the highest costs of transportation, AMC captures information on the quantity and type of goods shipped but not how those goods met a particular need. There

are multiple problems with this, chief among them being degradation of response effectiveness. Without this information, there is no way to place priorities on certain products for shipment and those products which may have the greatest direct effect are now on equal status with those goods with marginal impact. An example of this was shipping water by air to Haiti. It wasn't until days into the relief operation that the community understood the need for water was very low. AMC paid a tremendously high price for shipping this water in both direct costs and opportunity costs considering space for alternatives.

Inventory management for specific items is another critical activity which if integrated properly, would facilitate an effective response. This process doesn't exist within the organization and as a result, relief supplies suffer visibility degradation as they're removed from the aircraft. There's no central distribution center AMC can access for inventory levels and this constricts the strategic option of turning a pull to a push system, or at the very least, defining a push-pull boundary. From a different perspective, this lack of inventory management limits all direct response efforts to include a cascading effect beyond the DoD to NGO/NPO partners. A similar concept to establishing this inventory management process is what the DoD calls war reserve materiel (WRM). WRM is prepositioned assets associated with projected wartime activities in that specific area of operations (AO). While WRM isn't designed for HA/DR operations this concept of prepositioned materiel has worked in the past for organizations such as World Vision during the Mount Merapi Volcano in 2006 (Fritz Institute, 2004). Here we saw this

prepositioned material effectively save thousands of lives as those affected by the volcano were struck by a severe earthquake shortly after.

Connected to the process needed for inventory management and effective distribution is that of transportation and capacity planning. This is the mode source and geographic mapping, mode consideration, scheduling, contract management and other various activities directly impacting the movement of goods and service capability (Beresford, 2002). In Haiti this area was neglected and resulted in suboptimal mode selection as well as scheduling. The four key areas where process engineering should focus is that of warehousing, transportation, information management and the training of human resources to manage the process (Korpela, 1996, Kunz 2000, Van Wassenhove 2006). This is also a process which greatly benefits from interagency coordination, specifically our NGO/NPO and commercial partners. The World Food Program (WFP) does this to particular effect with the logistics firm TPG. Through proper capacity planning, the WFP takes advantage of seasonal change within the overall transportation structure of TPG thus using excess capacity (Contrill, 2004). This is also beneficial to TPG through the minimization of lost revenue and tax incentive purposes. Although AMC has standing partnerships with governmental and civil organizations such as USAID and the Civilian Reserve Air Fleet, these partnerships are not integrated toward overall capacity and transportation planning. A process which forecasts likely scenarios, maps them and then chooses appropriate mode and scheduling models would prove very beneficial to the relief effort. There is even room to work within existing in transit visibility systems such as the integrated computerized deployment system (ICODES), to

account for additional use of allowable cabin load (ACL). Such a process improvement would have significant impact to the overall operation.

The process of managing information is perhaps the "single greatest determinant of success" when it comes to the HA/DR mission set (Beresford, 2002). Across the spectrum of historical HA/DR relief operations it's understood that command and control (C2) is difficult to establish. In part this is due to the outpouring of response from multiple agencies with multiple interests and not always well aligned. Within AMC, the information which flows through the established Air Mobility Division pathway has been historically timely and accurate but doesn't account for the following critical aspects: interagency information and/or supply chain performance and commodity tracking to point of use. With the capability of establishing an expeditious, forward communications node AMC is uniquely positioned to be a lead integrating agency when it comes to overall response effectiveness. By augmenting the current C2 process with these aspects, overall information management could be greatly improved. Additionally, there is room for a central coordinating authority for these events in the form of a Director of Mobility Forces (DIRMOBFOR) but analysis has shown these individuals lack adequate training to make strategic decisions related to the supply chain (Barnson, 2014, Barrett, 2005).

The remaining two processes which should be reengineered are those of human resources management and strategic sourcing. Both of these processes are critical to any relief effort as case studies have shown that 42% of participating organizations

associated with a HA/DR response will lack qualified assessment personnel (Fritz Institute, 2004). Simply having individuals trained in what to look for and match that against a set of criteria is crucial to starting the response. Within the DoD, these individuals are trained to assess one piece of the supply chain, an airfield for instance but not the other nodes by which the customer relies upon. Related to human resource management is the organic capability needed to source logistic supplies, support or services in a strategic way and while AMC does a fantastic job of loading and transporting supplies, there is no process for securing those commodities across any kind of price or time threshold. Additionally, many of the established relationships exist outside of AMC and rest more often between the commercial entities and those NGO/NPOs responding. This becomes a problem as AMC can no longer measure key process indicators such procurement lead times, supply reliability and customer impact...all important aspects of supply chain management. Time is another enemy of efficient response and without establishing these relationships prior to an event, AMC will be hampered. Such contracting models as indefinite quantity, indefinite delivery (IDIQ) are effective in providing a fast response while maintaining a longstanding supplier customer relationship.

Overall, there is a tremendous amount of literature serving to establish best practices and processes within a HA/DR logistics operation. If these processes were to be established by TRANSCOM via AMC, the U.S. government may potentially amplify an already world class capability rendering lifesaving aid to millions and furthering our strategic national interests.

III. Methodology

The majority of this paper's research methodology is qualitative in nature, specifically using the Case Study Method and Grounded Theory**.** Yin states: "the case study is preferred in examining contemporary events, but when the relevant behaviors cannot be manipulated" (Yin, 1984). This seems a perfect fit for the HA/DR world and focuses in on the "decisions" being made before, during and after a response. Also fitting is that "case studies are generalizable to theoretical propositions and not populations or universes." This, I think, aligns very well with the point of doctrine and how we position ourselves within the DoD to achieve various ends. The "ends" in HA/DR are effectiveness of response but the devil is in the details. This is perhaps why it's so challenging to "get right." As Yin elaborates: "you would use a case study method because you deliberately wanted to cover contextual conditions-believing that they might be highly pertinent to your phenomenon of study." Bullets B and C below drive the association home:

1. A case study is an empirical inquiry that
    a. Investigates a contemporary phenomenon within its real-life context, especially when
    b. Boundaries between phenomenon and context are not clearly evident
    c. Relies on multiple sources of evidence, with data needing to converge in a triangulating fashion and benefits from the prior development of theoretical propositions to guide data collection and analysis

In conjunction with grounded theory, “grounded theorists seek to understand the social processes that are problematic for the people involved. A grounded theory study primarily uses interviews, but also uses observation and document analysis. It is a systematic approach to qualitative research that facilitates theoretical abstraction from field data through a process of constant comparative analysis” (Mello, 2012). It’s my belief that this compliments the study of the HA/DR realm because it amplifies the case study data. Additionally, it provides a social narrative as to the why behind the targeted decision and fills in gaps in context otherwise missed by the scripted AAR.

There are several approaches within this associated methodology which are used for this research. Besides the gathering of artifacts previously catalogued, the “field based” approach was also used to narrow focus or uncover alternative artifacts. For this research, this specifically took the form of interviewing key stakeholders associated with the four HA/DR events studied. These stakeholders were actively engaged in the operations studied and assumed a variety of roles throughout the chain of command to include a DIRMOBFOR, CRG Squadron Commander, pilots of multiple airframes and support personnel managing supply chain operations on the ground. This engagement helped shaped follow-on questions, artifact recovery and added perspective on the current HA/DR processes by those managing them.

Process Overview

It is perhaps of no little significance the path by which this research manifested was somewhat unorthodox. To begin with, the hypothesis was nearly a foregone conclusion as the artifacts first explored were lessons learned affirming that, at a fundamental level,

improvements to the HA/DR enterprise could or should be made. This changed the process of discovery and shifted the focus toward comparative analysis as stated in grounded theory. Which issues persist in the organization and why? Amassing the data needed to draw such parallels became the next challenge and it was then understood multiple cases were needed for examination which could accomplish the following:

- Account for differences in geography, duration and type
- Span a period in which the world experienced a rapid development in communications capability
- Reflect an organizational construct comparable to the present structure
- Span a period by which various lessons learned could be feasibly incorporated into the organizational processes

Through these criterion, the research stood a better chance of withstanding situational or circumstantial scrutiny paid toward the boundary analysis associated with the case study method. For example, if it was assumed a boundary existed related to the distance associated with the resulting response or supply chain, one could now compare the response in the Southwest Pacific with that of Haiti or Africa. Ultimately, the boundaries associated with each of the criterion could now be compared and assessed leading to a better understanding of persistent internal issues and root cause triangulation.

IV. Analysis

Overview

In this chapter I compare and contrast four significant HA/DR operations wherein the DoD played a significant supporting role. They are: Operation Unified Assistance, Operation Unified Response, Operation Tomodachi, and Operation United Assistance. These operations inclusively span a ten-year time period. Notably, all are OCONUS and have a minimum operational period of 45 days. The intent of this chapter is to analyze the DoD's and more specifically USTRANSCOM's response as associated with the processes critical to logistic effectiveness in a HA/DR environment and to assess what progress has occurred in this mission area throughout the time horizon. I'll begin by introducing the context within which the DoD operates and discuss the organizations chiefly responsible for response along with a general description of their approach to execution. From there, I'll move on to categorically assessing each Operational case study for overall response, KPI and CSF establishment, command and control and communications and information management.

DoD's First Responders

As previously mentioned, a critical enabling partner in HA/DR operations is the United States Government, specifically the Department of State (DoS) and the Department of Defense (DoD). While the DoS has several established agencies such as USAID and the Office of Foreign Disaster Relief whose primary mission set revolves around HA/DR operations in general, the DoD does not organize, train and equip to the

same degree as these supported agencies. Due to DoD's global reach however, the capability brought to the table in time of need, can't be ignored. To date, this research demonstrates the DoD response has been akin to a fire fighting mentality with little effort paid toward looking at HA/DR through the lens of strategic supply chain management. Additionally, just as humanitarian supply chain development practices lag commercial sectors by about 15 years, the DoD does also...but with much less continuity maintained within the organization **(Van Wassenhove, 2006)**. When examining doctrine and Joint Publications pertaining to HA/DR operations, it is clear there is not a results-oriented approach toward HA/DR operations **(JP 3-29, 2014)**. A clear example is provided in Joint Publication 5.0 where decisive points are discussed along with measures of performance and measures of effectiveness **(JP 5-0, 2011)**. The lack of this specified guidance may contribute to lack of preparedness which is crucial to mitigating the effects of these disasters.

Within USTRANSCOM, AMC bears the brunt of the initial logistics response due to time criticality. However, defining the current processes associated with AMC's HA/DR response is difficult due to the nature by which requirements manifest in the wake of an event. Currently the process exists to task a response force without linking a desired end state for the customer to any strategic level effort. In a word: capacity. Capacity is created and measured. If a lot of additional capacity is created this is celebrated, if a little is created, this is also celebrated. In fact, much of this capacity is created in the absence of forecasting or specific demand signal assessment. Here's how it works with regard to

our first responders within AMC. TRANSCOM, in response to an order, tasks a Contingency Response Wing (CRW) via AMC. This CRW is then responsible to assess the situation, develop the appropriate product mix and physically deploy a tailored force package within a twelve-hour window. Given certain geographies and situations, TRANSCOM may also augment this force with Army personnel to form a JTF-PO but in either event this particular capability is globally unmatched. At the same time, there's a Geographic Combatant Command effort to establish relief efforts, coordinate with non-governmental/non-profit organizations and establish appropriate lines of communication. This enterprise-wide effort demonstrates redundant and reactionary processes which lead to many of the problems addressed in this study and although the CRWs provide a world-class capability, these forces aren't leveraged as a lead integrating agency. In fact, during the critical first days of response, AMC has been unable to appoint a single coordinating authority for the overall effort, instead relying on situation reports (SITREPS) from the field though which requests for information (RFIs) are addressed and issues resolved. As it stands currently, doctrine establishes the Joint Task Force (JTF) as the most probable lead agency responsible for the establishment of a common operating picture (COP) but does not take into account preponderance of effort or holistic supply chain management responsibility **(JP 3-29, 2014)**.

Following a review of the case studies and AARs related to these events, it's clear that the TRANSCOM excels in specific areas related to HA/DR. Many of the capabilities brought to the table are also those needed in wartime, capabilities such as site assessment,

capacity and throughput improvements as well as many other general airfield improvements. With Operations Unified Response and United Assistance, a Joint Task Force Port Opening (JTF-PO) team was deployed and demonstrated just how quickly the DoD could assist the multinational effort. In Liberia alone, a JTF-PO team doubled the existing aircraft capacity of Roberts International Airport and was responsible for enabling 24/7 all-weather operations, both of which had a tremendous impact on overall operational capacity and throughput (JTF-PO, 2014). Unfortunately, capacity and throughput aren't measures of performance or effectiveness as captured by this research. Also noted within this study are recurring issues related to processes critical to HA/DR success. These include those pertaining to communications systems, command and control and interaction with external agencies. What seems to have been significant friction areas captured in the 2004 Asian Tsunami are repeated throughout the following decade.

Case Assessments

Overall response

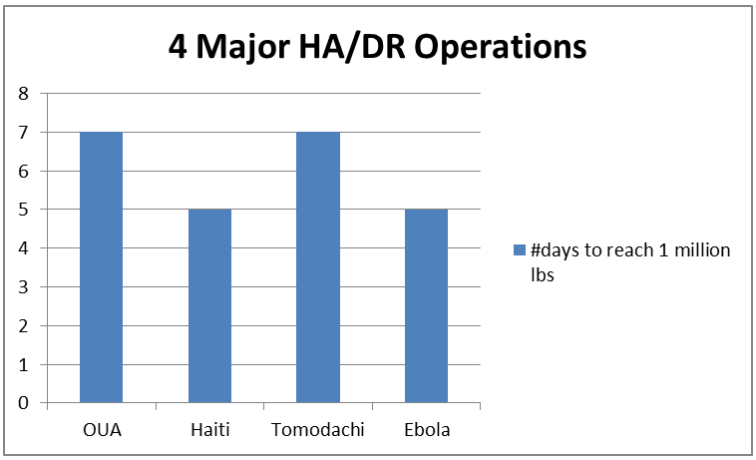
With regard to HA/DR response, the DoD can be gauged by multiple factors but there are those which stand out among the rest and serve to establish boundaries within which a measurement of effectiveness may be reached. This report characterizes this response according to available literature on the topic and doctrine established in Joint Publication 3-29: Foreign Humanitarian Assistance. Specifically assessed is the DoD's

speed of response, integration of NGO agencies and transition of responsibility to non-governmental or host nation entities.

In a commercial supply chain, the time interval between a customer placing an order and receiving an order is referred to as lead time and is often measured as one of the top critical factors in a successful supply chain (Korpela, 1996). When it comes to humanitarian relief operations, the order placed may be inferred as the specific need of the affected populace and the time in which this aid is delivered is just as critical to measuring success. This time interval may be heavily influenced by a variety of factors unique to the DoD and must be considered in the overall assessment. One consideration within this rapidly created supply chain is the DoD's authority to prioritize order fulfillment while at the same time having very little control with regard to procurement. As seen at multiple distribution points during Operation Unified Assistance (OUA), there was no record of what organization the cargo being moved belonged to (Barrett, 2005). This lack of accountability undermines the organizations ability to maintain in transit visibility and thereby reduces the supplier's ability to respond to changes in demand. Furthermore, as stated in the JFACC's AAR:

"Without a clear and validated knowledge of what supplies were being lifted on every mission, the JFACC lacked the ability to redirect supplies to new locations if emerging pressing needs surfaced. Additionally, timely operational assessments could not be accomplished due to the lack of knowledge of supplies being transported" (Barrett, 2005).

While this inability to link the front to the back end of the supply chain may adversely impact lead times and overall measures of effectiveness during HA/DR operations, the relative strength of these effects diminish as the capacity of the supply chain grows. For approximately 45 days following the events studied, this capacity is primarily grown via strategic airlift. Considering this and the notion that "the speed of the response is the most critical element of a successful HA/DR operation" (JCOA, 2007), this paper examines the lead time to move 1 million pounds of relief supplies in response to four OCONUS HA/DR events. The figure of 1 million pounds was chosen to reduce the likelihood that the majority of supplies received came by means other than strategic air. Effectively, this threshold is prohibitive of a singular COCOM response effort and must now include those assets which are not organically assigned. This is an important consideration because it illustrates the creation of a supply chain which now extends beyond the familiar area of responsibility unique to each COCOM and requires a more global perspective to adequately manage. The following graph illustrates this as associated with the four HA/DR relief operations assessed.



(figure 3: time to move 1 million tons)

The vast array of stakeholders associated with humanitarian operations makes "coordination and collaboration essential" in dealing with these organizations (JP 3-29, 2014). To this end, several governmental agencies have been established to facilitate civil-military coordination which include but aren't limited to: The Center for Excellence in Disaster Management and Humanitarian Assistance (COEDMHA), The Center for Disaster and Humanitarian Assistance Medicine (CDHAM), Office of Humanitarian Assistance, Disaster Relief, and Mine Action (OHDM) and the Joint Interagency Coordination Group (JIACG). In addition to these agencies, a number of nongovernmental, intergovernmental and private sector organizations also regularly participate in the HA/DR mission set in which the DoD is involved. Ultimately, it's the latter group of agencies through which the majority of relief effort supplies originate, establishing the base of the supply chain. Typically, this supply chain expands rapidly and will require strategic airlift capabilities only found within the DoD. Operation Unified Assistance (OUA) was a prime example of this requirement and saw the development of a supply chain capable of airlifting over 25 million pounds of cargo in a 47-day period (Barrett, 2005). OUA was not only impressive in terms in capacity but also in terms of rapidity, establishing the highest ever short tons moved per day (270) of any previous relief operation (JAFACC/COMAFFOR, 2005). Unfortunately, this report could not find any DoD documents which connected this rapid and robust supply chain to effectiveness. In fact, it was the lack of this connection which drew the attention of the appointed Joint Force Air Component Commander during OUA. As he stated in his 2005

Lessons Learned Report on using pounds of goods delivered for a measure of merit/effectiveness:

> "To facilitate mission accomplishment, measures of merit need to be established early in any operation. The strategy-to-task approach can assist in the assessment process. It is critical to focus on output vice input if the desired effects of HA/DR operations are to be optimized."

Interaction with NGO/NPO's adds an additional level of complexity to any operation and research into their pre-planned integration was conducted. According to reports from Operation Unified Assistance and Unified Response, this was a particularly large problem due to the saturation of various ports from these entities (CRG, 2010). Documented early in 2005, this level of integration was documented as a significant issue for AMC's Director of Mobility Forces (DIRMOBFOR):

> "The DIRMOBFOR remained in Hawaii and had difficulty responding to changing NGO/PVO [private organizations] requirements: dictated means of lift, regimented process for the requesting of lift, heavy airframes jeopardized slot time adherence…" (Barrett, 2005).

This same integration issue resurfaced during Operation Tomodachi in 2011, where "Air Mobility Command (AMC) offered a DIRMOBFOR on the day the earthquake occurred, but the first DIRMOBFOR was not requested and in-place for another five days (PACAF, 2011). In 2010 we observe this to be a repeated issue with Unified Response. Multiple reports mention the necessity of interaction for daily operations but no report accounts for

planning to this end (CRG, 2010, Kingsley, 2010). Rather, reports indicate that these agencies occupied much of the operating area in an ad hoc and unplanned manner:

> "Perhaps if the JTF-PO had arrived sooner, control of the parking ramp would have been achieved before of the situation lost control. By the time the JTF-PO arrived, media, relief workers and NGOs had already set up camp on the parking ramp and were moving around at will" (JTF-PO, 2010).

A leading recommendation from Unified Responses JTF-PO leadership echoed comments made six years earlier by those supporting United Assistance: "Consideration should be given to better inter-agency coordination" (JTF-PO, 2010). Interestingly however, this recommendation did not have an associated office of primary responsibility as typically seen with military AARs, leading this researcher to believe the responsible organization remains unknown through present. The most recent case studied, Operation United Assistance, furthers this assertion with no mention of coordinated NGO/NPO involvement in the DIRMOBFOR, JTF-PO Senegal and JTF-PO Liberia's AARs (Barnson, 2014, JTF-PO Senegal, 2014, JTF-PO, 2014). Not only does this lack of integration occur with the NGO agencies, it also extends to those the DoD directly supports as well. As seen during Operation Tomodachi: "The overall USG response plans were bureaucratic in nature, which often created disconnects between DoD and DoS that hampered a coordinated response to this operation" (PACAF, 2011).

The final category assessed in the four HA/DR events is the ability to transfer authority and responsibility from the DoD to the supported agencies and/or host nation. This is important as it sets many conditions the military must plan for to include request for

follow-on forces (RFF), Unit Type Code (UTC) selection and overall resource allocation and expenditure. A notional timeline for when this occurs is not found in any Joint Publication or document associated with HA/DR planning, nor is it found in any of the AAR's or Lessons Learned (L2) reports from those in the field assessed in this study. As might be expected, the timeline by which this transfer of authority occurred varied greatly between the four responses. There is also no mention of specific indicators by which this transfer should begin to occur or to whom. With Operation Unified Assistance this transfer of authority took 60 days when it was decided that "the UN, NGOs and IOs were ready to take over relief operations" (Barrett, 2005). This was also mentioned in the JFACC's final situation report signaling the end of the military JTF responsible for Unified Assistance. It stated success had been reached through "preparation of plans to assure smooth transition to NGO/HN" (JAFACC/COMAFFOR, 2005). In both cases, no additional information was given with regard to why the transfer occurred when it did. If CSF's were achieved or KPI's demonstrated various logistics improvements, this was not captured in any of the reports. With Operation Unified Response, this transfer happened much more quickly, at approximately 27 days, even though it involved many more (500+) non-governmental agencies than Unified Assistance (JTF-PO, 2010, AMC, HQ, 2010). Why operations in Haiti were turned over 45 percent faster than those in response to the Asian tsunami is not captured and the conditions by which this transfer occurred were also absent in the reports studied. Comparatively, Operation Tomodachi saw an extended timeline, 80 days, by which the Joint Force transferred authority even though it had a previously established presence and the disaster took place in a first-world nation

(PACAF, 2011). Again, the reasons for this are unclear as the parameters surrounding the transition could not be found.

The basic understanding of these required conditions needed for appropriate transfer are crucial to the time-phased planning effort and may affect follow-on forces (RFF), Unit Type Code (UTC) selection and overall resource allocation and expenditure, as previously mentioned. In the three disaster-related cases examined in this study, the RFF process was listed as a significant and recurring problem. Beginning in 2005 with Operation Unified Assistance, the lack of force-flow pre-planning resulted in RFF by various leaders in the organization (Barrett, 2005). This response however resulted in "compartmentalized and inefficient, fragmented planning" which "results in movement delays and creates confusion in allocating resources for different theaters of operation" (Barrett, 2005). According to Air Mobility Command, this is due to the inherent differences between receiving forces via time phased force deployment data (TPFDD) and RFF. The TPFDD is time-phased and "provides a structured approach to flowing the force and its supporting elements through the deployment process through a series of assumptions about the readiness of the force, transportation, routing, timing, etc" (Barrett, 2005). The RFF process "does not take that approach; it remains focused on the major combat forces and lacks the framework to assemble the remaining support and sustainment" (Barrett, 2005). A problem which was revisited again in 2010 with Operation Unified Response and in 2014 with Operation United Assistance, each having Commanders on-site stating the RFF process was a "significant problem" which was "delayed" and "slow to respond" (CRG, 2010, JTF-PO, 2014, JTF-PO Senegal, 2014).

AMC backed their Commander's statements with the observation that: "The RFF/RFC process is not responsive enough to rapidly respond to an immediate crisis such as in Humanitarian Relief/Disaster Assistance operations" (AMC, HQ, 2010).

While the lack of a notional transfer timeline and conditions may have affected how those additional forces were received via RFF, it also affected the equipment sourced via UTC. UTC's are the core building block for force packaging across the DoD and will typically have a time-based consumption threshold for use in the field. Without a notion of when the operation should be moving closer to transfer, this timeline cannot be matched against a particular building block. This lack of understanding was documented during the initial stages of Operation Unified Assistance where "most units arrived without any plan for food, water, shelter" forcing the CRG to "provide it for three weeks" (CRG, 2010). Furthermore, several of the requirements levied on the responding personnel were not supported in duration or frequency with the UTCs brought to include 24-hour air traffic control operations and/or those related to a Regional Air Movement Control Center (RAMCC) (AMC, HQ, 2010). Not long after Unified Response, those involved with Operation Tomodachi filed reports stating the inefficiencies and overall frustration with the RFF process (PACAF, 2011). In PACAF's Lessons and Observations Report, it was noted that the RFF process "was not responsive enough in providing required resources in a timely manner. The entire RFF process is a time consuming process that requires, but does not have, the ability to adjust for the situation and reduce or eliminate unnecessary approval layers not required for a crisis situation" (PACAF, 2011). Four years later, the RFF problems remained. During Operation United Assistance both JTF-PO Senegal and

Liberia listed it as a significant issue stating: “During the RFF process the 123 CRG quickly transmitted RFF requirements for follow-on forces, but effective advocacy with sourcing entities required excessive time and energy and had limited success” (JTF-PO Senegal, 2014) . In Liberia, the JTF-PO captured the impact of the problems associated with the process stating: “The timeline did not allow (nor was participation ever asked for) for the JTF-PO to execute and subsequently provide feedback through the JFC to USAFRICOM in order to influence and tailor the follow-on RFF for the APOD. As a result, initial capabilities, such as air traffic control, airfield management, and weather, were identified late and required additional staff work to ensure the capability was considered for sourcing (JTF-PO, 2014).

When it comes to large scale HA/DR operations, the military has been historically tasked to support USAID with the intent of transferring authority and responsibility back to the host nation and those agencies most capable of supporting a long-term relief effort. While some of the issues related to the RFF process and UTC selection will remain due to unknown conditions related to the event, force deployment timelines and phased deployment operations are critical components to military planning (JP 4-0, 2013, JP 5-0, 2011). Within the HA/DR operations studied, these two components are either ad-hoc, not planned or not reported.

KPI and CSF establishment

Throughout the four cases studied in this paper the terms Key Process Indicator or Critical Success Factor were never used. This isn’t to say various indicators or factors weren’t important or captured and could easily be construed as serving the same purpose

albeit by a different name. What is unique is the lack of depth or breadth seen in establishing these indicators and factors throughout the cases studied. In the 2005, tsunami response effort was led by the Combined Support Force-536 (CSF-536) and faced many challenges related to lack of established CSFs or KPIs referenced in the literature review section of this paper. This manifest in the following statement provided by the JFACC:

"Another challenge to overcome was the lack of priorities for movement. Due largely to the dynamic environment, unfamiliar NGO operations and processes, and initial lack of air mobility and logistics expertise on the CSF-536 staff, OUA was hindered by the lack of clear definition, acquisition, prioritization, and communication of lift requirements" (JAFACC/COMAFFOR, 2005).

Furthermore, "The JFACC elected to use pounds of goods delivered to specific locations as a Measures of Merit since it is an indicator of output—or what is of use to the intended object populations of OUA" (JAFACC/COMAFFOR, 2005). The JFACC then reported values to the CSF-536 staff on a daily basis, solidifying this metric as valued by the lead organization. The establishment of unique indicators or factors extended to Operation Unified Response with the concept of "maximizing throughput" and "reducing ground time" at Port Au Prince (PaP) Airport (CRG, 2010). The benefit to pursuing these indictors was captured in the 12th Air Force's After Action Report: "In 24 hours, the U.S. Air Force increased the PaP airport working Maximum-on-Ground (MOG) six-fold, thereby maximizing the delivery of relief supplies for the Haitian people" (Report prepared by Lessons Learned Directorate, 12th Air Force, HQ, 2012). The JTF-PO

leadership echoed this assessment on reducing ground time stating it "generated a more efficient airflow increasing the throughput" (JTF-PO, 2010). Another indicator used to measure supply chain effectiveness was percentage of evacuees remaining as Operation Pacific Passage launched in the wake of Operation Tomodachi. Here we saw an intense focus on planning a supply chain around evacuating a specific number of personnel and pets where the complimentary indicator of nuclear environmental conditions ensured targeted evacuation (PACAF, 2011). These indicators also remained when the nature of the response changed from disaster to humanitarian assistance. During Operation United Assistance, in response to the Ebola outbreak, the Joint Force Command began to measure lives saved and infection rate reduction. The monitoring of these indicators drove the Joint Force Command toward specified management strategies related to containment construction, security, personnel training and inter-agency coordination and yielded impressive results (Barnson, 2014). As written by the Operation United Assistance DIRMOBFOR:

> "In Sept 2014, prior to commencement of OUA, CDC Ebola estimates in Liberia for Jan 2015 were: 227,000 killed and an infection rate of 1,890 per day. As a direct result of our efforts the actual numbers were: 3,384 killed and an infection rate of 3 per day" (Barnson, 2014).

This research shows establishment of those indicators and factors similar to commercial CSFs and KPIs by the DoD. The five found in this research were:

- Pounds of supplies delivered

- Airfield throughput
    - Reduced ground time
- Lives saved/evacuated
- Infection/exposure rate

While these factors and indicators are pursued by the personnel assigned to the task effectively throughout the response, they were lacking in their ability to provide supply chain transparency and effectiveness for responses of this scale. Without overly restating the value of CSFs and KPIs from the literature review of this section, the five aforementioned factors/indicators used by the DoD in these events fall short of facilitating overall logistics performance as it relates to strategy. Generally speaking, these are the discrete activities warned of by Pettit (Pettit, Beresford, & Ding-Kuo, 2006). For example, pounds of supplies delivered and airfield throughput do not address customer needs met, and lives saved and infection rate reduction don't demonstrate where the strengths of our supply chain are in achieving those ends.

Command and Control

"C*ommand is central to all military action and unity of command is central to unity of effort"* (Department of the Army, 1994). Statements like this and particularly the importance placed of unity of command, are found in numerous publications produced by the DoD (JP 3-29, 2014, JP 4-0, 2013, JP 5-0, 2011, LeMay Doctrine Center, 2013). When it comes to HA/DR operations, unity of command is critical in uniting all the disparate organizations which quickly form in response to an event. In the four events

studied, Command and Control directly impacted the unity of effort across the all responses.

Beginning with Operation Unified Assistance, determining where to establish the Command and Control location signaled the first of many problems related to geography. The JTF, key aerial mobility leaders and staffs were not consolidated until weeks following the initial disaster. Originally the JTF-536 was set up to operate out of Okinawa, Japan but was later moved forward to Utaphao Air Base (AB), Thailand with JTF-Rear remaining in Japan. This repositioning took place approximately one week following the disaster, after many forces had already brought personnel, equipment and relief supplies to the region (JAFACC/COMAFFOR, 2005). The dual-hatted JFACC and DIRMOBFOR, Brigadier General Brooks L. Bash (15th Expeditionary Mobility Task Force Commander – EMTF/CC) was the key leader involved in the strategic aerial delivery of crucial supplies and personnel for the response and was located in Hawaii (JAFACC/COMAFFOR, 2005). General Bash captured this problem in his statement: "As the Commander, JTF 536, and staff were deploying forward, the JFACC met the challenge of dealing with shared decision making between the JTF rear at Okinawa, the USPACOM J-3 in Hawaii, and JTF forward, as the JTF 536 Headquarters stood up" (JAFACC/COMAFFOR, 2005). The geographic separation, difference in time zones and multiple coordination pathways presented rather large barriers for the accomplishment of unity of effort and unity of command. Because of this, there were several negative consequences, the first being command relationship establishment, one of the critical items discussed in JP 3-29 related to humanitarian response. General Bash elaborates:

"Clear command relationships did not get resolved until 15 January 2005 (21 days into the 47-day effort) when CSF-536 published FRAGO [Fragmentary Order] 6. Additionally, CSF-536 air relief and distribution operations were conducted by four separate elements with differing levels of command authority resulting in command and control challenges" (JAFACC/COMAFFOR, 2005).

Another consequence was the request for and tasking of resources in an unsynchronized way. This was seen in requests for augmenting forces for the Pacific Air Operations Center in support of Operation Unified Assistance and the tasking of multiple assets to fulfill mission sets at each of the geographically separate nodes (JAFACC/COMAFFOR, 2005). This resulted in duplication of roles and responsibilities of the AMOCC (air mobility operations control center) and the PAOC (pacific air operations center). These included acquisition of diplomatic clearances, airlift planning functions, and mission monitoring responsibilities (Barrett, 2005). While most issues were eventually resolved, there continued to be some overlap of duties throughout the operation. The issue was also documented by the CSF-356 that, as a result of command relationship issues, air relief and distribution operations were conducted by four separate elements:

- A functional component (JFACC)
- Service components (NAVFOR/AFFOR)
- Combined support groups (country-specific assessment & coordination)
- TRANSCOM/AMC (a direct support relationship)

This represented the exact opposite of unity of command as each of the four elements had differing levels of authority. Those on the ground struggled with similar issues. According to a study conducted by the Synergy Consulting Company, PACAF's 613th CRG was operating under the COCOM/OPCON of USPACOM with TACON only to CSF-536 (contrary to Joint guidance – JP 0-2), while AMC's 615th TALCE remained under the COCOM/OPCON of USTRANSCOM, AMC and the TACC (Barrett, 2005). As a result, the study found that "similar base opening and airfield operating forces ended up working for two different bosses" (Barrett, 2005). Again, multiple problems with unity of command and effort were found throughout Operation Unified Assistance.

Operation Unified Response was conducted in response to the Haitian earthquake of 2010. Occurring six years after Operation Unified Assistance, this response was much closer to the mainland of the United States and evolved to include multinational partners as well as multiple non-governmental agencies (500+). This response ultimately became the largest humanitarian relief effort associated with the United States military and provides an excellent study for command and control. In the case of Haiti, this study finds the majority of geographic separation issues experienced in Operation Unified Assistance were mitigated or removed in Unified Response. From an Air Force perspective, a unifying effort appears to by the daily video teleconferences, and update meetings conducted by AFNORTH A3 with USSOUTHCOM, JCS, JTF-Haiti, AF South, JTF-PO and the US Embassy in Haiti. JTF-PO, was a new unit on the HA/DR response scene. Created and tasked by USTRANCOM, this unit was responsible for opening the Aerial Port of Debarkation of PaP and also liaised daily with a further fifteen agencies

critical to the response (JTF-PO, 2010). Also differing from Unified Assistance, was the establishment of five distinct time-based phases of the operation. This was established from the first execution order (EXORD) and included the following:

- Initial Response
- Relief
- Restoration
- Stabilization
- Recovery (Rand Corporation, 2010)

Through these phases, Command elements could manage unity of effort and command through a more organized approach than seen in 2004. However, Unified Response was not without its problems related to command and control. Early in the response the Command of SOUTHCOM decided that a 2008 change to his organizational structure was insufficient to the task at hand in Haiti and reverted to a more traditional joint staff organizational structure (Rand Corporation, 2010). Furthermore, the military leaders responsible in Unified Response were unable to initially communicate mission requirements sufficiently to those supporting the effort. This resulted in excessive resources "pushed" to the scene hampering operational effectiveness (Rand Corporation, 2010). This problem transcended down through the military ranks and was felt by both the Haitian Flight Operations Center and the JTF-PO (JTF-PO, 2010). From this example, similarities may be drawn between the flow of goods experienced in both 2004

and 2006 responses where command and control has demonstrated a lack of capability in filtering requirements to those agencies supporting the effort.

Operation Tomodachi was a DoD named operation created in response to the earthquake and resulting Tsunami which devastated the area of Honshu Japan on 11 March, 2011. Unique to this disaster was not only it's location in a first world country where the United States had an established DoD and DoS presence but also the nuclear threat posed by the damaged Fukushima Daiichi nuclear power plant. This particular threat necessitated the creation of a parallel operation, Operation Pacific Passage, which was charged with the timely evacuation of personnel and pets from the affected region.

From the onset, command and control was slow to establish. Unlike Haiti, where SOUTHCOM established their JTF within two days of the disaster, PACOM did not establish JTF-505 and JTF-519 until six days following the tsunami (PACAF, 2011). Furthermore, guidance was "incomplete, confusing, and contradictory which significantly impacted mission execution and command and control (C2) relationships" (PACAF, 2011). To complicate issues further, the established Joint Support Force (JSF) published initial guidance which placed Air Force Forces in a doctrinally incorrect position. The PACAF's Lessons and Observations Report provides such an example:

> "the original PACOM OPORD identified 5 AF/CV as the USAFJ COMAFFOR; however, no forces were assigned to him. Therefore, it was PACAF that supported USFJ with forces instead of 5 AF. In preparation for Operation Pacific Passage, there was very little COCOM guidance on how the assisted departure

> operation would be conducted. This lack of clear guidance significantly slowed the process of operationalizing that guidance within PACAF" (PACAF, 2011).

The report goes on to list persistent issues with authorities, confusing messaging and poorly targeted publication. Almost as if stepping back in time seven years to Unified Assistance, a "coalition of the willing among services came together to execute the mission" (PACAF, 2011).

Operation United Assistance was a United States Agency for International Development (USAID) led mission in response to the largest Ebola outbreak in history. Occurring four years after the Haitian response, and geographically centered in Liberia and Senegal (western Africa), the US military played a significant role in supporting and enabling USAID and other agencies. The President of the United States directed the deployment of these military forces under USAFRICOM during the second half of 2014. U.S. Army Africa (USARAF), followed by the 101 ABN DVN, was the command DOD unit for the response to the Ebola outbreak in Liberia.

In addition to JTF-PO Liberia being tasked by TRANSCOM, the U.S. Air Force (Kentucky Air National Guard) 123 Contingency Response Group (CRG) and the U.S. Army 689 Rapid Port Opening Element (RPOE) were tasked in the latter weeks of September 2014 as a Joint Task Force-Port Opening (JTF-PO) team to rapidly deploy and open an APOD/ISB for West African EVD relief operations at Dakar, Senegal. The primary mission of this JTF-PO was to establish an Aerial Port of Debarkation and establish distribution channels to the nearby Seaport of Debarkation for cargo trans-load.

Although this paper found several reports of unclear command and control, they were significantly fewer than the previously studied cases. The Joint Forces Command created a forward stationed presence which was proximate to the Liberian embassy and interagency partners. This forward command element reduced the friction seen in Unified Assistance and to a lesser extent, Unified Response. There was however a geographic issue with the DIRMOBFOR being stationed in Dakar. This distance reduced DIRMOBFOR effectiveness in the theater of operations (Barnson, 2014). However, in a similar fashion to Unified Response, the JFC received clear guidance from their Combatant Command, USAFRICOM, in the establishment of key tasks, further clarifying command and control unity of effort (Williams, 2015).

Across the four cases studied for this paper, overall command and control has improved since Operation Unified Assistance but is marred by reports from Operations Unified Response and Tomodachi. To the members responding, this is one of the most frustrating areas presenting barriers to strategic effectiveness and mission accomplishment. The areas which appear to challenge leaders the most in both the JTF and subordinate units, remains coordination with DoS, inter-agency partners and NGOs. These entities saturate the response with personnel, equipment and often, much-needed expertise. Furthermore, it's these supported agencies which provide the means by which to complete the mission of transfer of authority and responsibility. While unifying efforts across the military spectrum have improved, the JTF structure has not shown the same level of improvement with regard to the supported agencies. Finally, "willingness" to get the job done pervades all disaster response reports in spite of unclear command relationships and authorities.

With no change to the status quo, this researcher would expect to see similar problems occur during the next major disaster response effort.

Communications and Information Management

As discussed in the literature review of this paper, communications and information management remain critical throughout a HA/DR response effort…especially within the initial stages where decisions are more often made by command than consensus. The DoD manages the physical requirements of communications through deployed UTCs while information management is established by various processes managed at the senior levels of the response. Amongst the four areas assessed in this paper throughout the four case studies, it is this area which has shown the least improvement.

Communications Equipment Findings

In the wake of the 2004 response, the communications problems were so severe that the DoD asked a Defense Science Board (DSB) Task Force to review communications capabilities and "found these capabilities lacking" (Barrett, 2005). The issues identified were multiple: range, bandwidth, encryption, battery life, etc associated with multiple types of radios and networks made it difficult for commanders and other key C2 organizations to maintain contact. "Some commanders were required to carry 4 or 5 different radios just to ensure connectivity and only occasionally did they have the range to cover cross base (intrabase) operations" (Barrett, 2005).

In a sponsored AMC report: "Almost one third of the 63 people interviewed [by an AF/XOL lessons learned team] said there were problems communicating with personnel deployed forward into the ROA [Relief Operations Area]" (Barrett, 2005).

What's perhaps most striking about communications during Unified Assistance is that for the "first three weeks of the deployment, communication was non-existent" (JAFACC/COMAFFOR, 2005). One of Air Mobility's primary lessons learned related to the lack of capable equipment: "Deployed personnel had to rely on cellular and Iridium phones, INMARSAT instruments, and local commercial Internet access to send and receive critical mission-related information" (Barrett, 2005). These communications were experienced by all services responding to the event and resulted in inaccurate, untimely and unsecure information being passed to multiple agencies in multiple ways.

Similar problems were experienced six years later during Operation Unified Response. This was the first response to use the JTF-PO and this JTF-PO was one of the first responders to the event. The JTF-PO brought with them a Deployable AMD Communications Element (DACE) and it took 36 hours to bring this communications system online (JTF-PO, 2010). When it finally came online, it wasn't sufficient to the task at hand. An email server was never established and there were insufficient NIPR, SIPR and DSN drops by which to communicate with external agencies (JTF-PO, 2010). This had cascading consequences throughout the area of operations and significantly delayed communications and prohibited access to systems such as Global Air Transportation and Execution System (GATES) during a critical time (CRG, 2010). This resulted in degraded in-transit visibility and forced daily situation reports to be sent via SIPR which significantly reduced the availability/ease of access, consequently reducing the number of people who had access to it. (JTF-PO, 2010). Personnel from the JTF-PO elaborated on the issues surrounding communications recommending the need for

immediate, portable DSN capability, pre-identified organizational email accounts or distribution lists, compatible radios, greater ranges with the PRC-152 system and more capacity for HELAMS (a telecom package) (JTF-PO, 2010).

As bad as it was during Unified Response, not much improved with regard to communications capability in 2014. According to the deployed JTF-PO's there were many similar issues experienced. The following list includes some of the issues captured:

- Communications services were not provided within 12 hours of main body arrival into APOD
- In-transit Visibility not operational for majority of deployment ("outdated comm. Equipment")
- 101 ABN communications equipment failed in Dakar upon arrival
- "Army follow-on COMM systems ("SNAP" terminals) were useless"
    - Army SNAP terminals inoperative upon arrival

Unique to the three operations just discussed was their need for deployed communications equipment to facilitate mission effectiveness. During Operation Tomodachi, communications equipment was in place due to the pre-established US presence in the region. To this end, this study found no indication of issues surrounding the physical functionality of communications equipment during Operation Tomodachi.

Information Management Findings

Information management is a well-documented challenge for the DoD in the four case studies examined in this paper. In addition to the findings presented in the command and control section, Unified Assistance suffered greatly from the inability to clarify

information pathways until well into the relief effort (JAFACC/COMAFFOR, 2005). The equipment issues compounded this problem and resulted in the "Command and liaisons elements having to search through various websites and make an overwhelming amount of phone calls to ensure proper information was being passed up and down the chain of command" (Barrett, 2005). Furthermore, the geographically separated coordinating authorities such as the PAOC, had difficulties as there was no central method for consolidating information throughout the effort. (Barrett, 2005). The uncertainty of when, how and to whom to pass information pervaded Unified Assistance. During Unified Response, there were several examples of poor information management which resulted in excess expenditure and inefficient response. A particular example involved information regarding the condition of the runway/pavement at Port Au Prince Airport. In this instance RFFs were placed for assessment teams and repair teams when the JTF-PO had never reported anything wrong with the runway (JTF-PO, 2010). The resulting confusion created artificial bottlenecks in the supply chain during the critical initial stages of the response. In a similar fashion, a bottleneck was created at PaP during the height of the relief operation. It was announced, incorrectly, that the JTF-PO had closed the runway due to ramp congestion when "the ramp was not even close to being full" (JTF-PO, 2010). This misinformation affected the AMD, HFOCC and the DIRMOBFOR. Misinformation continued to be sent throughout Unified Response (AMC, HQ, 2010).

While Operation Tomodachi realized the benefit of a pre-established communications infrastructure, information management was also a problem. One of the largest problems

was communicating information to external agencies using non-classified means. As the majority of Air Operation planning tools reside on classified networks much of the information had to be extracted then rebuilt on unclassified networks for dissemination (PACAF, 2011). This manual process took additional time and slowed the flow of crucial information which directly affected strategic interests in the region. Some work-arounds to synching this information surfaced as a result with "Defense Connect Online (DCO) becoming the predominate work-around for many connectivity issues" (PACAF, 2011). A unique challenge during Operation Tomodachi were social media and disconnected public affairs outlets. The result was a negative effect on strategic communications capability. PACAF discusses the issue further:

> "Initial PA guidance is critical to shaping the information environment and minimizing the gap between strategic messaging goals and the media picture. The Office of Secretary of Defense (OSD) and interagency processes were not responsive enough to provide critical initial guidance, which created gaps between strategic communication/messaging goals and the public media picture. In addition, while PACAF/PA pushed information and links to SAF/PA daily, the Air Staff was not on 24/7 operations which limited SAF/PA ability to adequately inform CSAF/SAF/SECDEF of significant USAF relief effort contributions or to provide timely guidance back to PACAF" (PACAF, 2011).

Similar information management issues and fundamental disconnects were experienced in Liberia during the Ebola response. For example, when the CRG was deployed, 18th AF was unaware of their arrival on station (JTF-PO, 2014). Lack of established

information pathways resulted in dual tasking units by USTRANSCOM and USAFE/A3. Both Commands sent assessment teams to Monrovia, Liberia resulting in two airfield assessment teams completing surveys/analysis of the same airfield and with very different results (JTF-PO, 2014). As it stood, the JTF-PO was capable of a full airfield and cargo distribution assessment while the USAFE/A3 team was only capable of evaluating the runway...a difference not understood until after both units were tasked (JTF-PO, 2014). The JTF-PO in Senegal reported similar issues, documenting conflicting data between the runway reports, which added to overall confusion in the area of operations (JTF-PO Senegal, 2014).

Communications and information management become increasingly difficult when more agencies are involved and the area of response is undeveloped or remote. This does not justify the consistent lack of functioning communications equipment or confusing and redundant information pathways seen in each of the four case studies.

V. Summary

Overall, there is a tremendous amount of literature serving to establish best practices and processes within a HA/DR logistics operation. Process which specifically address many, if not all of issues identified in the case assessment section. As it stands currently, the military uses the JTF and Combatant Commands as the organizational response toward HA/DR events. Throughout the four cases studied there are persistent problems occurring as a result of this approach. The following presents a framework for viewing these DoD problems through a lens adjusted by relevant literature. Any solutions addressing the problems previously catalogued have the potential to offer lifesaving aid to millions and further our strategic national interests.

A HA/DR Decisive Point

If the Joint Task Force is to be applied to HA/DR operations the same as it is in war, it may benefit those leading the organization to acknowledge the similarities and differences between the operations. To begin with, the DoD provides ample guidance in relation to wartime activities but falls short in providing HA/DR guidance as previously referenced in this paper. To understand the efficacy of the HA/DR supply chain, we must understand the importance and relevance of critical success factors. Again, those characteristics, conditions or variables that when properly sustained, maintained or managed can have a significant impact on the success of an organization (Pettit, 2006). The idea of success factors is not new to the DoD, in fact, we call them Decisive Points when planning for war. From Joint Publication 5-0:

"A *decisive point* is a geographic place, specific key event, critical factor, or

function that, when acted upon, allows a commander to gain a marked advantage over an adversary or contributes materially to achieving success (e.g., creating a desired effect, achieving an objective) The most important decisive points can be determined from analysis of critical factors. Understanding the relationship between a Center of Gravity's (COG) critical capabilities, requirements, and vulnerabilities can illuminate direct and indirect approaches to the COG. It is likely that most of these critical factors will be decisive points, which should then be further addressed in the planning process."

Maintaining a similar view toward CSF's within HA/DR operations will markedly contribute toward operational success. While there are numerous critical success factors in any supply chain, seven appear most frequently in humanitarian assistance post-response assessments: effective distribution, strategic planning, inventory management, transportation and capacity planning, information management, human resource management, and supplier relationships and sourcing. To select these seven CSF's, literature was reviewed which included a variety of events e.g. famine, tsunami and a variety of stakeholders, military, civilian, NGO and multinational.

The Seven Success Factors

Human Resource Management

Two processes which should be considered critical to success are those of human resources management and strategic sourcing. Both of these processes are critical to any relief effort as case studies have shown that 42% of participating organizations associated with a HA/DR response will lack qualified assessment personnel (Fritz Institute, 2004). This lack of training was consistently documented throughout the four

operations studied in this paper. Simply having individuals trained in what to look for and match that against a set of criteria is crucial to starting the response. Analysis of the four operations has shown that these individual are trained to assess one piece of the supply chain, an airfield for instance but not the other nodes by which the customer relies upon. This was demonstrated to great extent in both disaster and humanitarian assistance operations where all four cases involved reports by senior leaders discussing the need for improved training.

Supplier Relationships

Related to human resource management is the organic capability needed to source logistic supplies, support or services in a strategic way. While AMC does an exceptional job of loading and transporting supplies, there is no process for securing those commodities across any kind of price or time threshold. Said another way, AMC's first response force is not capable of strategically sourcing in support of a HA/DR supply chain operation. This capabilities gap may close with a renewed emphasis placed on training personnel in Operational Contracting Support (OCS) as well as supply chain CSF's. Such contracting models as indefinite quantity, indefinite delivery (IDIQ) are effective in providing a fast response while maintaining a longstanding supplier customer relationship. Additionally, many of the established relationships exist outside of DoD and rest more often between the commercial entities and USAID or the DoS. This becomes a problem as AMC, the potential first responder, can no longer measure critical success factors such as procurement lead times, supply reliability and customer impact...all important aspects of supply chain management. Time is another enemy of

efficient response and without establishing these relationships prior to an event, first-response efforts will suffer. In none of the artifacts studied across all four cases was there any discussion on the relevance of supplier relationships in a HA/DR environment. While several discussed funding the eventuality, measuring or managing the consequent relationship was not present.

Strategic Planning

Senior leaders responding to both Operations Unified Assistance and Tomodachi discuss the lack of strategic planning occurring prior to each event (Barrett, 2005, JAFACC/COMAFFOR, 2005, PACAF, 2011). Each event occurred in the same Combatant Command and was separated by seven years. Each event was in response to a tsunami triggered by an earthquake and unfortunately, each response demonstrated similar shortcomings when considering command and control, KPI and CSF establishment and effective communications and information management. To this researcher, an apparent lack of strategic planning appears to be occurring. Deciding whether this is a specific PACOM problem or a Combatant Command problem at large remains for further research. Either way, many of the problems may resurface during the next major disaster response.

Inventory Management and Effective Distribution

Inventory management for specific items is another critical activity which if integrated properly, would facilitate an effective response. This process has been marginally executed across the four events studied and as a result, relief supplies suffer visibility degradation as they're removed from the aircraft at the APOD. There's no

central distribution center AMC can access for inventory levels and this constricts the strategic option of turning a pull to a push system, or at the very least, defining a push-pull boundary. From a different perspective, this lack of inventory management limits all direct response efforts to include a cascading effect beyond the DoD to NGO/NPO partners. A similar concept to establishing this inventory management process is what the DoD calls war reserve materiel (WRM). WRM is prepositioned assets associated with projected wartime activities in that specific area of operations (AO). While WRM isn't designed for HA/DR operations this concept of prepositioned materiel has worked in the past for organizations such as World Vision during the Mount Merapi Volcano in 2006 (Fritz Institute, 2004). Here we saw this prepositioned material effectively save thousands of lives as those affected by the volcano were struck by a severe earthquake shortly after. Unfortunately, prepositioned material is only effective in the initial stages of the response and represents a high fixed cost (Kunz, Reiner, & Gold, 2000). The more prudent strategy is to complement these forward supply nodes, whether provided by the DoD or DoS, with investment toward training in DMC.

Effective distribution comprises the tasks which allow TRANSCOM to deliver the right product to the right person at the right time. In the case of HA/DR, the product is the logistic supplies, support and services provided by the USG to the nation or peoples affected within the fastest time possible, which has historically been a one-week period. In events past, AMC and by extension TRANSCOM has chosen to measure successful delivery to an Aerial Port of Debarkation (APOD) and not the true customer. To make distribution truly effective the organization must receive information from the customer

and it's in this area where AMC's distribution process breaks down. As a key stakeholder in the overall logistics process and perhaps the one organization which incurs the highest costs of transportation, AMC captures information on the quantity and type of goods shipped but not how those goods met a particular need. There are multiple problems with this, chief among them being degradation of response effectiveness. Without this information, there is no way to place priorities on certain products for shipment and those products which may have the greatest direct effect are now on equal status with those goods with marginal impact. This particular factor was not seen in any of the reports or AARs following the four studied events and would have allowed for greater agility and responsiveness in the supply chain.

Transportation and Capacity Planning

Connected to the process needed for inventory management and effective distribution is that of transportation and capacity planning. This is the mode source and geographic mapping, mode consideration, scheduling, contract management and other various activities directly impacting the movement of goods and service capability (Beresford, 2002). In Haiti this area was neglected and resulted in suboptimal mode selection as well as scheduling. The four key areas where process engineering should focus is that of warehousing, transportation, material handling equipment and the training of human resources to manage the process. This also benefits from interagency coordination, specifically our NGO/NPO and commercial partners. The World Food Program (WFP) does this to particular effect with the logistics firm TPG. Through proper capacity planning, the WFP takes advantage of seasonal change within the overall

transportation structure of TPG thus using excess capacity. This is also beneficial to TPG through the minimization of lost revenue and tax incentive purposes. Although the DoD has standing partnerships with governmental and civil organizations such as USAID and the Civilian Reserve Air Fleet, these partnerships are not integrated toward overall capacity and transportation planning. A process which forecasts likely scenarios, maps them and then chooses appropriate mode and scheduling models would prove very beneficial to the relief effort. There is even room to work within existing in transit visibility systems such as the integrated computerized deployment system (ICODES), to account for additional use of allowable cabin load (ACL). Such a process improvement would have significant impact to the overall operation and would have reduced a large amount of frustration documented in Haiti and Japan during NEO operations.

Information Management

The process of managing information is perhaps the "single greatest determinant of success" when it comes to the HA/DR mission set (Beresford, 2002). Across the spectrum of historical HA/DR relief operations it's understood that command and control (C2) is difficult to establish and is something the DoD struggled with in two of the four cases studied. In part, this is due to the outpouring of response from multiple agencies with multiple interests and not always well aligned. Within AMC, the information which flows through the established Air Mobility Division pathway has historically been timely and accurate but doesn't account for the following critical aspects: interagency information, supply chain performance and commodity tracking to point of use. With the capability of establishing an expeditious, forward communications

node AMC is uniquely positioned to be a lead integrating agency when it comes to overall response effectiveness. By augmenting the current C2 process with these aspects, overall information management could be greatly improved. Additionally, there is room for a central coordinating authority for these events in the form of a Director of Mobility Forces (DIRMOBFOR) but analysis has shown these individuals lack adequate training or are not correctly positioned to make strategic decisions related to the supply chain. The integration of this person with an adequate staff would greatly benefit information management during any HA/DR operation due to the inherent nature of its logistic intensity.

Command and Control

Among the four categories assessed throughout the cases, command and control in the form of the JTF has been documented as both a challenge to initiate and a barrier to those executing the mission. Many of the agencies which come together to form a JTF have limited prior working relationships and may not be sufficiently trained in HA/DR operations. During all disaster cases studied, the JTF struggled to understand the very nature of its own functionality let alone command or control subordinate units actively assisting those in need. This was repeatedly documented in AARs, L2s through not only the timing by which JTF's released modifications to orders but also the nature of what those modifications included. If there was one success factor in need of holistic re-examining it would be how the DoD organizes, trains and equips forces to command and control during a HA/DR event.

VI. Conclusions and Recommendations

General Conclusions

Throughout the four HA/DR cases studied in this paper, many recurring problems were documented and it's this researcher's opinion that the fundamental reason those problems persist will not be addressed if the focus paid toward HA/DR operations remains the status quo. Fundamentally the DoD struggles with command and control and lacks the ability to measure success within the overall operation. On humanitarian assistance and disaster relief missions, Joint Publication 3-29 states: "The capability to deploy forces to the operational area and rapidly integrate them into the joint force as directed by the JFC is essential." Achieving this as an OCONUS Combatant Command however becomes quite challenging when the majority of the aid and supported agencies must be brought into the operational area. Not addressed in doctrine is the underlying assumption that the timeliest response will be facilitated by air transportation and is therefore an ideal vector for establishing some of the most critical enabling capabilities. Additionally, Combatant Commands are allocated forces associated to Operational Plan(s) and not necessarily assistance or relief efforts per the global force management allocation plan (GFMAP). The use of personnel and equipment in this new supporting role inherently compromises their warfighting capability. Transportation Command is not a Geographic Combatant Command and is responsible for a much larger proportion of strategically used assets than any other. It also has the unique capability to respond anywhere in the world with these assets allowing not only for rapid response but access

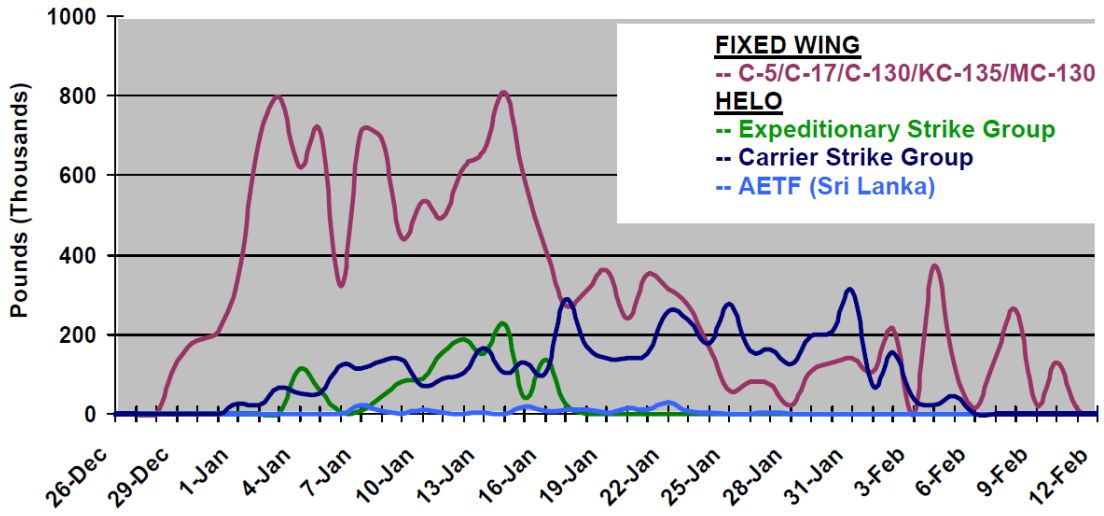
to global supply chains. In a sense, the Department of Defense has an ideal strategic "first response" capability in Air Mobility Command but this is not captured in doctrine.

Associated with this lack of specified capability is the lack of critical success factors or key process indicators used by TRANSCOM or Combatant Commands when responding to a HA/DR scenario. The separation between the response effort and these measurements precludes the notion that there are better avenues of response or supporting measures of effectiveness. Also, resource allocation becomes difficult when prioritization of capability is non-existent, from both an Air Force and DoD perspective. The Contingency Response Wing, which is the current force structure used by AMC for HA/DR, is beholden to a 12-hour response window. The benefits gained from this window are uncertain, especially when those responding aren't prioritizing toward such CSF's or KPI's.

Operation Unified Assistance and Response demonstrated the value placed on an air distribution system for delivering relief and evacuating victims. This is captured from a logistics standpoint by observing both the speed at which air transportation may deliver relief but also by the kind of aircraft delivering to point of need. It's quite often these milestones which are captured as HA/DR successes in the AARs and L2s.

In both Unified Assistance and Response, the arrival of cargo is outpaced by the organization's ability to strategically manage it due to the problems previously mentioned with communications and command relationships. What's notable is the contribution of

differing agencies to the overall effort of delivering relief. A classic example was first captured during Unified Assistance and is represented in the following graph:



(figure 4: Strategic Air Impact)

As seen above, the majority of supplies are delivered within the first few weeks by wide-bodied aircraft. Six years later, during Operation Unified Response, this same pattern repeated itself. In both cases, the more proximate Carrier Strike Group in South East Asia or US coastal ports couldn't match the speed and volume of strategic air lift due in large part to the time criticality of response. The organization responsible for strategic lift within the DoD is USTRANSCOM and the agency capable of using the most wide-bodied aircraft is AMC. In multiple reports, AMC personnel are responding faster and with more relief capability than the Joint Task Force established by doctrine. The facts suggest they're the most suitably positioned to lead an effort of this magnitude due to pre-established relationships, organic capability and the capability to improve a communications package prior to any event thereby reducing the problems associated with ad-hoc integration.

This research demonstrates a capabilities gap then forms between the supporting and supported organization resulting in degradation to overall response and end states. To further understand this capability gap however, the overall performance of the logistics effort must be categorized and assessed. As the Combatant Commands have demonstrated an inability to assess key performance indicators or critical success factors, who is best positioned to assume this responsibility within the DoD? The answer to this question suggests that it's the organization best suited to provide the one capability which the supported agency needs: global reach. Responses of this magnitude are not addressed by the USG without this capability. COCOMs are not resourced to manage a logistics enterprise of this magnitude. The events studied have shown that coordinating such a massive influx of personnel and equipment requires persistent training and equipping not feasible or available to all COCOMs. The Joint Enabling Command does not provide this capability currently and is used primarily as augmentation to a pre-existing command and control structure which has demonstrated a history of problems.

Recommendations for Action

The first recommendation of the paper is for re-categorization or the explicit identification of those disasters by which the DoD will need to employ strategic airlift to assist in OCONUS HA/DR operations. This threshold should be qualified by DoS representatives and trigger the formation of a JTF led by TRANSCOM personnel. This global JTF Commander should be trained extensively in HA/DR operations with DoS and

could be the primary duty of a DIRMOBFOR or similar individual. To this end TRANSCOM will also need to be a certified JTF provider and train at the appropriate levels with DoS strategic planners and leaders. All ongoing COCOM HA/DR operations which do not meet this threshold should remain unaffected with local regional relationships intact and no degradation to phase zero operations. DoS and DoD should share personnel and resources in the formation and management of this HA/DR JTF with specific scrutiny paid toward lines of command and authority which are currently established in the offices of Political Military Affairs, Conflict and Stabilization Operations, Population, Refugees and Migration and USAID. Many resources and lines of effort which currently exist among these offices and COCOM training programs could be consolidate for cost savings and targeted continuity of effort.

Recommendations for Future Research

There are several areas related to HA/DR operations and HA/DR logistics which would add to this research. The first would be examining the cost-effeteness of training currently provided to COCOMs by the DoS. This would require these training events to be assessed according to return on investment or according to a more thorough cost benefit analysis. Are these events yielding long term results and how are we capturing that as a DoD or DoS? This research would also need to recommend which training events are worth retaining and which could be reduced. The forthcoming investment strategy would highlight those functions which are core to the capability required and those which could be invested in for larger audiences within the HA/DR community.

The second area of related research would be an assessment of the cost and approach toward creating a TRANSCOM-led global JTF structure. How could the current organizational interfaces be subsumed under this new structure without loss of continuity and with minimal disruption. Research would need to assess the appropriate command structure consisting of leaders from both DoS and DoD which are trained and capable of rapidly responding to events of a certain size across the globe.

Finally, additional research paid toward the implementation of various KPIs and CSFs within the DoD logistics enterprise should be conducted. Regardless of any changes made with the current command and control structure, the implementation of these factors and indicators would greatly benefit those responding to these events.

VII. Journal Submission

Examining the Department of Defense's role as a lead enabling agency during humanitarian and disaster relief events occurring outside the contiguous United States

ABSTRACT

While forecasting the next conflict is fraught with uncertainty, the US Department of Defense (DOD) retains a robust logistics capability in its Transportation Command (TRANSCOM) in order to quickly respond to an array of global events. Humanitarian Logistics (HL) literature has repeatedly pronounced the importance of coordination, communication, and overall logistics capability to a successful disaster relief effort. However, a capabilities-to-execution gap exists in that TRANSCOM is not doctrinally positioned during a humanitarian assistance and disaster relief (HA/DR) operation to be in a command and control role where its unique capabilities can be fully utilized. Four recent DOD HA/DR cases and the HL literature are analyzed to identify critical capabilities in disaster response. These capabilities are compared to the unique and organic capabilities of TRANSCOM. A model for closing the capabilities-to-execution gap is presented in which TRANSCOM acts as a functional first responder in establishing key logistics, communications, and coordination networks prior to being subsumed by the traditional military command structure. Extension of this model to the civilian sector forms a basis for general HL theory.

KEYWORDS: HA/DR, Key Process Indicators, Department of Defense, Case Study, Supply Chain, OCONUS, Humanitarian

INTRODUCTION

When considering supply chains, perhaps none are more dynamic or uncertain than those formed in support of HA/DR events. Typically, these supply chains and the organizations which manage them are operating globally and face unique political, chronological and geographic barriers throughout the response window. Uniquely positioned to overcome these barriers, the United States Military and the Transportation Command (USTRANSCOM) in particular, has played crucial roles in four humanitarian response efforts spanning the past 12 years. As the Air component of USTRANSCOM, Air Mobility Command (AMC) serves as a potential first responder to these global events with their unique global reach capability (President Obama, 2010). A capability successfully demonstrated in all four Operations studied.

A chief assumption of this paper is that disasters will continue to occur around the world at more or less the same rate we've observed in the past…about 500 annually (Van Wassenhove, 2006). The goal of the HA/DR mission is to reduce the number of people impacted or killed by these disasters which current estimates place at an annual 200 million and 75 thousand respectively. Unfortunately, this is a goal which grows in complexity and attainability with annual increases to global population, interdependency and urban density. While no panacea exists, extensive literature on the subject points to

one focus area in particular: logistics. Across the board, HA/DR operations are 80% logistics and although these contain some peculiarities not shared with their commercial analogues, the overall concepts found within the field of supply chain management apply quite well (Van Wassenhove, 2006).

The aim of this study is to determine whether or not the DoD can optimize their HA/DR response by improving logistics processes and structure more in-line with available literature and best practice. This begins with understanding how the DoD has historically operated with their chief customer: The United States Agency for International Development (USAID). A particularly effective approach to understanding the right type of process for our customer begins with defining the effectiveness or performance of the current organizational response. To assist in this regard, we look at case studies and after action reports (AAR) which afford those most intimately involved the time to reflect, review and recommend courses of action associated with a particular HA/DR effort.

Investigating then, the planning, processes and organizational doctrine established to ensure an effective and efficient response becomes a crucial focus of this research. Through an examination of how the DoD manages the HA/DR logistics across multiple events and years, this paper intends to evaluate the nature of support the DoD offers to supported agencies and levies expectations based on past performance. Additionally, whether or not this position should or could be improved will be studied. Is for example, the DoD's role as a first responder a singular product of its global reach capability or

does it seek to improve other aspects the HA/DR supply chain? By researching literature, after action reports and conducting interviews with key stakeholders, a juxtaposition of the DoD's capability as a HA/DR global supply chain owner with internationally desired outcomes is expected. The following research questions are addressed in detail: (i) Is the Joint Task Force the most appropriate command structure for OCONUS HA/DR event response? (ii) Can we optimize DoD's response to HA/DR events by leveraging key performance indicators and critical success factors common to global supply chains? (iii) Does the DoD organize, train and equip to improve its position as lead enabling (supporting) agency over time?

The paper is structured accordingly. First, a review of the recent literature is conducted relating to global HA/DR supply chains whereby best practices are examined. Following a brief discussion of the hypothesis and method used, results of the four case studies will be presented. Finally, this paper concludes by discussing recommendations for further research and courses of action.

LITERATURE REVIEW

There are many unknowns related to global HA/DR supply chain operations but it's understood their need will continue to grow as our world integrates and populations grow. (Gooley, 1999; Korpela, 1996; Kunz, Reiner, & Gold, 2000; Overstreet & Hall, 2011; Tomasini, 2009; Van Wassenhove, 2006). As the acronym suggests, these supply chains may exist is support of a humanitarian assistance, disaster relief operation or both

and considering the probability that relief will arrive via international effort, a great deal of complexity is added to the system. To better understand the body of work devoted to the study of this complexity, Overstreet (2011) analyzed 51 academic articles in order to shed light on predominate focus areas and found that over 50% of the academic research relates to planning, policies and procedures.

While there could be many possible explanations for this focus, the resulting published works lend credence to the notion that planning, policies and procedures remains a target rich environment for the study of HA/DR logistics albeit related to the ease of data acquisition or hypothesis generation. Surprisingly however, fewer than five academic articles have been published pertaining to personnel or information technology and communication respectively, even though both are considered vital to HA/DR supply chain performance (Kunz, Reiner, & Gold, 2000; Long, 1997). Said differently, there appears to be a greater focus on planning a HA/DR supply chain than managing one within the research community…a focus which is shared by the DoD. On this surface, this makes sense due to the very nature of HA/DR strategy formation which is typically unknown prior to event occurrence. The associated risk however, is executing a plan without appropriate measures of effectiveness established past inception. A risk exacerbated by complexity associated with this particular supply chain.

One such variable adding to the overall complexity is the life cycle of a HA/DR supply chain. As described by (Tomasini, 2009), they follow a unique pattern of ramp up, sustainment, and ramp down where coordination based on objectives and stakeholders

evolves in concert with the three phases. Of all the phases, the initial ramp-up phase is the most time sensitive as various bottlenecks, discord and environmental unknowns threaten the establishment of a lifesaving logistics effort. This knowledge appears to corroborate the focus within the community toward planning, policies and procedures perhaps because you can't manage what you haven't begun. From a command and control perspective, this has a peculiar effect on the stakeholder's ability to make supply chain decisions. (Donini, 1996) explains this phenomenon: "To this end and to expedite solutions, coordination occurs more often by command than consensus due to efficiencies gained through centralization of resources, tasks and information." It's during this coordination by command and ramp up phase, in which TRANSCOM historically facilitates or enables the creation of a supply chain. As stated in DoD guidance:

"Normally, military forces operate in the initial stages of disaster relief to fill immediate gaps in assistance; military objectives will be to enable civilian control of disaster relief efforts (HN, international, or other USG departments or agencies)" (JP 3-29, 2014).

Describing how to best facilitate the transition between the phases described by Tomasini or how to "enable civilian control" is not provided. This blurring of lines or lack of the who, what, where, when and why relating to transfer of authority, exists both in military and academic literature. Again, great emphasis is placed on establishing a "beachhead" for the logistics effort with little direction provided for follow-on management, time-

phased operations or general success factors as they may be applied toward effectiveness. The result, it may be argued, is the lack of a time-phased approach toward establishing the HA/DR supply chain as a manageable capability. The benefits of a time-phased approach will be discussed in greater detail within the proposition section of this paper as it's an operational planning concept with which the military is intimately familiar. Understanding the nature of a HA/DR supply chain encourages awareness of similar processes found outside the DoD.

Thankfully, in an effort to encapsulate measurements of performance, considerable work has been accomplished comparing HA/DR supply chains to their corporate counterparts. There are many benefits to doing this to include the concept of benchmarking. This search for best practices was discussed by Korpela in his work on the Analytical Hierarchy Process (AHP). This process is used to address four primary challenges found in corporate logistics: 1) the customer service explosion, 2) time compression, 3) globalization of industry, and 4) organizational integration (Korpela, 1996). The similarity to those problems found in HA/DR supply chains is stark. Compared to HA/DR supply chains, it's perhaps the fourth challenge wherein the majority of complexity is added as a vast number of relationships between supplier and distributor materialize rapidly with minimal pre-execution integration. Korpela also used the AHP in conjunction with those logistics critical success factors (CSF) to produce a framework by which strengths, weaknesses and the performance of enablers could be measured.

CSF's are namely those characteristics, conditions or variables that when properly sustained, maintained or managed can have a significant impact on the success of an organization (Pettit, 2006). While this allows for the theoretical creation of numerous CSF's, all must facilitate the analysis of strengths found within a particular supply chain to meet the overall goal of improving logistics performance (Korpela, 1996). Not only choosing the correct CSFs but ensuring that they're connected within the overall strategy of disaster relief rather than discrete activities is vital to the performance of the supply chain. Pettit describes this process in depth, including the various drawbacks of applying commercially gleaned CSFs in a HA/DR context:

"The lack of direct transferability of commercial logistics and supply chain solutions is exacerbated by the lack of technical knowledge which exists in many aid agencies as there are an insufficient number of experienced logisticians working in the HA community" (Pettit, Beresford, & Ding-Kuo, 2006)

To summarize, identifying CSFs is for naught if the personnel managing the process lack the knowledge to execute. Tying this notion back into the fourth challenge presented by the AHP, may then lead to the integration of willing but untrained process managers. Training issues like these call upon a broader problem found within temporary supply chains: where to invest? It's not particularly surprising that a significant contribution toward the overall HA/DR supply chain effort is shouldered by volunteers. Kunz addresses the two most commonly pursued investment solutions: 1) pre-positioning

relief inventory in countries prone to disasters, 2) investing in disaster management capabilities (DMC) related people and processes (Kunz, Reiner, & Gold, 2000). These DMCs may include training staff to be prepared to operate in a new country, developing and disseminating best practices on the basis of past disasters, educating the local population, pre-negotiating agreements with suppliers and governments, harmonizing procedures with local government requirements, or securing cooperation with local governments and NGOs. Additionally, Kunz's research demonstrated that these DMCs fit directly into Van Wassenhove' s five key elements of intangible preparedness activities (appendix 1). While investing in both pre-positioned inventories and DMC resulted in positive results for beneficiaries, investing in DMC reduced lead times by up to 67% at a significantly lower cost than prepositioned inventories (Kunz, Reiner, & Gold, 2000).

Literature suggests HA/DR supply chains have a predictable but temporary life-cycle, managed by agencies comprised of largely untrained individuals who would benefit from CSF identification and DMC investment prior to event occurrence. Which organizations then, from a customer perspective, would illicit the greatest return on investment along these lines? When considering OCONUS HA/DR supply chains, the United States Government has proven willing and capable of responding to a variety of disasters with the Department of State and Defense chief-most involved. Furthermore, these agencies maintain organic capabilities critical to the establishment and management of HA/DR supply chains on a routine basis. From Joint Publication 3-29: Foreign

Humanitarian Assistance, the acknowledgement of these capabilities and the organizations which manage them are clearly stated and rest with the establishment of relationships between a Joint Task Force created by the DoD and USAID, managed by the DoS (JP 3-29, 2014). Literature associated with both organizations offer additional insight as to where and how various capabilities are managed.

Beginning with the capability to provide adequate Command and Control during crisis, we consider official guidance from both the DoD and DoS. Inherent to this capability is the authority to execute strategy and the responsibility to manage execution. From the standpoint of the DoD, this capability is assumed by both USAID and the Department of State where both are seen as separate supported agencies during a HA/DR effort…despite the most recent organizational chart placing USAID under the Secretary of State (Appendix 2). To clarify, the DoD states that either organization may be supported depending on the nature of the operation and direction given by the USG (JP 3-29, 2014). This has led to several interfaces occurring between DoS and DoD when considering interagency coordination before an event occurs. The significance of these interfaces addresses the potential focus areas for investment in DMC.

Within USAID, the principle interface begins with the Office of US Foreign Disaster Assistance (OFDA) and the Office of Civilian Military Cooperation (CMC) of which both are cited as: “key offices that interact with DOD during FHA operations” (JP 3-29, 2014). These offices fall under the Bureau for Democracy, Conflict, and

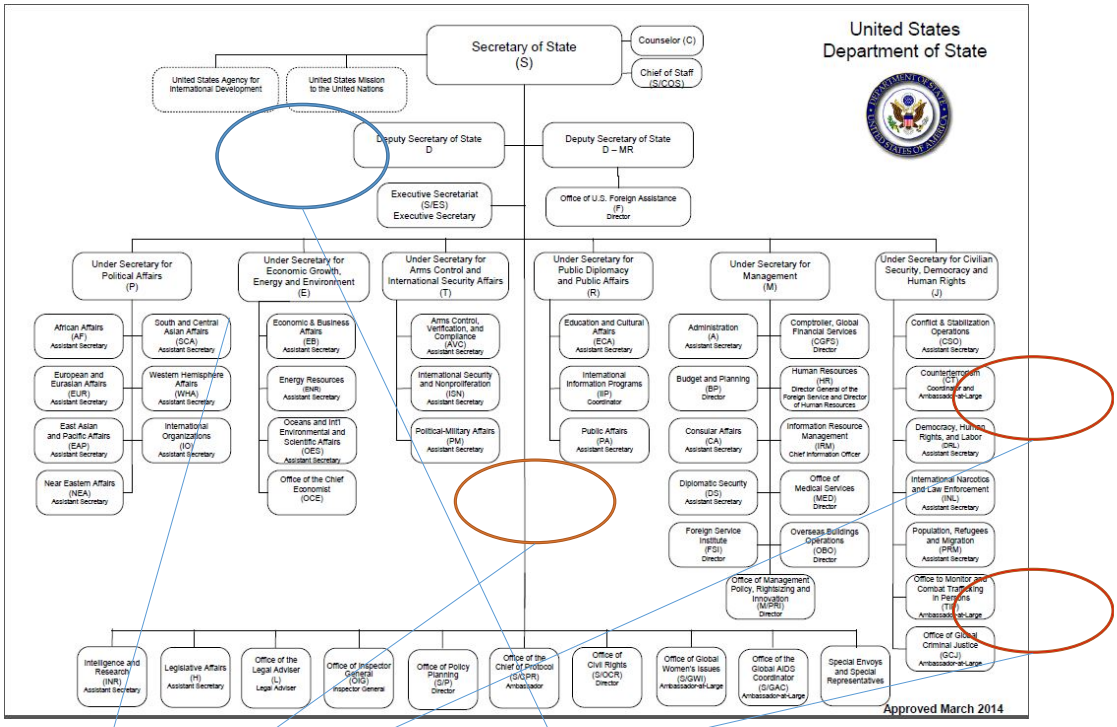
Humanitarian Assistance (DCHA) which is one of ten total functional and central bureaus (appendix 3). What's unique to the OFDA is the "delegated responsibility to provide international disaster and HA and coordinate the USG response to declared disasters in foreign countries" (JP 3-29, 2014). Again, from the DoD perspective it's this office which is responsible for formulating the overall strategy and interfacing with other agencies, NGO's and foreign offices to support the effort. When we look at the primary interface between the DoS and DoD however, the waters muddy.

According to the DoD, the Bureau of Political-Military Affairs (PM) is the principal link between DOD and DOS (JP 3-29, 2014). Specifically, this bureau is a sub-branch of the Arms Control and International Security Affairs Department and has no direct line of coordination or authority to USAID yet their role is crucial to strategy development to the overall HA/DR effort prior to event occurrence. Outside of this department rests two functional bureaus both heavily involved with HA: The Bureau of Population, Refugees, and Migration (PRM) and the Bureau of Conflict and Stabilization Operations (CSO) which "engages in conflict prevention, crisis response, and

stabilization, aiming to address the underlying causes of destabilizing violence" (JP 3-29, 2014). The Under Secretary for Civilian Security, Democracy, and Human Rights oversees these functional bureaus and has no lines of authority to USAID or the Bureau of Political-Military Affairs.

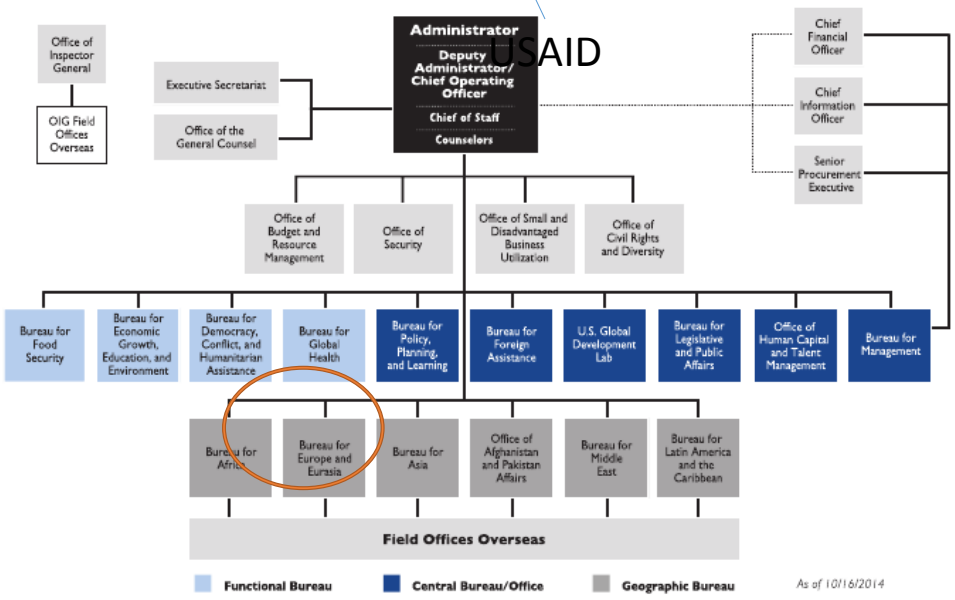
These relationships represent the current organizational interfaces by which the formation of Command and Control strategy is expected to occur (fig. 1). Additionally, according to DoD policy, the primary entity responsible for understanding these relationships during a HA/DR event are the GCC commanders, staff and planning cells. This is important to overall DMC investment in the form of training and strategic planning due to the specific experience and capabilities these agencies maintain. An example of such capabilities, which closely align with the concepts associated with critical success factors and subsequent value to HA/DR operations may be found within USAID. In the USAID Field Operations Guide, we see considerable focus paid toward HA/DR strategic-level assessments, assessments which are notably absent in comparable DoD guidance (USAID, 2005). USAID provides 9 reasons why initial assessments matter to include making "recommendations…that identify and prioritize the actions and resources needed for immediate response" which truly sets the stage for the both effective strategic level efforts and establishment of unified Command and Control efforts (USAID, 2005). These reasons are followed by guidance which allows for the completion of successful assessments and closely mirrors the value proposition associated with CSF's applied toward HA/DR supply chain operations. Specifically listed are eight keys or factors which allow for the completion of a successful assessment (appendix 3). Several of these correlate quite well CSF's found in HA/DR supply chains such as (i) distinguishing between emergency and chronic needs and (ii) assessing needs and vulnerabilities in relation to capacities. Unfortunately, USAID's Field Operation's Guide uses vague and conditional terminology when referring to the DoD interface in

their Appendix F entitled: Working with the Military in the Field. Specifically, the DoD force structure and basic capabilities are described but leave out crucial items necessary to Command and Control such as communication pathways, command and control authorities,



DoD

USAID



(Figure1: common-user capabilities or preferred service selection given various logistics supplies, services and support (USAID, 2005).

Capabilities Matrix for USG HADR Operations

	Strategic Planning	On-site Assessment	Command & Control	Organic Global Response	Total Supply Chain Engagement
DoS					
Political Military Affairs	++	-	+	-	-
Conflict and Stabilization Operations	++	-	+	-	-
Population, Refugees & Migration	++	-	+	-	-
Office of U.S. Foreign Disaster Assistance	++	++	+	-	+
DoD					
Geographic Combatant Command	+	-	+	-	+
USTRANSCOM	-	-	+	++	++

Key

Capability

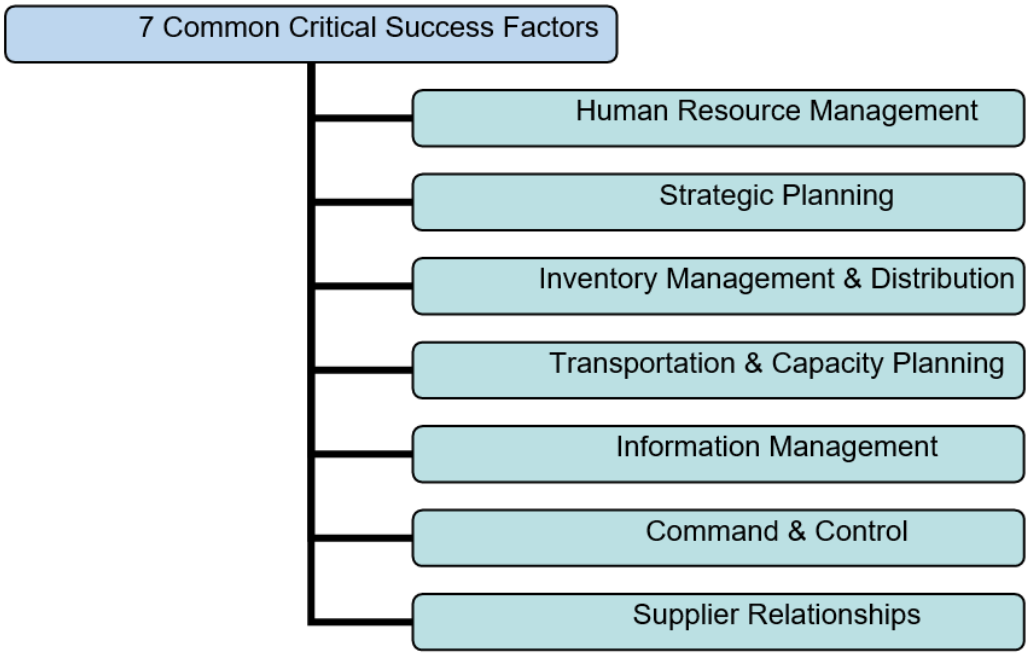
- \- Not possessed
- \+ Created in response/JIT
- ++ Inherent

(Figure 2: Capabilities Matrix for USG HA/DR Operations)

PROPOSITION

As literature suggests, understanding the importance and relevance of critical success factors is crucial to managing a global HA/DR supply chain operation. While there are numerous critical success factors in any supply chain, seven appear most frequently in humanitarian assistance post-response assessments: human resource

management, strategic planning, inventory management and distribution, transportation and capacity planning, information management, command and control, and supplier relationships (fig. 5) (Barrett, 2005; Beresford AKC, 2002; Donini, 1996; Korpela, 1996; Tomasini, 2009; Van Wassenhove, 2006). The hypothesis of this paper is the DoD does not effectively use these CSFs when planning for and executing OCONUS HA/DR supply chain operations resulting in recurring problems and degraded support of external agencies.

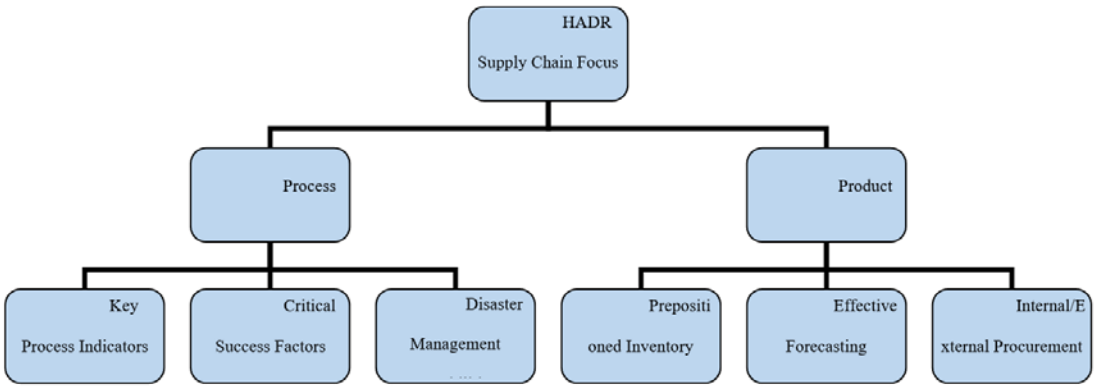


(Figure 5: 7 Common Critical Success Factors)

Overall, there is a tremendous amount of literature serving to establish best practices and processes for a DoD HA/DR logistics operation. If these processes were to be

established by TRANSCOM, the U.S. government would greatly amplify an already world class capability rendering life-saving aid to millions and furthering our strategic national interests.

Focusing on one or all of these practices must be tailored to the size and scope of the operation while also paying close attention not to invest in improving upon one particular practice past the point of diminishing returns. To better understand these practices, they may be separated into two primary categories or focus areas: process and product (fig. 6). Through focusing on the processes we may effectively measure supply chain efficiency and effectiveness, assessing both interests of doing things right and doing the right things. Those practices relating to the product are also highly important especially in humanitarian relief situations where the product offering is relatively simplified, say food for famine and vaccines for epidemics **(Long DC, 1995)**. One of the main differences between the two categories relates to what an organization can accomplish before a crisis and what may be accomplished after. The simple reality remains that the product and its component focus areas add value after an event has occurred, until then, they are typically fixed or sunk costs (Kunz, Reiner, & Gold, 2000).



(Figure 6: HA/DR Supply Chain Focus)

Associating response with projected supply chain life cycle is especially appropriate for the DoD where involvement is expected to terminate at some point in the sustainment phase. This relegates the window of support to fall within the ramp up phase and is where the DoD has the largest opportunity to support the overall effort. A comparison between Kunz's investment in DMC and Tomosini's HA/DR supply chain life cycle theory allow us to see the product and process as a function of service level across time. This relationship also provides insight as to where the DoD may invest resources and training when one considers USAID's worldwide prepositioned inventories. Considering then that the DoD will more effectively improve its position as a supporting agency during this window by focusing on process vs product, the question of where to focus is still a-specific. Since narrowing the focus toward the process, we turn our attention back to the commercial supply chain and how performance is measured.

A thoroughly studied topic, supply chain performance measurement has come a long way but unlike their commercial counterparts, HA/DR supply chains are uniquely not driven by market forces (Van Wassenhove, 2006). Within this HA/DR context, a customer however still exists and a supply chain is used to deliver goods or aid from point of origin to point of consumption. Having the ability to measure various key processes and indicators throughout the supply chain can have a tremendous impact on the success of the overall mission, regardless of it being by driven by a humanitarian or profit oriented strategy. Also, for both HA/DR and commercial enterprise, logistics provides a rich

source of data, providing however one knows what to measure. Data which may be used to make decisions before message traffic from the customer is received and understood or that data the customer may never send. Decisions such as optimizing distribution nodes and networks, mode selection or push-pull boundaries. How is the DoD making these decisions during ramp up or before?

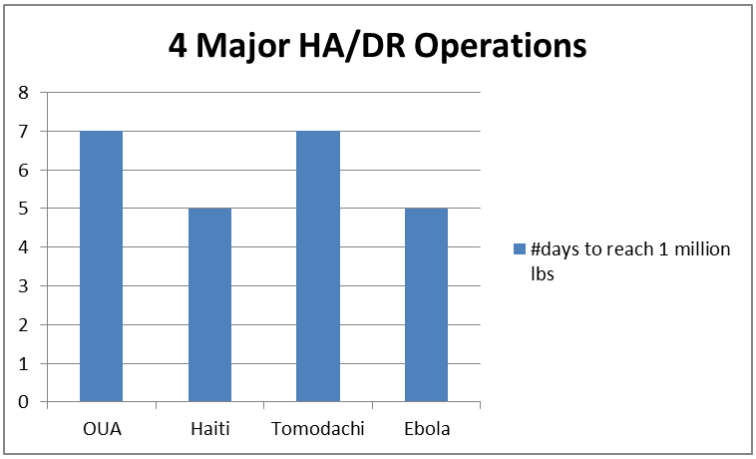
Another reason for any organization wanting to measure logistics performance is the cost. This is especially true for HA/DR efforts, as the supply chain most often represents the greatest percentage of overall costs (Van Wassenhove, 2006). Interestingly, these are costs not associated with price as in traditional supply chains and these costs aren't always related to procurement or the organization transporting them but are often sunk costs incurred by humanitarian donors. While not all of these donations are solicited, it's these donors which demand transparency and performance measurement to ensure their donations of aid are actually reaching those in need. As seen with the Haiti earthquake response effort, the external demand grew so rapidly that it

began to directly affect the DoD's supply chain efforts in negative ways. In several instances these negative effects could have been mitigated if the process owners had known how to measure performance indicators and critical success factors. As it was however, many processes were not in place and the overall response suffered. Investigating these CSFs in greater detail as they pertain to the DoD's investment in DMC associated with the ramp-up phase helps to isolate appropriate areas for improvement.

Beginning with human resources management, we see that this factor is cause for scrutiny across the spectrum of HA/DR process owners and not just the DoD. Not only are the responding personnel critical to any relief effort but case studies have shown that an astounding 42% of participating organizations associated with a HA/DR response will lack qualified assessment personnel (Fritz Institute, 2004). Simply having individuals trained in what to look for and match that against a set of criteria is crucial to initiating or ramping up the appropriate response. The DoD acknowledges this shortfall in their after-action and lessons learned reports. Within the DoD, these responders are trained to assess one piece of the supply chain, an airfield for instance but not the other nodes by which the customer relies upon. Related to human resource management is the organic capability needed to source logistic supplies, support or services in a strategic way and while TRANSCOM does a fantastic job of loading and transporting supplies, there is no process for securing those commodities across any kind of price or time threshold. Additionally, many of the established relationships exist outside of TRANSCOM and rest more often between the commercial entities and those NGO/NPOs responding. This becomes a problem as AMC can no longer measure critical success factors such as procurement lead times, supply reliability and customer impact...all important aspects of supply chain management. The condensed ramp up time window is another enemy of efficient response and without establishing these relationships prior to an event, the DoD will hamper its efforts. While such contracting models as indefinite quantity, indefinite delivery (IDIQ) exist and are effective in providing a fast response while maintaining a

longstanding supplier customer relationship, they're not applied to HA/DR supply operations.

Strategic planning is a vital component of the five key elements of preparedness, specifically falling into the category of knowledge management (Van Wassenhove, 2006). The problem however is summed up by Contrill in his work researching the partnership between a commercial logistics firm and the largest humanitarian aid agency in the world, the United Nations World Food Program: "People are solving problems but not planning" (Contrill, 2004). A sentiment reflected in the DoD's "get it done" attitude documented in every AAR and the documented frustrations with outdated contingency plans managed by the Geographic Combatant Commands (GCC). How then is the DoD to ensure task execution in support of overall strategy if it's predominantly developed just in time? If the majority of strategic planning is dated, what's a reasonable window within ramp-up to establish strategy? This paper recommends seven days as it's within this window that TRANSCOM has shown capability to deliver 1 million pounds of relief goods to the four major OCONUS events studied. I theorize that due to an established ability to commit this amount of resources to the effort: (i) a global HA/DR supply chain has been established (ii) coordination by command must be clear and unified (iii) strategy to task may follow the establishment of i and ii.



Connected to the strategic planning process needed for inventory management and effective distribution is that of transportation and capacity planning. This is the mode source and geographic mapping, mode consideration, scheduling, contract management and other various activities directly impacting the movement of goods and service capability (Beresford, 2002). In Haiti this area was neglected and resulted in suboptimal mode selection as well as scheduling. The four key areas focus areas should be that of warehousing, transportation, material handling equipment and then the aforementioned training of human resources to manage the process. This is also a process which greatly benefits from interagency coordination, specifically our NGO/NPO and commercial partners. The World Food Program (WFP) does this to particular effect with the logistics firm TPG. Through proper capacity planning, the WFP takes advantage of seasonal change within the overall transportation structure of TPG thus using excess capacity (Contrill, 2004). This is also beneficial to TPG through the minimization of lost revenue and tax incentive purposes. What benefits could also be extended to the DoD? Although TRANSCOM has standing partnerships with governmental and civil

organizations such as USAID and the Civilian Reserve Air Fleet, these partnerships are not integrated toward HA/DR capacity and transportation planning. A process which forecasts likely scenarios, maps them and then chooses appropriate mode and scheduling models would prove very beneficial to the relief effort. There is even room to work within existing in transit visibility systems such as the integrated computerized deployment system (ICODES), to account for additional use of allowable cabin load (ACL). Such a process improvement would have significant impact to the overall operation.

Effective distribution comprises the tasks which allow TRANSCOM to deliver the right product to the right person at the right time. In the case of HA/DR, the product is the logistic supplies, support and services provided by TRANSCOM to the nation or peoples affected within the fastest time possible, historically a one-week time horizon. In events past, Air Mobility Command (AMC) and by extension TRANSCOM has chosen to measure successful delivery to an Aerial Port of Debarkation (APOD) and not the true customer. To make distribution truly effective however, the organization must receive information from the customer and it's in this area where TRANSCOM's distribution process breaks down. As a key stakeholder in the overall logistics process and perhaps the one organization which incurs the highest costs of transportation, AMC captures information on the quantity and type of goods shipped but not how those good met a particular need. There are multiple problems with this, chief among them being degradation of response effectiveness. Without this information, there is no way to place priorities on certain products for shipment and those products which may have the

greatest direct effect are now on equal status with those goods with marginal impact. An example of this was shipping water by air to Haiti. It wasn't until days into the relief operation that the community understood the need for water was very low. AMC paid a tremendously high price for shipping this water in both direct costs and opportunity costs considering space for alternatives.

Inventory management for specific items is another critical activity which if integrated properly, would facilitate an effective response. This process doesn't exist within the organization and as a result, relief supplies suffer visibility degradation as they're removed from the aircraft. There's no central HA/DR distribution center TRANSCOM can access for inventory levels and this constricts the strategic option of turning a pull to a push system, or at the very least, defining a push-pull boundary. From a different perspective, this lack of inventory management limits all direct response efforts to include a cascading effect beyond the DoD to NGO/NPO partners. A similar concept to establishing this inventory management process is what the DoD calls war reserve materiel (WRM). WRM is prepositioned assets associated with projected wartime activities in that specific area of operations (AO). While WRM isn't designed for HA/DR operations this concept of prepositioned materiel has worked in the past for organizations such as World Vision during the Mount Merapi Volcano in 2006 (Fritz Institute, 2004). Here we saw this prepositioned material effectively save thousands of lives as those affected by the volcano were struck by a severe earthquake shortly after. The potential benefit for the DoD to invest in a system such as this however is limited

primarily due to the fact that the chief supported agency, USAID, already maintains such prepositioned inventory.

Finally, we look at information management. The process of managing information is perhaps the "single greatest determinant of success" when it comes to the HA/DR mission set (Beresford, 2002). Across the spectrum of historical HA/DR relief operations it's understood that command and control (C2) is difficult to establish. In part, this is due to the outpouring of response from multiple agencies with multiple interests and not always well aligned. Within AMC, the information which flows through the established Air Mobility Division pathway has been historically timely and accurate but doesn't account for the following critical aspects: interagency information, supply chain performance and commodity tracking to point of use. With the capability of establishing an expeditious, forward communications node AMC is uniquely positioned to be a lead integrating agency when it comes to overall response effectiveness. By augmenting the current C2 process with these aspects, overall information management could be greatly improved. Additionally, there is room for a central coordinating authority for these events in the form of a Director of Mobility Forces (DIRMOBFOR) but analysis has shown these individuals lack adequate training to make strategic decisions related to the supply chain.

PLANNING

According to Joint Publication 5-0: Contingency plans are developed in anticipation of a potential crisis outside of crisis conditions. A contingency is a situation that likely would

involve military forces in response to natural and man-made disasters, terrorists, subversives, military operations by foreign powers, or other situations as directed by the President or Secretary of Defense. The JPEC uses deliberate planning to develop plans for a broad range of contingencies based on tasks identified in the GEF, JSCP, or other planning directives. Deliberate planning facilitates the transition to CAP and informs the TCP (JP 5-0, 2011).

METHODS

The majority of this paper's research methodology is qualitative in nature, specifically using the Case Study Method and Grounded Theory**.** Yin states: "the case study is preferred in examining contemporary events, but when the relevant behaviors cannot be manipulated" (Yin, 1984). This seems a perfect fit for the HA/DR world and focuses in on the "decisions" being made before, during and after a response. Also fitting is that "case studies are generalizable to theoretical propositions and not populations or universes." This, I think, aligns very well with the point of doctrine and how we position ourselves within the DoD to achieve various ends. The "ends" in HA/DR are effectiveness of response but the devil is in the details. This is perhaps why it's so challenging to "get right." As Yin elaborates: "you would use a case study method because you deliberately wanted to cover contextual conditions-believing that they might be highly pertinent to your phenomenon of study." Bullets B and C below drive the association home:

2. A case study is an empirical inquiry that

a. Investigates a contemporary phenomenon within its real-life context, especially when
b. Boundaries between phenomenon and context are not clearly evident
c. Relies on multiple sources of evidence, with data needing to converge in a triangulating fashion and benefits from the prior development of theoretical propositions to guide data collection and analysis

In conjunction with grounded theory, "Grounded theorists seek to understand the social processes that are problematic for the people involved. A grounded theory study primarily uses interviews, but also uses observation and document analysis. It is a systematic approach to qualitative research that facilitates theoretical abstraction from field data through a process of constant comparative analysis" (Mello, 2012). It's my belief that this compliments the study of the HA/DR realm because it amplifies the case study data. Additionally, it provides a social narrative as to the why behind the targeted decision and fills in gaps in context otherwise missed by the scripted AAR.

RESULTS

In this chapter I compare and contrast four significant HA/DR operations wherein the DoD played a significant supporting role. They are: Operation Unified Assistance, Operation Unified Response, Operation Tomodachi, and Operation United Assistance. These operations span a ten-year time period. Notably, all are OCONUS and have a minimum operational period of 45 days. The intent of this chapter is to analyze the DoD's and more specifically USTRANSCOM's response as associated with the

processes critical to logistic effectiveness in a HA/DR environment and to assess what progress has occurred in this mission area throughout the time horizon. I'll begin by introducing the context within which the DoD operates and discuss the organizations chiefly responsible for response along with a general description of their approach to execution. From there, I'll move on to categorically assessing each Operational case study within categories of overall response, KPI and CSF establishment, Command and Control and Communications.

As previously mentioned, a critical enabling partner in HA/DR operations is the United States Government, specifically the Department of State (DoS) and the Department of Defense (DoD). While the DoS has several established agencies such as USAID and the Office of Foreign Disaster Relief whose primary mission set revolves around HA/DR operations in general, the DoD does not organize, train and equip to the same end. Due to DoD's global reach however, the capability brought to the table in time of need, can't be ignored. To date, this research demonstrates the DoD response has been akin to a fire fighting mentality with little effort paid toward looking at HA/DR through the lens of strategic supply chain management. Additionally, just as humanitarian supply chain development practices lag commercial sectors by about 15 years, the DoD does also...but with much less muscle memory maintained within the organization (Overstreet & Hall, 2011). When it comes to primary mission sets, the DoD excels in fighting our nations wars but does not apply the same disciplined and most importantly results-oriented

approach toward HA/DR operations. This leads to fundamental lack of preparedness which is crucial to mitigating the effects of these disasters.

Within USTRANSCOM, AMC bears the brunt of the initial logistics response due to time criticality. However, defining the current processes associated with AMC's HA/DR response is difficult simply because of the lack of an established or existing process. Currently the process exists to task a response force without linking a desired end state for the customer to any strategic level effort. Specifically, AMC tasks a Contingency Response Wing (CRW), assigning a 12-hour time limit for those forces to assess the situation, develop the appropriate product mix and physically deploy. Given certain geographies, this particular capability is globally unmatched. At the same time, there's a Geographic Combatant Command effort to establish relief efforts, coordinate with non-governmental/non-profit organizations and establish appropriate lines of communication. This enterprise-wide effort demonstrates redundant and reactionary processes which lead to many of the problems addressed in this study and although the CRWs provide a world-class capability, these forces aren't leveraged as a lead integrating agency. In fact, during the critical first days of response, AMC has been unable to appoint a single coordinating authority for the overall effort, instead relying on situation reports (SITREPS) from the field though which requests for information (RFIs) are addressed and issues resolved. As it stands currently, doctrine establishes the Joint Task Force (JTF) as the most probable lead agency responsible for the establishment of a common operating picture (COP). This research examines which measurements of success (critical success factors) or key

process indicators (KPI) are used to accomplish strategic end states during four major HA/DR events.

Following a review of the case studies and AARs related to these events, it's clear that the TRANSCOM excels in specific areas related to HA/DR. Many of the capabilities brought to the table are also those needed in wartime, capabilities such as site assessment, capacity and throughput improvements as well as many other general airfield improvements. With Operations Unified Response and United Assistance, a Joint Task Force Port Opening (JTF-PO) team was deployed and demonstrated just how quickly the DoD could assist the multinational effort. In Liberia alone, a JTF-PO team doubled the existing aircraft capacity of Roberts International Airport and was responsible for enabling 24/7 all-weather operations, both of which had a tremendous impact on overall operational capacity and throughput (JTF-PO, 2014). Unfortunately, capacity and throughput aren't measures of performance or effectiveness as captured by this research. Also noted within this study, are recurring issues related to processes critical to HA/DR success. These include those pertaining to communications systems, command and control and interaction with external agencies. What seems to have been significant friction areas captured in the 2004 Asian Tsunami are repeated throughout the following decade.

Overall Response

With regard to HA/DR response, the DoD can be gauged by multiple factors but there are those which stand out among the rest and serve to establish boundaries within which a

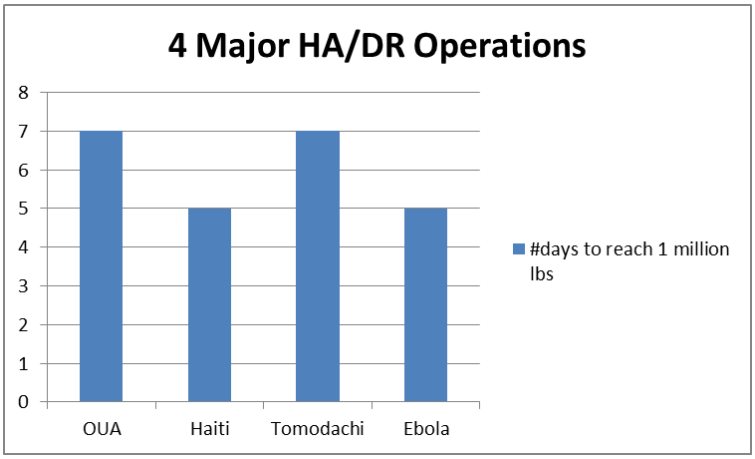
measurement of effectiveness may be reached. This report characterizes this response according to available literature on the topic and doctrine established in Joint Publication 3-29: Foreign Humanitarian Assistance. Specifically assessed is the DoD's speed of response, integration of NGO agencies and transition of responsibility to non-governmental or host nation entities.

In a commercial supply chain, the time interval between a customer placing an order and receiving an order is referred to as lead time and is often measured as one of the top critical factors in a successful supply chain (Korpela, 1996). When it comes to humanitarian relief operations, the order placed may be inferred as the specific need of the affected populace and the time in which this aid is delivered is just as critical to measuring success. This time interval may be heavily influenced by a variety of factors unique to the DoD and must be considered in the overall assessment. One consideration within this rapidly created supply chain is the DoD's authority to prioritize order fulfillment while at the same time having very little control with regard to procurement. As seen at multiple distribution points during Operation Unified Assistance (OUA), there was no record of what organization the cargo being moved belonged to (Barrett, 2005). This lack of accountability undermines the organizations ability to maintain in transit visibility and thereby reduces the supplier's ability to respond to changes in demand. Furthermore, as stated in the JFACC's AAR:

"Without a clear and validated knowledge of what supplies were being lifted on every mission, the JFACC lacked the ability to redirect supplies to new locations if emerging

pressing needs surfaced. Additionally, timely operational assessments could not be accomplished due to the lack of knowledge of supplies being transported" (Barrett, 2005).

While this inability to link the front to the back end of the supply chain may adversely impact lead times and overall measures of effectiveness during HA/DR operations, the relative strength of these effects diminish as the capacity of the supply chain grows. For approximately 45 days following the events studied, this capacity is primarily grown via strategic airlift. Considering this and the notion that "the speed of the response is the most critical element of a successful HA/DR operation" (JCOA, 2007), this paper examines the lead time to move 1 million pounds of relief supplies in response to four OCONUS HA/DR events. The figure of 1 million pounds was chosen to reduce the likelihood that the majority of supplies received came by means other than strategic air. Effectively, this threshold is prohibitive of a singular COCOM response effort and must now include those assets which are not organically assigned. This is an important consideration because it illustrates the creation of a supply chain which now extends beyond the familiar area of responsibility unique to each COCOM and requires a more global perspective to adequately manage. The following graph illustrates this as associated with the four HA/DR relief operations assessed.



The vast array of stakeholders associated with humanitarian operations makes "coordination and collaboration essential" in dealing with these organizations (JP 3-29, 2014). To this end, several governmental agencies have been established to facilitate civil-military coordination which include but aren't limited to: The Center for Excellence in Disaster Management and Humanitarian Assistance (COEDMHA), The Center for Disaster and Humanitarian Assistance Medicine (CDHAM), Office of Humanitarian Assistance, Disaster Relief, and Mine Action (OHDM) and the Joint Interagency Coordination Group (JIACG). In addition to these agencies, a number of nongovernmental, intergovernmental and private sector organizations also regularly participate in the HA/DR mission set in which the DoD is involved. Ultimately, it's the latter group of agencies through which the majority of relief effort supplies originate, establishing the base of the supply chain. Typically, this supply chain expands rapidly and will require strategic airlift capabilities only found within the DoD. Operation Unified Assistance (OUA) was a prime example of this requirement and saw the development of a supply chain capable of airlifting over 25 million pounds of cargo in a 47-day period (Barrett, 2005). OUA was not only impressive in terms in capacity but

also in terms of rapidity, establishing the highest ever short tons moved per day (270) of any previous relief operation (JAFACC/COMAFFOR, 2005). Unfortunately, this report could not find any DoD documents which connected this rapid and robust supply chain to effectiveness. In fact, it was the lack of this connection which drew the attention of the appointed Joint Force Air Component Commander during OUA. As he stated in his 2005 Lessons Learned Report on using pounds of goods delivered for a measure of merit/effectiveness:

"To facilitate mission accomplishment, measures of merit need to be established early in any operation. The strategy-to-task approach can assist in the assessment process. It is critical to focus on output vice input if the desired effects of HA/DR operations are to be optimized."

Interaction with NGO/NPO's adds an additional level of complexity to any operation and research into their pre-planned integration was conducted. According to reports from Operation Unified Assistance and Unified Response, this was a particularly large problem due to the saturation of various ports from these entities (CRG, 2010). Documented early in 2005, this level of integration was documented as a significant issue for AMC's Director of Mobility Forces (DIRMOBFOR):

"The DIRMOBFOR remained in Hawaii and had difficulty responding to changing NGO/PVO [private organizations] requirements: dictated means of lift, regimented process for the requesting of lift, heavy airframes jeopardized slot time adherence…" (Barrett, 2005).

This same integration issue resurfaced during Operation Tomodachi in 2011, where "Air Mobility Command (AMC) offered a DIRMOBFOR on the day the earthquake occurred, but the first DIRMOBFOR was not requested and in-place for another five days (PACAF, 2011).

In 2010 we observe this to be a repeated issue with Unified Response. Multiple reports mention the necessity of interaction for daily operations but no report accounts for planning to this end (CRG, 2010, Kingsley, 2010). Rather, reports indicate that these agencies occupied much of the operating area in an ad hoc and unplanned manner: "Perhaps if the JTF-PO had arrived sooner, control of the parking ramp would have been achieved before of the situation lost control. By the time the JTF-PO arrived, media, relief workers and NGOs had already set up camp on the parking ramp and were moving around at will" (JTF-PO, 2010).

A leading recommendation from Unified Responses JTF-PO leadership echoed comments made six years earlier by those supporting United Assistance: "Consideration should be given to better inter-agency coordination" (JTF-PO, 2010). Interestingly however, this recommendation did not have an associated office of primary responsibility as typically seen with military AARs, leading this researcher to believe the responsible organization remains unknown through present. The most recent case studied, Operation United Assistance, furthers this assertion with no mention of coordinated NGO/NPO involvement in the DIRMOBFOR, JTF-PO Senegal and JTF-PO Liberia's AARs (Barnson, 2014, JTF-PO Senegal, 2014, JTF-PO, 2014). Not only does this lack of integration occur with the NGO agencies, it also extends to those the DoD directly

supports as well. As seen during Operation Tomodachi: "The overall USG response plans were bureaucratic in nature, which often created disconnects between DoD and DoS that hampered a coordinated response to this operation" (PACAF, 2011).

The final category assessed in the four HA/DR events is the ability to transfer authority and responsibility from the DoD to the supported agencies and/or host nation. This is important as it sets many conditions the military must plan for to include request for follow-on forces (RFF), Unit Type Code (UTC) selection and overall resource allocation and expenditure. A notional timeline for when this occurs is not found in any Joint Publication or document associated with HA/DR planning, nor is it found in any of the AAR's or L2 reports from those in the field assessed in this study. As might be expected, the timeline by which this transfer of authority occurred varied greatly between the four responses. There is also no mention of specific indicators by which this transfer should begin to occur or to whom. With Operation Unified Assistance this transfer of authority took 60 days when it was decided that "the UN, NGOs and IOs were ready to take over relief operations" (Barrett, 2005). This was also mentioned in the JFACC's final situation report signaling the end of the military JTF responsible for Unified Assistance. It stated success had been reached through "preparation of plans to assure smooth transition to NGO/HN" (JAFACC/COMAFFOR, 2005). In both cases, no additional information was given with regard to why the transfer occurred when it did. If CSF's were achieved or KPI's demonstrated various logistics improvements, this was not captured in any of the reports. With Operation Unified Response, this transfer happened much more quickly, at approximately 27 days, even though it involved many more

(500+) non-governmental agencies than Unified Assistance (JTF-PO, 2010, AMC, HQ, 2010). Why operations in Haiti were turned over 45 percent faster than those in response to the Asian tsunami is not captured and the conditions by which this transfer occurred were also absent in the reports studied. Comparatively, Operation Tomodachi saw an extended timeline, 80 days, by which the Joint Force transferred authority even though it had a previously established presence and the disaster took place in a first-world nation (PACAF, 2011). Again, the reasons for this are unclear as the parameters surrounding the transition could not be found.

The basic understanding of these required conditions needed for appropriate transfer are crucial to the time-phased planning effort and may affect follow-on forces (RFF), Unit Type Code (UTC) selection and overall resource allocation and expenditure, as previously mentioned. In the three disaster-related cases examined in this study, the RFF process was listed as a significant and recurring problem. Beginning in 2005 with Operation Unified Assistance, the lack of force-flow pre-planning resulted in RFF by various leaders in the organization (Barrett, 2005). This response however resulted in "compartmentalized and inefficient, fragmented planning" which "results in movement delays and creates confusion in allocating resources for different theaters of operation" (Barrett, 2005). According to Air Mobility Command, this is due to the inherent differences between receiving forces via time phased force deployment data (TPFDD) and RFF. The TPFDD is time-phased and "provides a structured approach to flowing the force and its supporting elements through the deployment process through a series of assumptions about the readiness of the force, transportation, routing, timing, etc."

(Barrett, 2005). The RFF process "does not take that approach; it remains focused on the major combat forces and lacks the framework to assemble the remaining support and sustainment" (Barrett, 2005). A problem which was revisited again in 2010 with Operation Unified Response and in 2014 with Operation United Assistance, each having Commanders on-site stating the RFF process was a "significant problem" which was "delayed" and "slow to respond" (CRG, 2010, JTF-PO, 2014, JTF-PO Senegal, 2014). AMC backed their Commander's statements with the observation that: "The RFF/RFC process is not responsive enough to rapidly respond to an immediate crisis such as in Humanitarian Relief/Disaster Assistance operations" (AMC, HQ, 2010).

While the lack of a notional transfer timeline and conditions may have affected how those forces received via RFF, it also affected the equipment sourced via UTC. UTC's are the core building block for force packaging across the DoD and will typically have a time-based consumption threshold for use in the field. Without a notion of when the operation should be moving closer to transfer, this timeline cannot be matched against a particular building block. This lack of understanding was documented during the initial stages of Operation Unified Assistance where "most units arrived without any plan for food, water, shelter" forcing the CRG to "provide it for three weeks" (CRG, 2010). Furthermore, several of the requirements levied on the responding personnel were not supported in duration or frequency with the UTCs brought to include 24-hour air traffic control operations and/or those related to a Regional Air Movement Control Center (RAMCC) (AMC, HQ, 2010). Not long after Unified Response, the involved with Operation Tomodachi filed reports stating the inabilities with the RFF process (PACAF, 2011). In

PACAF's Lessons and Observations Report, it was noted that the RFF process "was not responsive enough in providing required resources in a timely manner. The entire RFF process is a time consuming process that requires, but does not have, the ability to adjust for the situation and reduce or eliminate unnecessary approval layers not required for a crisis situation" (PACAF, 2011). Four years later, the RFF problems remained. During Operation United Assistance both JTF-PO Senegal and Liberia listed it as a significant issue stating: "During the RFF process the 123 CRG quickly transmitted RFF requirements for follow-on forces, but effective advocacy with sourcing entities required excessive time and energy and had limited success" (JTF-PO Senegal, 2014). In Liberia, the JTF-PO captured the impact of the problems associated with the process stating: "The timeline did not allow (nor was participation ever asked for) for the JTF-PO to execute and subsequently provide feedback through the JFC to USAFRICOM in order to influence and tailor the follow-on RFF for the APOD. As a result, initial capabilities, such as air traffic control, airfield management, and weather, were identified late and required additional staff work to ensure the capability was considered for sourcing (JTF-PO, 2014).

When it comes to large scale HA/DR operations, the military has been historically tasked to support USAID with the intent of transferring authority and responsibility back to the host nation and those agencies most capable of supporting a long-term relief effort. While some of the issues related to the RFF process and UTC selection will remain due to unknown conditions related to the event, force deployment timelines and phased deployment operations are critical components to military planning (JP 4-0, 2013, JP 5-0,

2011). Within the HA/DR operations studied, these two components are either ad-hoc, not planned or not reported.

KPI and CSF establishment

Throughout the four cases studied in this paper the terms Key Process Indicator or Critical Success Factor were never used. This isn't to say various indicators or factors weren't important or captured and could easily be construed as serving the same purpose albeit by a different name. What is unique is the lack of depth or breadth seen in establishing these indicators and factors throughout the cases studied. In the 2005, tsunami response effort was led by the Combined Support Force-536 (CSF-536) and faced many challenges related to lack of established CSFs or KPIs referenced in the literature review section of this paper. This manifest in the following statement provided by the JFACC:

"Another challenge to overcome was the lack of priorities for movement. Due largely to the dynamic environment, unfamiliar NGO operations and processes, and initial lack of air mobility and logistics expertise on the CSF-536 staff, OUA was hindered by the lack of clear definition, acquisition, prioritization, and communication of lift requirements" (JAFACC/COMAFFOR, 2005).

Furthermore, "The JFACC elected to use pounds of goods delivered to specific locations as a Measures of Merit since it is an indicator of output—or what is of use to the intended object populations of OUA" (JAFACC/COMAFFOR, 2005). The JFACC then reported values to the CSF-536 staff on a daily basis, solidifying this metric as valued by the lead organization. The establishment of unique indicators or factors extended to Operation

Unified Response with the concept of “maximizing throughput” and “reducing ground time” at Port Au Prince (PaP) Airport (CRG, 2010). The benefit to pursuing these indictors was captured in the 12th Air Force’s After Action Report: “In 24 hours, the U.S. Air Force increased the PaP airport working Maximum-on-Ground (MOG) six-fold, thereby maximizing the delivery of relief supplies for the Haitian people” (12th Air Force, HQ, 2012). The JTF-PO leadership echoed this assessment on reducing ground time stating it “generated a more efficient airflow increasing the throughput” (JTF-PO, 2010). Another indicator used to measure supply chain effectiveness was percentage of evacuees remaining as Operation Pacific Passage launched in the wake of Operation Tomodachi. Here we saw an intense focus on planning a supply chain around evacuating a specific number of personnel and pets where the complimentary indicator of nuclear environmental conditions ensured targeted evacuation (PACAF, 2011). These indicators also remained when the nature of the response changed from disaster to humanitarian assistance. During Operation United Assistance, in response to the Ebola outbreak, the Joint Force Command began to measure lives saved and infection rate reduction. The monitoring of these indicators drove the Joint Force Command toward specified management strategies related to containment construction, security, personnel training and inter-agency coordination and yielded impressive results (Barnson, 2014). As written by the Operation United Assistance DIRMOBFOR:

“In Sept 2014, prior to commencement of OUA, CDC Ebola estimates in Liberia for Jan 2015 were: 227,000 killed and an infection rate of 1,890 per day. As a direct result of our

efforts the actual numbers were: 3,384 killed and an infection rate of 3 per day" (Barnson, 2014).

This research shows establishment of those indicators and factors similar to commercial CSFs and KPIs by the DoD. The five found in this research were:

- Pounds of supplies delivered
- Airfield throughput
  - Reduced ground time
- Lives saved/evacuated
- Infection/exposure rate

While these factors and indicators are pursued by the personnel assigned to the task effectively throughout the response, they were lacking in their ability to provide supply chain transparency and effectiveness for responses of this scale. Without overly restating the value of CSFs and KPIs from the literature review of this section, the five aforementioned factors/indicators used by the DoD in these events fall short of facilitating overall logistics performance as it relates to strategy. Generally speaking, these are the discrete activities warned of by Pettit. For example, pounds of supplies delivered and airfield throughput do not address customer needs met, and lives saved and infection rate reduction don't demonstrate where the strengths of our supply chain are in achieving those ends.

Command and Control

"Command is central to all military action and unity of command is central to unity of effort" (Department of the Army, 1994). Statements like this and particularly the

importance placed of unity of command, are found in numerous publications produced by the DoD (JP 3-29, 2014, JP 4-0, 2013, JP 5-0, 2011, LeMay Doctrine Center, 2013). When it comes to HA/DR operations, unity of command is critical in uniting all the disparate organizations which quickly form in response to an event. In the four events studied, Command and Control directly impacted the unity of effort across the all responses.

Beginning with Operation Unified Assistance, determining where to establish the Command and Control location signaled the first of many problems related to geography. The JTF, key aerial mobility leaders and staffs were not consolidated until weeks following the initial disaster. Originally the JTF-536 was set up to operate out of Okinawa, Japan but was later moved forward to Utaphao Air Base (AB), Thailand with JTF-Rear remaining in Japan. This repositioning took place approximately one week following the disaster, after many forces had already brought personnel, equipment and relief supplies to the region (JAFACC/COMAFFOR, 2005). The dual-hatted JFACC and DIRMOBFOR, Brigadier General Brooks L. Bash (15th Expeditionary Mobility Task Force Commander – EMTF/CC) was the key leader involved in the strategic aerial delivery of crucial supplies and personnel for the response and was located in Hawaii (JAFACC/COMAFFOR, 2005). General Bash captured this problem in his statement: "As the Commander, JTF 536, and staff were deploying forward, the JFACC met the challenge of dealing with shared decision making between the JTF rear at Okinawa, the USPACOM J-3 in Hawaii, and JTF forward, as the JTF 536 Headquarters stood up" (JAFACC/COMAFFOR, 2005). The geographic separation, difference in time zones and

multiple coordination pathways presented rather large barriers for the accomplishment of unity of effort and unity of command. Because of this, there were several negative consequences, the first being command relationship establishment, one of the critical items discussed in JP 3-29 related to humanitarian response. General Bash elaborates: "Clear command relationships did not get resolved until 15 January 2005 (21 days into the 47-day effort) when CSF-536 published FRAGO [Fragmentary Order] 6. Additionally, CSF-536 air relief and distribution operations were conducted by four separate elements with differing levels of command authority resulting in command and control challenges" (JAFACC/COMAFFOR, 2005).

Another consequence was the request for and tasking of resources in an unsynchronized way. This was seen in requests for augmenting forces for the Pacific Air Operations Center in support of Operation Unified Assistance and the tasking of multiple assets to fulfill mission sets at each of the geographically separate nodes (JAFACC/COMAFFOR, 2005). This resulted in duplication of roles and responsibilities of the AMOCC (air mobility operations control center) and the PAOC (pacific air operations center). These included acquisition of diplomatic clearances, airlift planning functions, and mission monitoring responsibilities (Barrett, 2005). While most issues were eventually resolved, there continued to be some overlap of duties throughout the operation. The issue was also documented by the CSF-356 that, as a result of command relationship issues, air relief and distribution operations were conducted by four separate elements:

- A functional component (JFACC)
- Service components (NAVFOR/AFFOR)

- Combined support groups (country-specific assessment & coordination)
- TRANSCOM/AMC (a direct support relationship)

This represented the exact opposite of unity of command as each of the four elements had differing levels of authority. Those on the ground struggled with similar issues. According to a study conducted by the Synergy Consulting Company, PACAF's 613th CRG was operating under the COCOM/OPCON of USPACOM with TACON only to CSF-536 (contrary to Joint guidance – JP 0-2), while AMC's 615th TALCE remained under the COCOM/OPCON of USTRANSCOM, AMC and the TACC (Barrett, 2005). As a result, the study found that "similar base opening and airfield operating forces ended up working for two different bosses" (Barrett, 2005). Again, multiple problems with unity of command and effort were found throughout Operation Unified Assistance. Operation Unified Response was conducted in response to the Haitian earthquake of 2010. Occurring six years after Operation Unified Assistance, this response was much closer to the mainland of the United States and evolved to include multinational partners as well as multiple non-governmental agencies (500+). This response ultimately became the largest humanitarian relief effort associated with the United States military and provides an excellent study for command and control. In the case of Haiti, this study finds the majority of geographic separation issues experienced in Operation Unified Assistance were mitigated or removed in Unified Response. From an Air Force perspective, a unifying effort appears to by the daily video teleconferences, and update meetings conducted by AFNORTH A3 with USSOUTHCOM, JCS, JTF-Haiti, AF South, JTF-PO and the US Embassy in Haiti. JTF-PO, was a new unit on the HA/DR response

scene. Created and tasked by USTRANCOM, this unit was responsible for opening the APOD of PaP and also liaised daily with a further fifteen agencies critical to the response (JTF-PO, 2010). Also differing from Unified Assistance, was the establishment of five distinct time-based phases of the operation. This was established from the first execution order (EXORD) and included the following:

- Initial Response
- Relief
- Restoration
- Stabilization
- Recovery (Rand Corporation, 2010)

Through these phases, Command elements could manage unity of effort and command through a more organized approach than seen in 2004. However, Unified Response was not without its problems related to command and control. Early in the response the Command of SOUTHCOM decided that a 2008 change to his organizational structure was insufficient to the task at hand in Haiti and reverted to a more traditional joint staff organizational structure (Rand Corporation, 2010). Furthermore, the military leaders responsible in Unified Response were unable to initially communicate mission requirements sufficiently to those supporting the effort. This resulted in excessive resources "pushed" to the scene hampering operational effectiveness (Rand Corporation, 2010). This problem transcended through the military ranks and was felt by both the Haitian Flight Operations Center and the JTF-PO (JTF-PO, 2010). From this example, similarities may be drawn between the flow of goods experienced in both 2004 and 2006

responses where command and control has demonstrated a lack of capability in filtering requirements to those agencies supporting the effort.

Operation Tomodachi was a DoD named operation created in response to the earthquake and resulting Tsunami which devastated the area of Honshu Japan on 11 March, 2011. Unique to this disaster was not only it's location in a first world country where the United States had an established DoD and DoS presence but also the nuclear threat posed by the damaged Fukushima Daiichi nuclear power plant. This particular threat necessitated the creation of a parallel operation, Operation Pacific Passage, which was charged with the timely evacuation of personnel and pets from the affected region.

From the onset, command and control was slow to establish. Unlike Haiti, where SOUTHCOM established their JTF within two days of the disaster, PACOM did not establish JTF-505 and JTF-519 until six days following the tsunami (PACAF, 2011). Furthermore, guidance was "incomplete, confusing, and contradictory which significantly impacted mission execution and command and control (C2) relationships" (PACAF, 2011). To complicate issues further, the established Joint Support Force (JSF) published initial guidance which placed Air Force Forces in a doctrinally incorrect position. The PACAF's Lessons and Observations Report provides such an example:

"the original PACOM OPORD identified 5 AF/CV as the USAFJ COMAFFOR; however, no forces were assigned to him. Therefore, it was PACAF that supported USFJ with forces instead of 5 AF. In preparation for Operation Pacific Passage, there was very little COCOM guidance on how the assisted departure operation would be conducted.

This lack of clear guidance significantly slowed the process of operationalizing that guidance within PACAF" (PACAF, 2011).

The report goes on to list persistent issues with authorities, confusing messaging and poorly targeted publication. Almost as if stepping back in time seven years to Unified Assistance, a "coalition of the willing among services came together to execute the mission" (PACAF, 2011).

Operation United Assistance was a United States Agency for International Development (USAID) led mission in response to the largest Ebola outbreak in history. Occurring four years after the Haitian response, and geographically centered in Liberia and Senegal (western Africa), the US military played a significant role in supporting and enabling USAID and other agencies. The President of the United States directed the deployment of these military forces under USAFRICOM during the second half of 2014. U.S. Army Africa (USARAF), followed by the 101 ABN DVN, was the command DOD unit for the response to the Ebola outbreak in Liberia.

In addition to JTF-PO Liberia being tasked by TRANSCOM, the U.S. Air Force (Kentucky Air National Guard) 123 Contingency Response Group (CRG) and the U.S. Army 689 Rapid Port Opening Element (RPOE) were tasked in the latter weeks of September 2014 as a Joint Task Force-Port Opening (JTF-PO) team to rapidly deploy and open an APOD/ISB for West African EVD relief operations at Dakar, Senegal. The primary mission of this JTF-PO was to establish an Aerial Port of Debarkation and establish distribution channels to the nearby Seaport of Debarkation for cargo trans-load.

Although this paper found several reports of unclear command and control, they were significantly fewer than the previously studied cases. The Joint Forces Command created a forward stationed presence which was proximate to the Liberian embassy and interagency partners. This forward command element reduced the friction seen in Unified Assistance and to a lesser extent, Unified Response. There was however a geographic issue with the DIRMOBFOR being stationed in Dakar. This distance reduced DIRMOBFOR effectiveness in the theater of operations (Barnson, 2014). However, in a similar fashion to Unified Response, the JFC received clear guidance from their Combatant Command, USAFRICOM, in the establishment of key tasks, further clarifying command and control unity of effort (Williams, 2015).

Across the four cases studied for this paper, overall command and control has improved since Operation Unified Assistance but is marred by reports from Operations Unified Response and Tomodachi. To the members responding, this is one of the most frustrating areas presenting barriers to strategic effectiveness and mission accomplishment. The areas which appear to challenge leaders the most in both the JTF and subordinate units, remains coordination with DoS, inter-agency partners and NGOs. These entities saturate the response with personnel, equipment and often, much-needed expertise. Furthermore, it's these supported agencies which provide the means by which to complete the mission of transfer of authority and responsibility. While unifying efforts across the military spectrum have improved, the JTF structure has not shown the same level of improvement with regard to the supported agencies. Finally, "willingness" to get the job done pervades all disaster response reports in spite of unclear command relationships and authorities.

With no change to the status quo, this researcher would expect to see similar problems occur during the next major disaster response effort.

Communications and Information Management

As discussed in the literature review of this paper, communications and information management remain critical throughout a HA/DR response effort…especially within the initial stages where decisions are more often made by command than consensus. The DoD manages the physical requirements of communications through deployed UTCs while information management is established by various processes managed at the senior levels of the response. Amongst, the four areas assessed in this paper throughout the four case studies, it is this area which has shown the least improvement.

Communications Equipment Findings

In the wake of the 2004 response, the communications problems were so severe that the DoD asked a Defense Science Board (DSB) Task Force to review communications capabilities and "found these capabilities lacking" (Barrett, 2005). The issues identified were multiple: range, bandwidth, encryption, battery life, etc. associated with multiple types of radios and networks made it difficult for commanders and other key C2 organizations to maintain contact. "Some commanders were required to carry 4 or 5 different radios just to ensure connectivity and only occasionally did they have the range to cover cross base (intra-base) operations" (Barrett, 2005).

In a sponsored AMC report: "Almost one third of the 63 people interviewed [by an AF/XOL lessons learned team] said there were problems communicating with personnel deployed forward into the ROA [Relief Operations Area]" (Barrett, 2005).

What's perhaps most striking about communications during Unified Assistance is that for the "first three weeks of the deployment, communication was non-existent" (JAFACC/COMAFFOR, 2005). One of Air Mobility's primary lessons learned related to the lack of capable equipment: "Deployed personnel had to rely on cellular and Iridium phones, INMARSAT instruments, and local commercial Internet access to send and receive critical mission-related information" (Barrett, 2005). These communications were experienced by all services responding to the event and resulted in inaccurate, untimely and unsecure information being passed to multiple agencies in multiple ways. Similar problems were experienced six years later during Operation Unified Response. This was the first response to use the JTF-PO and this JTF-PO was one of the first responders to the event. The JTF-PO brought with them a Deployable AMD Communications Element (DACE) and it took 36 hours to bring this communications system online (JTF-PO, 2010). When it finally came online, it wasn't sufficient to the task at hand. An email server was never established and there were insufficient NIPR, SIPR and DSN drops by which to communicate with external agencies (JTF-PO, 2010). This had cascading consequences throughout the area of operations and significantly delayed communications and prohibited access to systems such as GATES during a critical time (CRG, 2010). This resulted in degraded in-transit visibility and forced daily situation reports to be sent via SIPR which significantly reduced the availability/ease of access, consequently reducing the number of people who had access to it. (JTF-PO, 2010). Personnel from the JTF-PO elaborated on the issues surrounding communications recommending the need for immediate, portable DSN capability, pre-identified

organizational email accounts or distribution lists, compatible radios, greater ranges with the PRC-152 system and more capacity for HELAMS (a telecom package) (JTF-PO, 2010).

As bad as it was during Unified Response, not much improved with regard to communications capability in 2014. According to the deployed JTF-PO's there were many similar issues experienced, the following list includes some of the issues captured:

- Communications services were not provided within 12 hours of main body arrival into APOD
- In-transit Visibility not operational for majority of deployment ("outdated comm. Equipment")
- 101 ABN communications equipment failed in Dakar upon arrival
- "Army follow-on COMM systems ("SNAP" terminals) were useless"
    - Army SNAP terminals inoperative upon arrival

Unique to the three operations just discussed was their need for deployed communications equipment to facilitate mission effectiveness. During Operation Tomodachi, communications equipment was in place due to the pre-established US presence in the region. To this end, this study found no indication of issues surrounding the physical functionality of communications equipment during Operation Tomodachi.

Information Management Findings

Information management is a well-documented challenge for the DoD in the four case studies examined in this paper. In addition to the findings presented in the command and control section, Unified Assistance suffered greatly from the inability to clarify

information pathways until well into the relief effort (JAFACC/COMAFFOR, 2005). The equipment issues compounded this problem and resulted in the "Command and liaisons elements having to search through various websites and make an overwhelming amount of phone calls to ensure proper information was being passed up and down the chain of command" (Barrett, 2005). Furthermore, the geographically separated coordinating authorities such as the PAOC, had difficulties as there was no central method for consolidating information throughout the effort. (Barrett, 2005). The uncertainty of when, how and to whom to pass information pervaded Unified Assistance. During Unified Response, there were several examples of poor information management which resulted in excess expenditure and inefficient response. A particular example involved information regarding the condition of the runway/pavement at Port Au Prince Airport. In this instance RFFs were placed for assessment teams and repair teams when the JTF-PO had never reported anything wrong with the runway (JTF-PO, 2010). The resulting confusion created artificial bottlenecks in the supply chain during the critical initial stages of the response. In a similar fashion, a bottleneck was created at PaP during the height of the relief operation. It was announced, incorrectly, that the JTF-PO had closed the runway due to ramp congestion when "the ramp was not even close to being full" (JTF-PO, 2010). This misinformation affected the AMD, HFOCC and the DIRMOBFOR. Misinformation continued to be sent throughout Unified Response (AMC, HQ, 2010).

While Operation Tomodachi realized the benefit of a pre-established communications infrastructure, information management was also a problem. One of the largest problems

was communicating information to external agencies using non-classified means. As the majority of Air Operation planning tools reside on classified networks much of the information had to be extracted then rebuilt on unclassified networks for dissemination (PACAF, 2011). This manual process took additional time and slowed the flow of crucial information which directly affected strategic interests in the region. Some work-arounds to synching this information surfaced as a result with "Defense Connect Online (DCO) becoming the predominate work-around for many connectivity issues" (PACAF, 2011). A unique challenge during Operation Tomodachi were social media and disconnected public affairs outlets. The result was a negative effect on strategic communications capability. PACAF discusses the issue further:

"Initial PA guidance is critical to shaping the information environment and minimizing the gap between strategic messaging goals and the media picture. The Office of Secretary of Defense (OSD) and interagency processes were not responsive enough to provide critical initial guidance, which created gaps between strategic communication/messaging goals and the public media picture. In addition, while PACAF/PA pushed information and links to SAF/PA daily, the Air Staff was not on 24/7 operations which limited SAF/PA ability to adequately inform CSAF/SAF/SECDEF of significant USAF relief effort contributions or to provide timely guidance back to PACAF" (PACAF, 2011).

Similar information management issues and fundamental disconnects were experienced in Liberia during the Ebola response. For example, when the CRG was deployed, 18th AF was unaware of their arrival on station (JTF-PO, 2014). Lack of established

information pathways resulted in dual tasking units by USTRANSCOM and USAFE/A3. Both Commands sent assessment teams to Monrovia, Liberia resulting in two airfield assessment teams completing surveys/analysis of the same airfield and with very different results (JTF-PO, 2014). As it stood, the JTF-PO was capable of a full airfield and cargo distribution assessment while the USAFE/A3 team was only capable of evaluating the runway...a difference not understood until after both units were tasked (JTF-PO, 2014). The JTF-PO in Senegal reported similar issues, documenting conflicting data between the runway reports, which added to overall confusion in the area of operations (JTF-PO Senegal, 2014).

Communications and information management become increasingly difficult when more agencies are involved and the area of response is undeveloped or remote. This does not justify the consistent lack of functioning communications equipment or confusing and redundant information pathways seen in each of the four case studies.

Summary

Overall, there is a tremendous amount of literature serving to establish best practices and processes within a HA/DR logistics operation. Process which specifically address many, if not all of issues identified in the case assessment section. As it stands currently, the military uses the JTF and Combatant Commands as the organizational response toward HA/DR events. Throughout the four cases studied there are persistent problems occurring as a result of this approach. The following presents a framework for viewing these DoD problems through a lens adjusted by relevant literature. Any solutions

addressing the problems previously catalogued have the potential to offer lifesaving aid to millions and further our strategic national interests.

DISCUSSION AND CONCLUSIONS

On humanitarian assistance and disaster relief missions, Joint Publication 3-29 states: “The capability to deploy forces to the operational area and rapidly integrate them into the joint force as directed by the JFC is essential.” Achieving this as an OCONUS Combatant Command however becomes quite challenging when the majority of the aid and supported agencies must be brought into the operational area. Not addressed in doctrine is the underlying assumption that the timeliest response will be facilitated by air transportation and is therefore an ideal vector for establishing some of the most critical enabling capabilities. Additionally, Combatant Commands are allocated forces associated to Operational Plan(s) and not necessarily assistance or relief efforts per the global force management allocation plan (GFMAP). The use of personnel and equipment in this new supporting role inherently compromises their warfighting capability. Transportation Command is not a Geographic Combatant Command and is responsible for a much larger proportion of strategically used assets than any other. It also has the unique capability to respond anywhere in the world with these assets allowing not only for rapid response but access to global supply chains. In a sense, the Department of Defense has an ideal strategic “first response” capability in Air Mobility Command but this is not captured in doctrine.

Associated with this lack of specified capability is the lack of critical success factors or key process indicators used by TRANSCOM when responding to a HA/DR scenario. The separation between the response effort and these measurements precludes the notion that there are better avenues of response or supporting measures of effectiveness. Also, resource allocation becomes difficult when prioritization of capability is non-existent, from both an Air Force and DoD perspective. The Contingency Response Wing, which is the current force structure used by AMC for HA/DR, is beholden to a 12-hour response window. The benefits gained from this window are uncertain, especially when those responding aren't prioritizing toward such CSF's or KPI's.

OUA demonstrated the value placed on an air distribution system for delivering relief and evacuating victims. This is captured from a logistics standpoint by observing both the speed at which air transportation may deliver relief but also by the kind of aircraft delivering to point of need. As seen in the following timeline, the movement of these supplies overlaps with that of significant movement milestones:

Clearly, the arrival of cargo is outpacing the organization's ability to strategically manage it due to the problems previously mentioned with communications and command relationships. What's notable is the contribution of differing agencies to the overall effort of delivering relief. As seen in the following graph, the majority of supplies are delivered within the first few weeks following an event of this magnitude by wide-bodied aircraft.

Even the more proximate Carrier Strike Group can't match the speed and volume of strategic lift. There are many reasons for this and will be discussed further in the summary section. The organization responsible for strategic lift within the DoD is USTRANSCOM and the agency capable of using the most wide-bodied aircraft is AMC. In multiple reports, AMC personnel are responding faster and with more relief capability than the Joint Task Force established by doctrine. The facts suggest they're the most suitably positioned to lead an effort of this magnitude due to pre-established relationships, organic capability and the capability to improve a communications package prior to any event thereby reducing the problems associated with ad-hoc integration.

This research demonstrates a capabilities gap then forms between the supporting and supported organization resulting in degradation to overall response and end states. To further understand this capability gap however, the overall performance of the logistics effort is categorized and assessed. Among those processes, what are the key performance indicators (KPI) the DoD measures and to what end? As this study integrates literature, after action reports and interviews with key stakeholders, it becomes clear the organization's position as an enabler results, almost singularly, from this global reach capability.

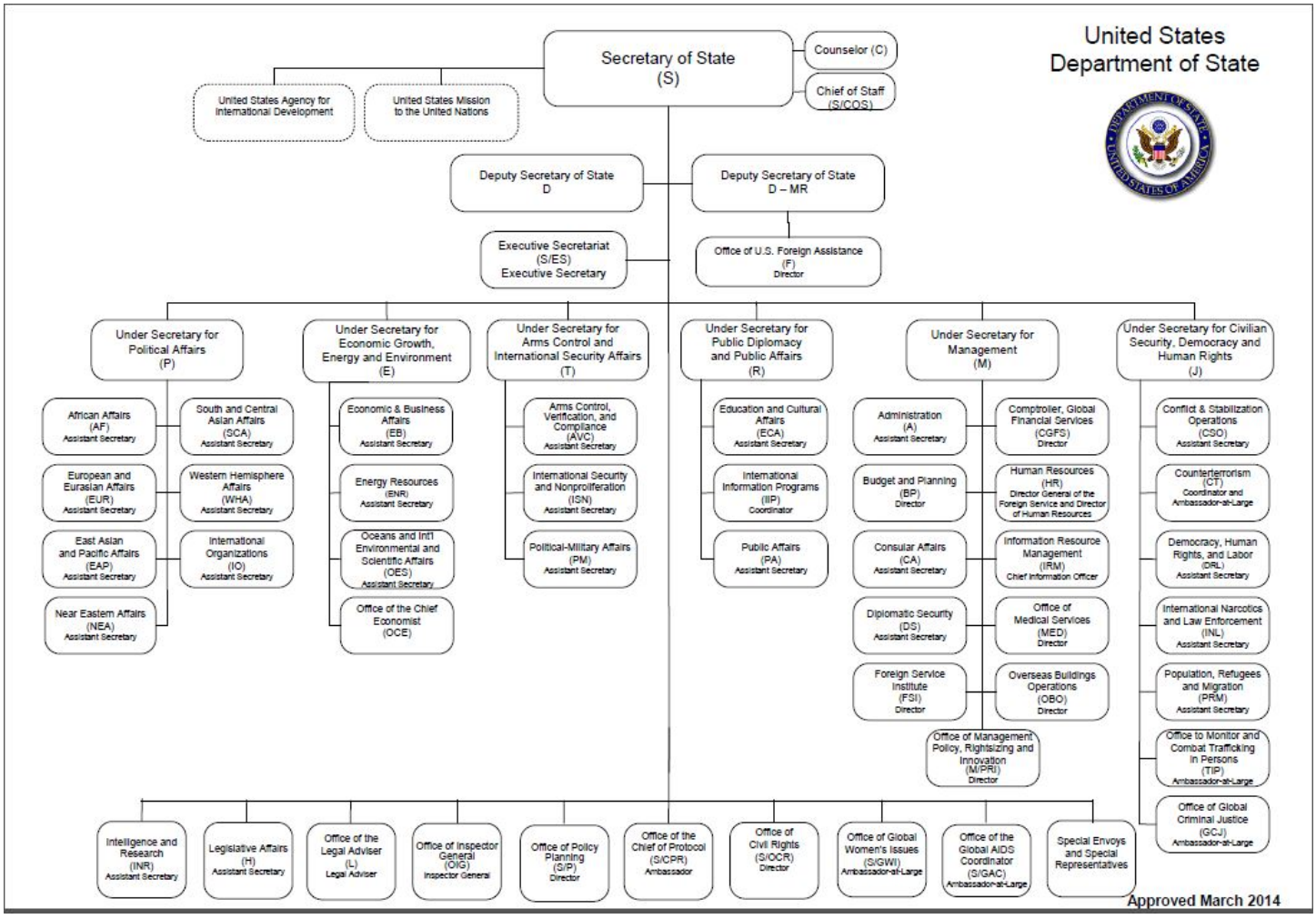
If these processes were to be established by TRANSCOM via AMC, the U.S. government would greatly amplify an already world class capability rendering life-saving aid to millions and furthering our strategic national interests.

Appendix A.

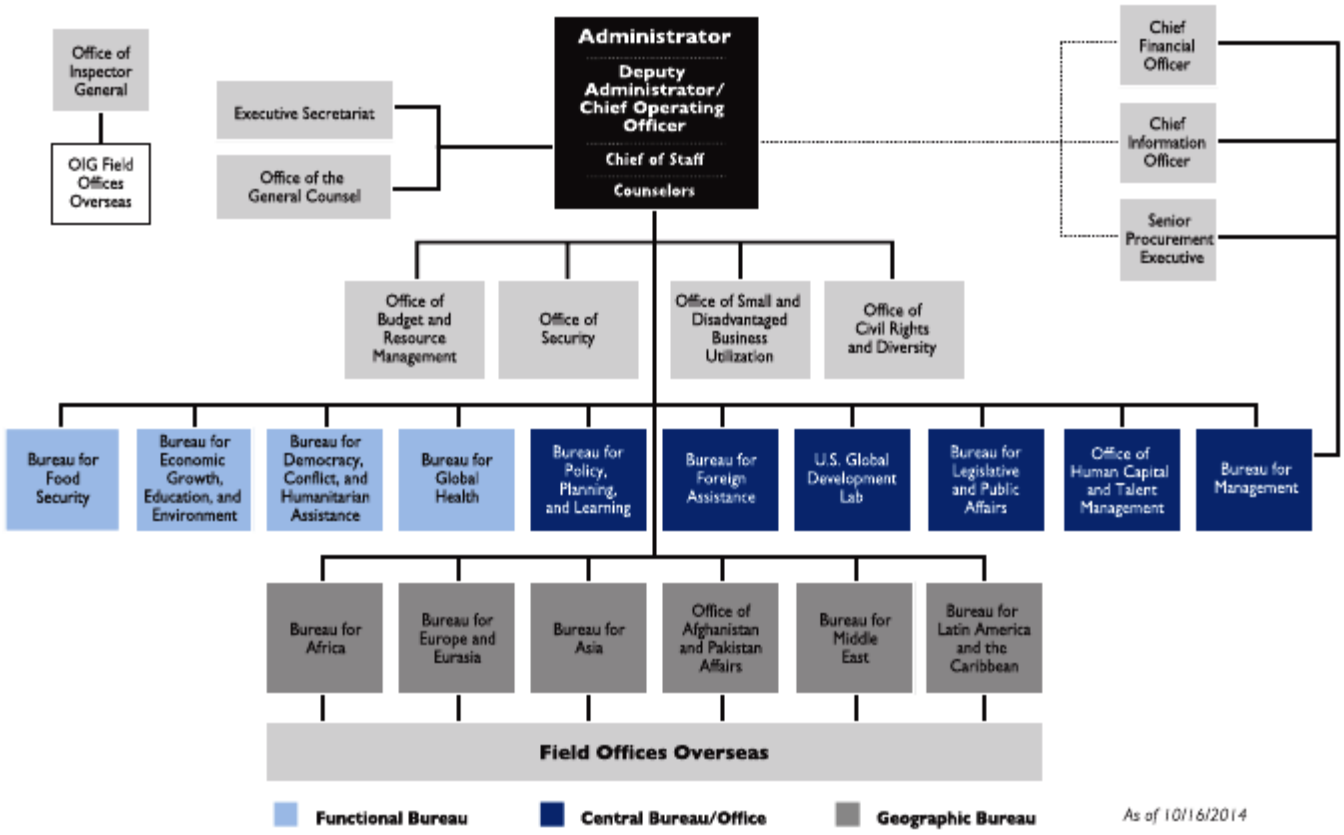
Disaster Management Capabilities Compared to Van Wassenhove' s Five Key Elements of Intangible Preparedness Activities (Kunz, Reiner, & Gold, 2000)

Investment in…	Preparedness activities
Human resources	- Training staff (Altay and Green, 2006; Perry, 2007; Pettit and Beresford, 2005; Van Wassenhove, 2006) - Hiring disaster mitigation and preparedness specialists (Benson *et al.*, 2001) - Hiring and training local staff to respond to disasters (Van Wassenhove, 2006)
Knowledge management	- Learning from previous disaster response experiences and developing best practices (Charles and Lauras, 2011; Van Wassenhove, 2006) and "preparedness templates" for different types of disasters (Day et al., 2012) - Early warning systems (Oloruntoba, 2010; Van Wassenhove, 2006) - Decision-making models and tools (Adivar and Mert, 2010; Balcik and Beamon, 2008; Banomyong and Sopadang, 2010; Day et al., 2009; Görmez et al., 2011; Mete and Zabinsky, 2010; Nolz et al., 2010; Özdamar, 2011; Rawls and Turnquist, 2010; Taskin and Lodree, 2010; Tovia, 2007; Ukkusuri and Yushimito, 2008) - Disaster damage (e.g., earthquake) scenarios (Barbarosoglu and Arda, 2004)
Process management	- Pre-negotiating agreements with suppliers and logistics providers (Altay et al., 2009; Duran et al., 2011; Kovács and Spens, 2007; Van Wassenhove, 2006) - Preparing organizational structures, response plans within relief organizations, and arrangements with other organizations (Altay and Green, 2006; Görmez et al., 2011; Jahre et al., 2009; Oloruntoba, 2010; Pettit and Beresford, 2005)
Resources	- Preparing financial resources for quick disaster response (Van Wassenhove, 2006) - Postponing and pooling resources (Jahre and Heigh, 2008; Kovács and Tatham, 2009; Tomasini and Van Wassenhove, 2009)
Community	- Educating vulnerable communities to recognize specific pre-disaster events and to respond appropriately (Banomyong et al., 2009; Benson et al., 2001; Kovács and Spens, 2009; Oloruntoba, 2010; Perry, 2007; Van Wassenhove, 2006) - Assessing economic and physical vulnerabilities of populations in disaster planning (Perry, 2007) - Cooperating with local governments, military, humanitarian organizations, and businesses in order to establish framework agreements or permanent networks of actors (Jahre et al., 2009; Van Wassenhove, 2006)
	- Negotiating customs agreements with local governments (Kovács and Tatham, 2009) - Disaster planning by local governments and NGOs, in collaboration with local communities (Adivar and Mert, 2010; Perry, 2007)

Appendix B.
Department of State Organizational Chart



Appendix C.
USAID Organizational Chart



Appendix D.
USAID Keys to a Successful Assessment

E. Keys to a Successful Assessment

Several factors contribute to the design of a successful and accurate assessment.

Identify the Users

Every element of an assessment should be designed to collect information for a specific user. The potential users should specify their information needs during the design phase. For example, health workers need certain types of information that will only be useful in certain formats—usually tables—while a procurement officer may need other types of quantitative or qualitative data.

Identify the Information Needed To Plan Specific Programs

Too often, assessments collect information that is incomplete or of little value for planning relief programs or specific interventions. In many cases, information is anecdotal rather than substantive; in others, valuable time is wasted collecting detailed information when the identification of broader trends would be just as useful.

Determine what information is vital, what method is best to obtain this information, and how much detail is necessary for the information to be useful. The type of assistance provided by an agency should be considered when determining the types of data to be collected. For example, an agency that provides food will need to know about availability of transport and fuel, road conditions, local crop harvests, etc.

Consider the Format

It is important to collect, organize, and present the data in a form useful to analysts and program planners. The results must be succinct and presented in a format that makes the implications or recommendations very clear so that priorities can be set quickly. By applying baselines and standards to the presentation, key relationships can

be quickly noted. For example, daily death rates in a displaced person (DP) camp should be calculated and compared to the international standard of 1.0 deaths per 10,000 people per day.

Consider the Timing of the Assessment

Timing may affect the accuracy of an assessment because situations and needs can change dramatically from day to day. Various types of assessments need to be timed to collect the necessary information when it is available and most useful.

Relief needs are always relative but, as a general rule, initial surveys should be broad in scope and should determine overall patterns and trends. More detailed information can wait until emergency operations are well established.

Determine the Best Places To Obtain Accurate Information

If the information must be obtained from sample surveys, ensure that the areas to be surveyed represent an accurate picture of needs and priorities. For example, carrying out a health survey limited to a medical center would yield a distorted view of the overall health situation because generally only sick or severely malnourished people and their relatives would be in the medical center.

Distinguish Between Emergency and Chronic Needs

Virtually all developing countries have longstanding chronic needs in most, if not all, sectors. It is important to design an

assessment that distinguishes between chronic and emergency needs. Attempt to acquire baseline data, reference data, and/or recognized and accepted standards in each sector. For example, if malnutrition is prevalent in a certain area of a country, a nutrition survey of the affected population will almost certainly reflect poor nutritional status. The surveyors must differentiate between what is normal for the location and what is occurring as a result of the disaster so that emergency food aid and health care can be provided to those in most dire need. (Remember that assessments may bring to light previously unrecognized or unacknowledged problems in a society. Thus, the data

collection system should be careful to structure the information so that critical data such as health status, etc., can be used for long-term planning.)

Assess Needs and Vulnerabilities in Relation to Capacities

Needs are immediate requirements for survival. Vulnerabilities are potential areas for harm and include factors that increase the risks to the affected population. Vulnerabilities create unequal levels of risk between groups. Needs are assessed after an emergency has occurred, whereas vulnerabilities can be assessed before and during the emergency. Needs are expressed in terms of requirements (food, water, shelter, etc.); vulnerabilities are expressed in terms of their origins (physical/material, social/ organizational, or motivational/attitudinal). The antidote to needs and vulnerabilities are self-reliance and capacities. Capacities are means and resources that can be mobilized by the affected population to meet their own needs and reduce vulnerability.

Assessing vulnerabilities and capacities, as well as needs, provides the following benefits:

- Preventing an expansion of the emergency in which today's vulnerabilities become tomorrow's needs.
- Targeting assistance to the most vulnerable groups.
- Effecting a sustainable recovery based on local resources and institutions.

The last point is particularly important because externally derived assistance can actually slow recovery and impede a return to development if not provided in a way that supports the efforts of the local populations to secure their own means of long-term survival. The direct engagement of members of the affected population is essential to ensure an accurate and thorough assessment of their needs, vulnerabilities, and capacities.

Use Recognized Terminology, Standards, and Procedures

Assessments will invariably be carried out by a variety of people operating independently. To provide a basis for evaluating the information, generally accepted terminology, ratings, and classifications should be used in reporting. The use of standard

survey forms with clear guidelines for descriptive terms is usually the best way to ensure that all information is reported on a uniform basis.

Appendix E.
Operation Unified Assistance Case Study – Asian Tsunami

An organizational case study

Introduction

At 0600Z on 26 December 2004, a 9.3 magnitude earthquake struck in the depths of the Indian Ocean approximately 160 kilometers off the coast of Sumatra Island. The resulting Tsunami emanating from the epicenter caused widespread death and devastation. Countries affected by the natural disaster included the coastal regions of Sri Lanka, India, Thailand, Maldives, Myanmar, Malaysia, and others. The AMOCC/CC and his team identified Utaphao, Thailand as the most viable hub from which to conduct intra-theater airlift operations

USPACOM responded to the tsunami disaster by implementing its service-led joint task force (JTF) construct. Marine Forces Pacific (MARFORPAC) was designated as the lead for this Humanitarian Assistance/Disaster Relief (HA/DR) operation which in turn, assigned III Marine Expeditionary Force (MEF) as the core JTF staff to lead the relief effort.

According to PACAF, 24,000,000+ pounds of cargo were moved by air (fixed and rotary wing) with the first relief cargo arriving on the ground within 72 hours of the earthquake and tsunami. *OUA* was the fourth largest air mobility foreign humanitarian relief effort ever in terms of total cargo moved and first in terms of short tons (STONS) moved per day (261+ STONS/Day over the 47-day operation).

Data Sources

- CSF-536 Joint Force Air Component Commander (JFACC)/Air Force Forces Commander (AFFOR) Lessons and Observations
- Air Mobility Lessons Learned from Tsunami Humanitarian Assistance and Disaster Relief Operations in the Indian Ocean

Equipment

According to AMC, 142 missions were flown moving 2,943 passengers and 3,786 STONS of cargo.24 The JFACC reported the following airlift numbers:

 Intra-theater airlift (C-130): 357 missions equaling 994 sorties

 Inter-theater airlift (C-17/C-5/C-141): 128 missions equaling 327 sorties

 Cumulative airlift total (fixed and rotary wing): 25,582,014 lbs.

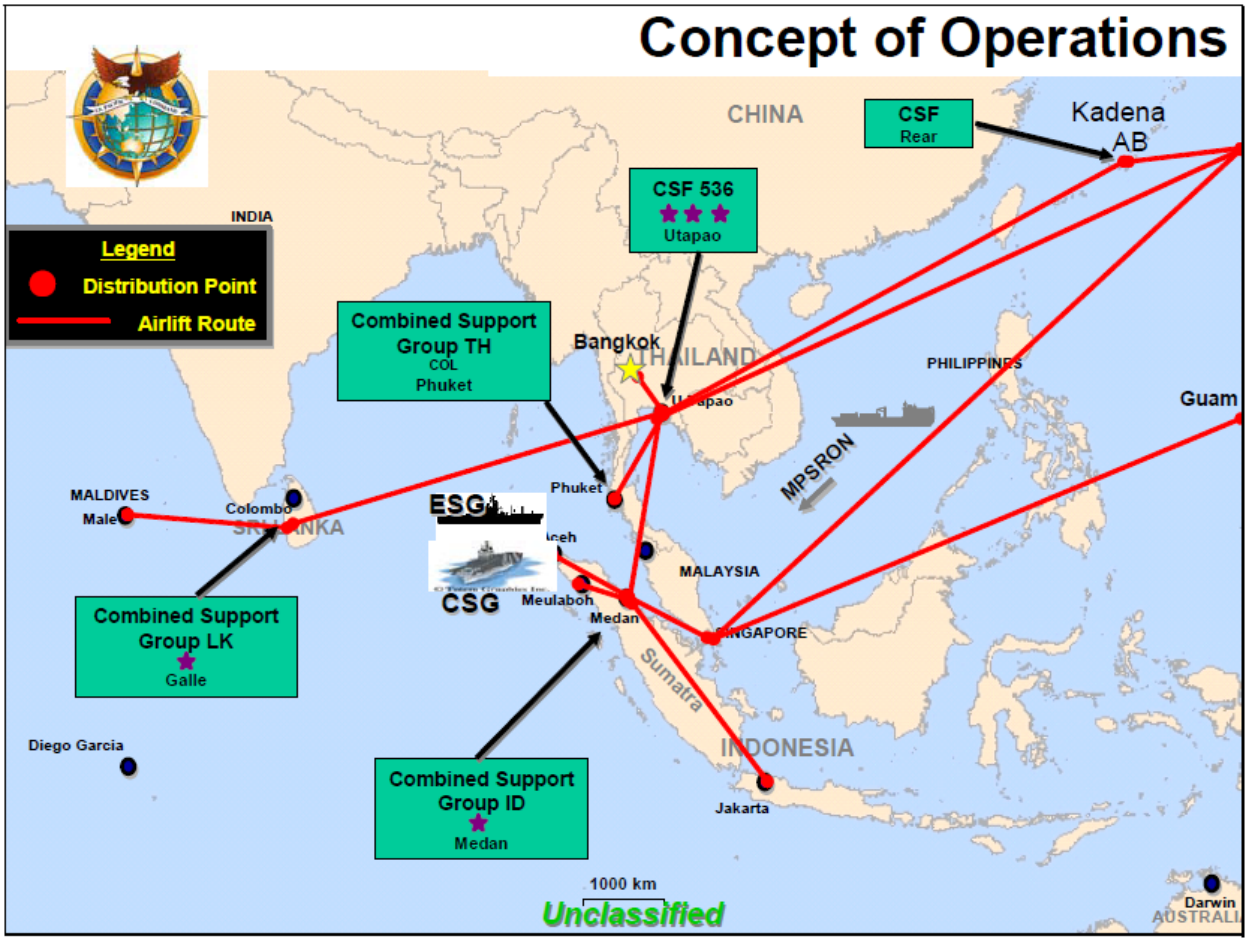
Air Force Personnel

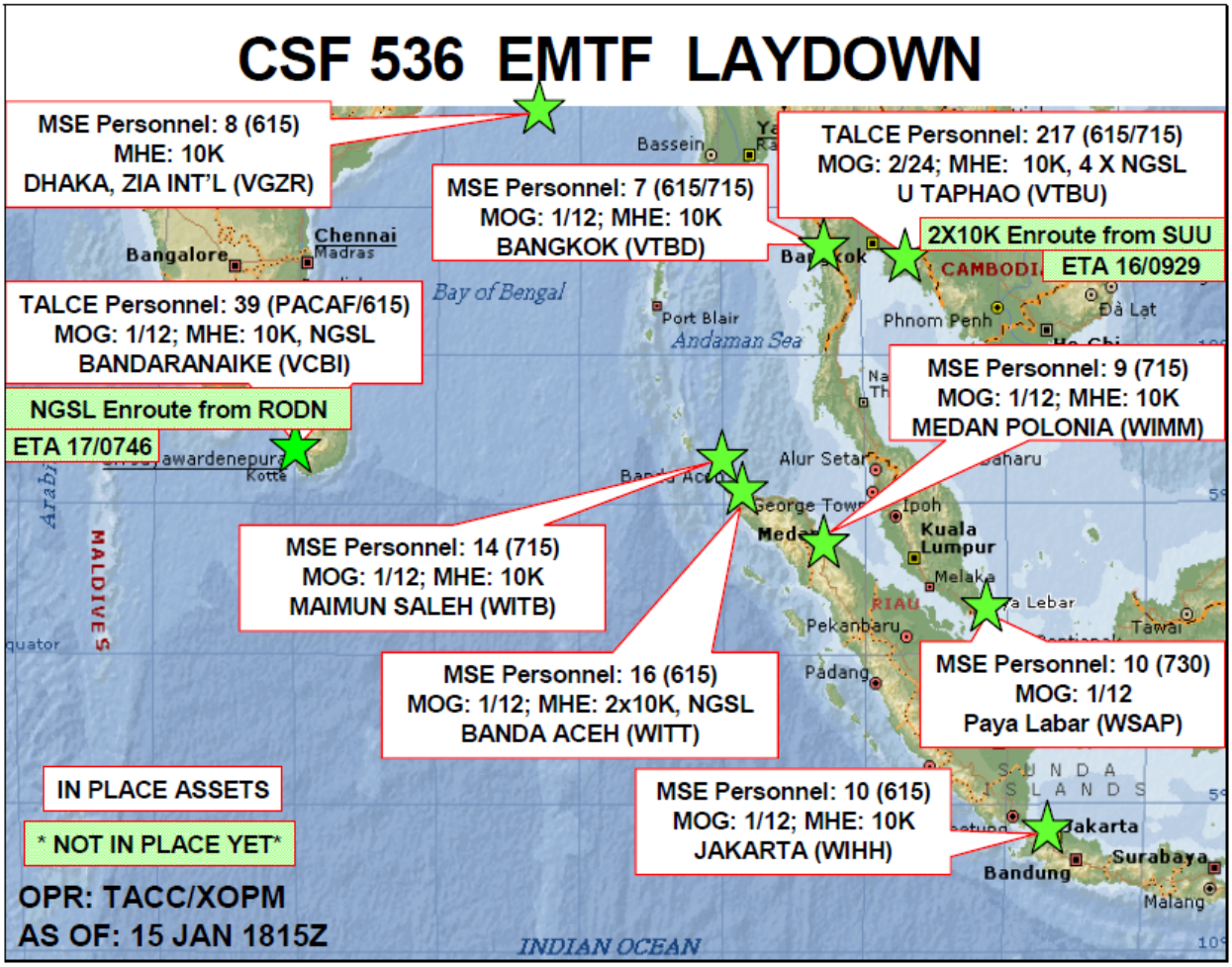
More than 2,000 airmen from 100 Air Force units and 14 bases, as far apart as Charleston AFB, S.C. and Kadena AB, Japan, were involved. They supported or flew 30 Air Force aircraft that conducted more than 1,400 sorties in the region and scores of long-haul missions into the theater…

Most of the AMC TALCE forces came out of the 615th Air Mobility Operations Group (AMOG) from Travis AFB, CA. They primarily supported operations at Utaphao AB and Bangkok, Thailand; Banda Aceh, Jakarta, Maimun Saleh, and Polonia (Medan), Indonesia; and Dhaka, Bangladesh. PACAF's 613th Contingency Response Group (CRG) had primary responsibility for operations in Colombo, Sri Lanka and the Maldives Islands.

- Cumulative passengers moved (fixed and rotary wing): 13,302,25


Participating Nation Military Operations
INDIA
SRI LANKA
Ships x 30
Helos x 30
Fixed Wing x 22
C-130 x 2
Ships x 2
Helos x 3
Med Team
Eng Team
Ships x 5
AN-32 x 7
MI-8/17 x 6
Helos x 3
Fixed Wing x 2
Medical Team x 2
Med Team
FFG
ARS
2 x helos
Ship x 1
Enroute
Colombo
C-130 x 1
Water System
C-130 x 1
Ships x 2
DART Team
ROWPU x 4
Med Team
Eng Team
Ship x 1
Helo x 1
Male
Ships x 12
Helos x 13
Fixed Wing x 5
C-130 x 2
Ships x 2
Eng Team
Med Team
Ships x 4
Helos x 3
Fixed wing x 3
Medical Team x 4
Eng Team
C-130 x 1
U-tapao
Forensic
Team
1 x DVI
Team
Fixed wing x 1
MP Team
C-130 x 1
LST to ID
LST to SL
HH-60 x 2
Field
Hospital
Med Team
Field Hosp
Eng Team x 2
ALT x 2
Khao Lak
Ships x 7
Field Hospital
Eng Team
Field Hospital
Hospital Ship
Helos x 2
Aceh
Helos x 1
C-160 x 2
Ship x 1
C-130 x 2
Helos x 2
Med Team
Eng Team
Medan
Meulaboh
C-130 x 1
Ships x 2
LPD/AOR
CH-47 x 3
HH-60 x 2
Med Team
LPA – CJTF 629
Helos x 2
K.L.
Helos x 4
C-130 x 2
Ships x 28
Helos x 2
Fixed Wing x 15
French Ships X 2
Helos x 8
Med Team
Swiss Helos x 3
ETA: TBD
C-130 x 5
CH-47 x 4
Super Puma x 4
Hospital
Ship
LST x 2
C-130 x 6
B-707 x 1
UH-1 x4
INDONESIA
AUS
AUT
BGD
BRN
CAN
CHE
DEU
FRA
GBR
IDA
IND
JPN
KOR
LKA
MYS
NOR
NZL
PAK
SGP
THA
USA
RNZAF B-757
in region
2 x C-130
Darwin
UNCLASSIFIED


Concept of Operations
CHINA
CSF
Rear
Kadena
AB
CSF 536
Utapao
INDIA
Legend
Distribution Point
Airlift Route
Combined Support
Group TH
COL
Phuket
Bangkok
THAILAND
PHILIPPINES
Guam
MPSRON
MALDIVES
Male
Colombo
SRI LANKA
ESG
Phuket
MALAYSIA
CSG
Meulaboh
Medan
SINGAPORE
Combined Support
Group LK
Galle
Sumatra
INDONESIA
Diego Garcia
Combined Support
Group ID
Medan
Jakarta
1000 km
Unclassified
Darwin
AUSTRALI


CSF 536 EMTF LAYDOWN
MSE Personnel: 8 (615)
MHE: 10K
DHAKA, ZIA INT'L (VGZR)
MSE Personnel: 7 (615/715)
MOG: 1/12; MHE: 10K
BANGKOK (VTBD)
TALCE Personnel: 217 (615/715)
MOG: 2/24; MHE: 10K, 4 X NGSL
U TAPHAO (VTBU)
2X10K Enroute from SUU
ETA 16/0929
TALCE Personnel: 39 (PACAF/615)
MOG: 1/12; MHE: 10K, NGSL
BANDARANAIKE (VCBI)
NGSL Enroute from RODN
ETA 17/0746
MSE Personnel: 9 (715)
MOG: 1/12; MHE: 10K
MEDAN POLONIA (WIMM)
MSE Personnel: 14 (715)
MOG: 1/12; MHE: 10K
MAIMUN SALEH (WITB)
MSE Personnel: 16 (615)
MOG: 1/12; MHE: 2x10K, NGSL
BANDA ACEH (WITT)
MSE Personnel: 10 (730)
MOG: 1/12
Paya Labar (WSAP)
MSE Personnel: 10 (615)
MOG: 1/12; MHE: 10K
JAKARTA (WIHH)
IN PLACE ASSETS
* NOT IN PLACE YET*
OPR: TACC/XOPM
AS OF: 15 JAN 1815Z
Bassein
Chennai
Madras
Bangalore
Bay of Bengal
Port Blair
Andaman Sea
Phnom Penh
CAMBODI
Đà Lạt
Alur Setar
George Town
Ipoh
Kuala
Lumpur
Melaka
RIAU
Pekanbaru
Padang
Tawai
Kotte
MALDIVES
SUNDA
ISLANDS
Jakarta
Surabaya
Bandung
Malang
INDIAN OCEAN

Overview of Reports

"Until those operations were up and running, the U.S. military provided the critical capabilities needed to keep the response moving. Once the UN, NGOs and IOs were ready to take over relief operations, all actions were turned over to them in early February 2005 and continue to this day."

The JTF-536 was originally set up to operate out of Okinawa, Japan but was later moved forward to Utaphao Air Base (AB), Thailand with JTF Rear remaining in Japan.

Also located in Hawaii with the COMAFFOR/JFACC was Brigadier General Select Brooks L. Bash (15th Expeditionary Mobility Task Force Commander – EMTF/CC) who served as the Director of Air Mobility Forces (DIRMOBFOR).

Timeline

26 Dec 04 – Earthquakes and tsunami; operational planning team stood up at United States Pacific Command (USPACOM)

27 Dec 04 – C-130s and P3s begin deployment to Thailand; CVN-72 (Aircraft Carrier Nuclear Powered) Abraham Lincoln Carrier Battle Group underway to disaster area

28 Dec 04 – Course of Action decision to stand up Joint Task Force (JTF)

30 Dec 04 – First C-130 relief flight; maritime PREPRO (prepositioning) ships ordered underway

31 Dec 04 – First helicopter relief flight takes place

2 Jan 05 – Commander, JTF-536 arrives in Thailand to set up JTF operations (JTF later renamed to Combined Support Force – CSF-536)

8 January - 374 AEW at Utaphao, Thailand, reported a total of 799 tons of cargo delivered, 769 passengers transported, and 301.6 hours flown

17 January 2005, USAF aircraft had flown a total of 748 missions, transported 4,007 passengers and delivered 6,036 short tons (ST) of cargo since the start of the operation

22 Jan 05 – Combined Support Group-Thailand (CSG-T) at Phuket, Thailand stands down

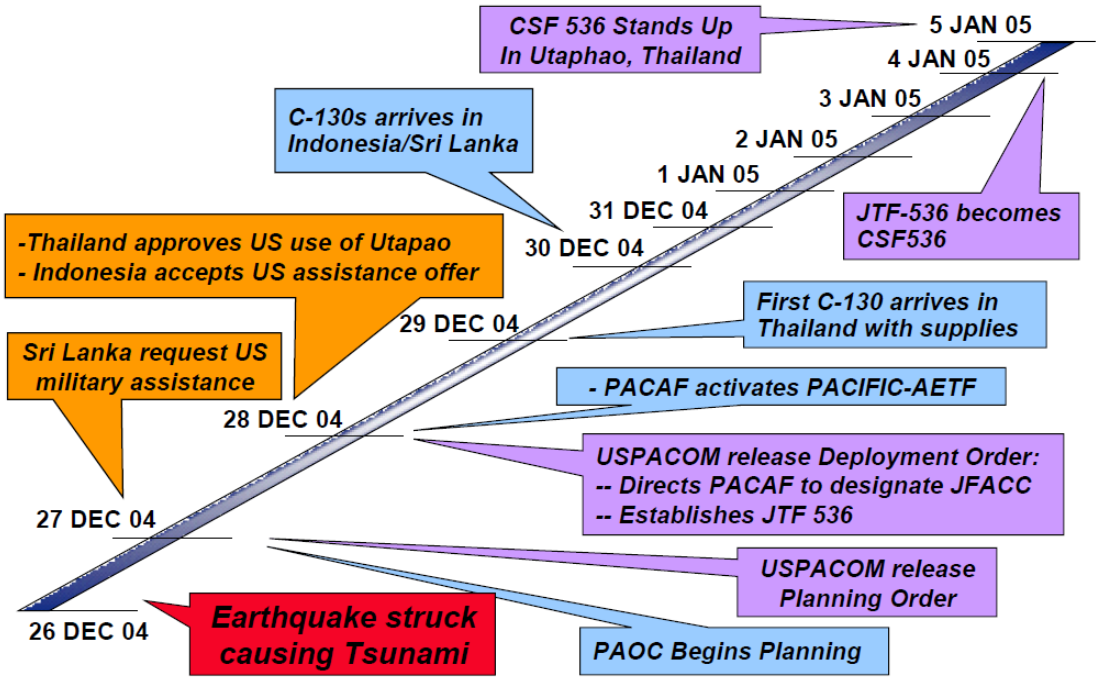
29 Jan 05 – Combined Support Group-Sri Lanka (CSG-SL) at Galle, Sri Lanka stands down

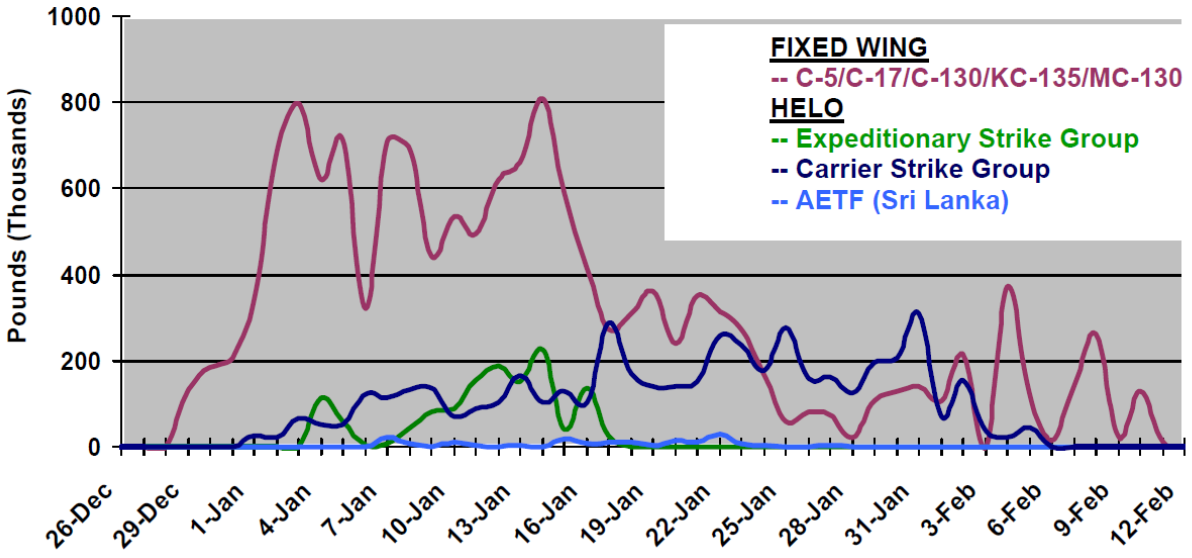
31 Jan 05 – Carrier Abraham Lincoln ceases operations

10 Feb 05 – Combined Support Group-Indonesia (CSG-I) at Medan, Indonesia stands down

12 Feb 05 – CSF-536 stands down

23 February - TACC reported that all deployment and redeployment missions associated with OUA were closed


CSF 536 Stands Up In Utaphao, Thailand
5 JAN 05
4 JAN 05
3 JAN 05
2 JAN 05
1 JAN 05
31 DEC 04
30 DEC 04
29 DEC 04
28 DEC 04
27 DEC 04
26 DEC 04
C-130s arrives in Indonesia/Sri Lanka
JTF-536 becomes CSF536
-Thailand approves US use of Utapao
- Indonesia accepts US assistance offer
Sri Lanka request US military assistance
First C-130 arrives in Thailand with supplies
- PACAF activates PACIFIC-AETF
USPACOM release Deployment Order:
-- Directs PACAF to designate JFACC
-- Establishes JTF 536
USPACOM release Planning Order
PAOC Begins Planning
Earthquake struck causing Tsunami


Pounds (Thousands)
1000
800
600
400
200
0
FIXED WING
-- C-5/C-17/C-130/KC-135/MC-130
HELO
-- Expeditionary Strike Group
-- Carrier Strike Group
-- AETF (Sri Lanka)
26-Dec
29-Dec
1-Jan
4-Jan
7-Jan
10-Jan
13-Jan
16-Jan
19-Jan
22-Jan
25-Jan
28-Jan
31-Jan
3-Feb
6-Feb
9-Feb
12-Feb

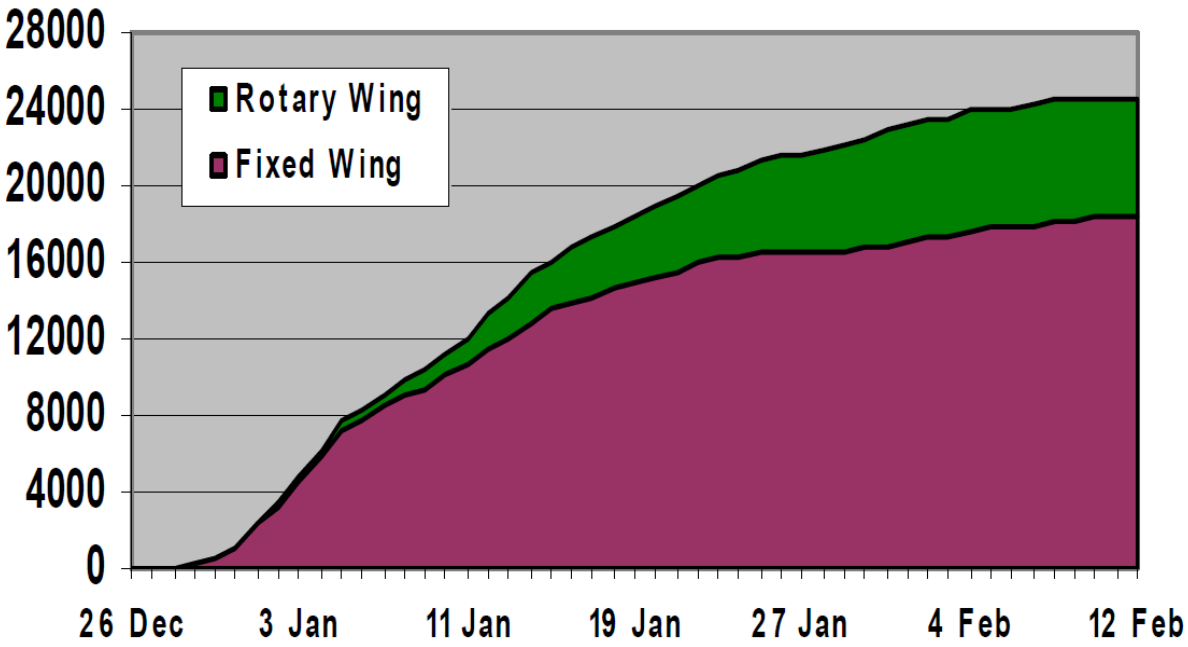


Figure 5. CSF-536 Cumulative Air Relief

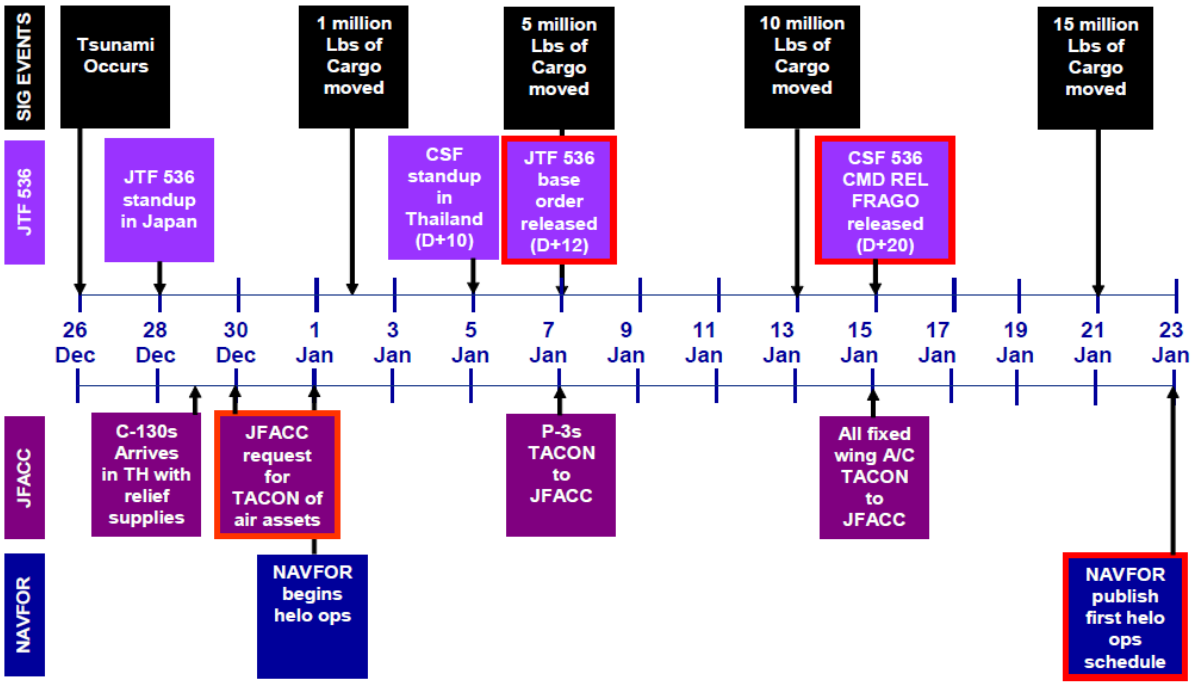


Figure 7: CSF-536 Significant Events Timeline

Significant Issues

Command Relationships

Doctrine: "*command is central to all military action and unity of command is central to unity of effort*"

The establishment of clear and unambiguous command relationships for JTF/CSF-536 did not occur as rapidly as possible. Clear command relationships did not get resolved until 15 January 2005 (21 days into the 47-day effort) when CSF-536 published FRAGO [Fragmentary Order] 6. Additionally, CSF-536 air relief and distribution operations were conducted by four separate elements with differing levels of command authority resulting in command and control challenges

The JFACC identified the following lessons learned or challenges when it came to OUA command relationships:

 Clearly defined command relationships in an unambiguous and fully coordinated OPORD [operations order] should be the first order of business in any JTF standup

 In an organization composed of service, functional, non-doctrinal entities, clear lines of authority and command relationships are a must otherwise unity of command and unity of effort will suffer

 Seams from a mixed organizational construct (service, functional and non-doctrinal entities) can result in serious impediments to integration and synchronization of HA/DR operations

 Rapid dissemination of organizational structure/charts and associated communication information [is] critical to ops: *"It was effective, but could have been more efficient"*

CSF-356 identified that, as a result of command relationship issues …*air relief and distribution operations were conducted by four separate elements:*

 A functional component (JFACC)

 Service components (NAVFOR/AFFOR)

 Combined support groups (country-specific assessment & coordination)

 TRANSCOM/AMC (a direct support relationship)

PACAF's 613th CRG operating under the COCOM/OPCON of USPACOM with TACON only to CSF-536 (contrary to Joint guidance – JP 0-2), while AMC's 615th TALCE remained under the COCOM/OPOCON of USTRANSCOM, AMC and the TACC. As a result, similar base opening and airfield operating forces ended up working for two different bosses there was a lack of integrated mobility planning between CHOPed and Non-CHOPed airlift and support forces that further complicated the relationship with CSF-536

Financial Impact

The lack of coherent command relationships even impacted financial guidance between Supported and

Supporting Commands – *When this operation was first started – "MC units were some of the first to deploy to the area. For support upon arrival, they reverted to the local economy for sustainment and lodging as no requirements for bare base assets were called for. Later on a JTF was set up to run operations but AMC assets were not CHOPed to the JTF or theater (strategic and mobile C2 assets remain under the OPCON of USTRANSCOM through AMC and TACC). While operations were progressing, the JTF personnel subsequently acquired contract quarters and meals, while the AMC assets remained in commercial quarters. With little interaction between the two, AMC personnel were unaware of the JTF policy on billeting until they were notified about two weeks later that they should have been in contract quarters from the beginning. Subsequent financial policies were released by the theater after the fact stating all personnel ISO [in support of] the JTF were required to utilize these services. AMC personnel had accumulated bills with the financial offices refusing to pay the bills based on the theater policy. "Failure to properly establish the complex command relationships before deployment and left the TALCEs well ahead of the power curve and unable to articulate their orders. It made multiple commanders on the ground unable to discuss their relationships, and the resulting power struggles were time consuming and disruptive to operations. This was not the first time we needed to provide disaster response to wide areas involving multiple countries"*

[The] DIRMOBFOR remained in Hawaii…difficulty responding to changing NGO/PVO [private organizations] requirements: dictated means of lift, regimented process for the requesting of lift, heavy airframes jeopardized slot time adherence…provided an LNO [Liaison Officer] later in the operation…daily VTCs [Video Teleconferencing] helped.

There was some duplication of roles and responsibilities of the AMOCC (air mobility operations control center) and the PAOC (pacific air operations center). These included acquisition of diplomatic clearances, airlift planning functions, and mission monitoring responsibilities. While most issues were resolved, there continued to be some overlap of duties throughout the operation

The CSF 536 commander outlined command relationships in the 7 January 2005 CSF-536 Base Order. The base order was ambiguous with respect to command relationships, and was not clarified until the 15 January 2005 CSF-536 FRAGO 6 (D+20)

stipulated the JFACC was the supported commander for PR/SAR, ISR, inter-theater, and intra-theater airlift operating in the ROA, and assigned the JFACC TACON of all CSF-536 U.S. aircraft.

Communications

AMC forces had difficulty maintaining effective communications with the TACC, the CSF-536 command structure in Thailand, as well as the JFACC and the DIRMOBFOR (who were not collocated with CSF-536 in Thailand, but remained at Hickam AFB, HI).

- "DoD asked a Defense Science Board (DSB) Task Force to review communications capabilities and found these capabilities lacking"

Issues (range, bandwidth, encryption, battery life, etc) associated with multiple types of radios and networks (TALCE, Security Forces, LMR [Land Mobile Radio] and interface with other Services and host nations) made it difficult for commanders and other key C2 organizations to maintain contact. Some commanders were required to carry 4 or 5 different radios just to ensure connectivity and [only] occasionally did they have the range to cover cross base (intrabase) operations.

Because of the severe damage to in-country communications networks, OUA tested the US military capability to build an instant communications system between the forward and rear operating elements.

Almost one third of the 63 people interviewed [by an AF/XOL lessons learned team] said there were problems communicating with personnel deployed forward into the ROA [Relief Operations Area]

For the first 3 weeks of the deployment, comm was non-existent; therefore the comm package needs to be front-loaded in the deployment. Once the comm unit showed up, it only took a couple of days to get set-up, but by that time operations were tapering off. Satellite phones were nice, but they are not truly worldwide; they also consistently cut out and dropped signal. Cell phones were a saving grace, but the units needed more talk time minutes to ensure they can stay in contact with home station.

Deployed personnel had to rely on cellular and Iridium phones, INMARSAT instruments, and local commercial Internet access to send and receive critical mission-related information

Problems with the classification of data took basically two forms. First, operations were initially hindered by the inability to transfer information coming out of established locations with Secret Internet Protocol Network (SIPRNET) to forward locations operating with Non-Classified Internet Protocol Network (NIPRNET)…on the distant end, deployed TALCE and MST locations were extremely slow in getting SIPRNET capability, so initial exchanges of information were limited at best, having to rely on secure Iridium satellite phones, creating a single point of failure and extremely limited compatible communications reach-back to the PAOC

Communications was a major weakness overall and HQ needs to coordinate with our deployable units to resolve this issue through equipment and process changes.

- *LMRs failed approximately 95% of the time*

For tracking supplies being shipped into the theater (i.e. bottled water), only the Global Air Transportation Execution System (GATES) had the capability to provide level 6 detail on cargo aboard a particular mission; however, the deployed TMO [Transportation Movement Office] troops could not use the DGATES [Deployed Global Airlift Transportation and Execution System] systems they brought with them.

Three weeks into the operation, the CSF at Utaphao was using a SIPRNET café style operation with all the secured computers shared and located in one central point, with no printer support available. CSF-536 SITREPs were being submitted using an Internet email account accessed through a local Internet Service Provider (ISP).

The DIRMOBFOR noted that *I-BEST [Inmarsat Bandwidth Efficient Satellite Transport] did not work as advertised. The Navy controls access to satellite time on this system. I-BEST was initially set up at Utaphao as a primary telephone/data communications method until deployed assets were brought on line with greater capability. The biggest complaint from the field was that data rates were below the expected 'guaranteed' 32K rate. It was later determined that the reduced bandwidth was a result of the Navy assigning reduced bandwidth to the TALCE Utaphao based I-BEST system because of competing needs in the area.*

Command and liaisons elements had to search through various websites and make an overwhelming amount of phone calls to ensure proper information was being passed up and down the chain of command. Information external to the PAOC was difficult to locate because there was no central site for consolidating information.

- *Part of the problem with Utaphao was it took them a week to bring up their SIPR capability*

Air Mobility Expertise in Theater and In-Transit Visibility (ITV)

Is RFF no good?

"For AMC, use of an RFF or DEPORD impacts economies of scale, which in turn, reduces efficiency, effectiveness and visibility over all the pieces in the air mobility system. *OUA* lessons learned reconfirmed that the problem still exists and was compounded by the flood of relief supplies from all over the world into the air mobility system. It was difficult maintaining control over the U.S. military piece of the operation, but when the operation went truly global, it became extremely difficult to track and control the movement of personnel, equipment and relief supplies. By deploying forward fully trained air mobility experts early to do the planning and execution of theater air mobility operations, this problem could be alleviated"

There was uncertainty about what the process should be for passing intra-theater requirements and there was a lack of control and visibility over intra-theater airlift movements.

There was also no record of what organization the cargo being moved belonged to. Also, planning windows were never established and adhered to

No consolidation Air Coordination Center – Air Mobility Division functions should have deployed forward with CSF-536. Distance, time zones, and lack of SA [Situational Awareness] all contributed to less than efficient use of A/C [aircraft] and confusion between supporting air elements

ITV was not effective because a majority of the supplies had no TCN's [Transportation Control Number]

Without a clear and validated knowledge of what supplies were being lifted on every mission, the JFACC lacked the ability to redirect supplies to new locations if emerging pressing needs surfaced. Additionally, timely operational assessments could not be accomplished due to the lack of knowledge of supplies being transported

Case Study Questions

Should AMC become the lead enabling (supporting) agency within the first 72hrs of an OCONUS HA/DR event?

CSF-536 closed its doors at Utaphao AB, Thailand on 12 February 2005, stating that the deployment of U.S. military forces to Southeast Asia was part of a much larger U.S. commitment to providing long-term humanitarian assistance and disaster support. Assistance will continue and be **directed by the U.S. Agency for International Development**, which is the U.S. government's lead agency for support to the region

The results of the TALCEs, MSEs, and MSTs during OUA were phenomenal.

- *"one of the greatest services we provided in this effort was the team at Banda Aceh that helped organize that ramp.*
- *They began helping to organize the ramp a mere 12 hours after their arrival"*
- *"The limited resources, which are introduced into an otherwise austere environment, are essential to mission success."*

"air distribution system relies upon certain processes enabled by mobility expertise. Movement of relief supplies is central to HA/DR ops, and must be managed by process experts with the proper equipment…"

"Lessons learned and relearned over the years show a lack of air mobility expertise upfront in the theaters, a lack of JOPES expertise, and difficulty in keeping an updated TPFDD through ITV to maintain visibility over what is moving through the Joint deployment system."

JTF report: (1) command organization and relationships; (2) command and control operations and relief supply movement processes; (3) communications shortfalls; and (4) manning needs

JTF L2: "Clearly defined command relationships in an unambiguous and fully coordinated OPORD should be one of the first priorities of any JTF"

JTF L2: "Designate JTF component lead for HA/DR events based on operational and environmental considerations. USPACOM should consider amending its pre-determined service-led JTF construct by adding PACAF as a potential lead for HA/DR operations. HA/DR operations requiring timely transportation of relief supplies over vast distances would greatly benefit from the air component commander leading the effort.

Adding PACAF as a potential lead component would provide CDRUSPACOM flexibility in establishing an effective command structure for future HA/DR operations."

JTF L2: To leverage Service capabilities in joint operations, the JTF staff must have appropriate personnel assigned from the appropriate services. A recommendation to rapidly establish a joint command structure appropriate for a specific HA/DR JTF for future operations, is to use the PACOM Standing Joint Force Headquarters (SJFHQ) as a core joint staff for the JTF Commander to establish his/her team. The PACOM SJFHQ should be manned, trained, and prepared to act as a core element for PACOM contingencies across the spectrum of conflict, and be well versed in all aspects of joint operations.

"The JFACC made a conscious decision to request support from AMC to establish an AMD since the PAOC is not manned to maintain an AMD. Prior to the standup of the AMD, the AMOCC was designated to plan and execute the initial mobility requirements for OUA" "Commanders with a standing AMOCC should consider designating their AMOCC as the standing AMD in the AOC to take advantage of the process and habitual relationship fostered through daily operations. AMC personnel can provide augmentation to the AMOCC/AMD as the mission requires."

Can we optimize DOD's response to HA/DR by further leveraging AMC and KPI/CSF identification?

Another challenge to overcome was the lack of priorities for movement. Due largely to the dynamic environment, unfamiliar NGO operations and processes, and initial lack of air mobility and logistics expertise on the CSF-536 staff, OUA was hindered by the lack of clear definition, acquisition, prioritization, and communication of lift requirements.

To facilitate mission accomplishment, measures of merit need to be established early in any operation. The strategy-to-task approach can assist in the assessment process. It is critical to focus on output vice input if the desired effects of HA/DR operations are to be optimized.

Is it possible to improve DOD HA/DR effectiveness by reducing AMCs response time?

Not enough information to ascertain; remains excessively hypothetical

How was NGO/NPOs integration anticipated and resourced?

A fragmented planning, coordination and integration process Initial lack of understanding between host nation representatives, NGOs and forward deployed military personnel hampered initial set-up and coordination of operations.

300 relief organizations trying to become involved in the relief effort--One of the biggest issues right now are trying to determine what the relief requirements are

A few days into OUA the decision was made that OUA would be a UN led effort with USAID as the conduit through which the Department of Defense would work to identify the requirements. The lack of information and established mechanisms for working through USAID was a challenge in conducting OUA.

Due largely to the dynamic environment, unfamiliar NGO operations and processes, and initial lack of air mobility and logistics expertise on the CSF-536 staff, OUA was hindered by the lack of clear definition, acquisition, prioritization, and communication of lift requirements. The most critical piece of information for HA/DR ops is defining the requirements for humanitarian relief—what kind is needed, where it is needed, and when it is needed. Communications and connectivity problems further complicated this process

What were the pre-planned key process indicators?

Jtf brief: PACAF CONPLAN 5070-98 supporting USPACOM 5070-02, *Foreign Humanitarian Assistance (FHA) and Peacekeeping (PK)/Peace Enforcement (PE) Operations (U),* being out of date, and lacking the detail to lay a framework for air power support to a HA/DR operation. As a result, the FACC/COMAFFOR and DIRMOBFOR had to rely on the experience and crisis action planning skills of their staffs

- The JFACC elected to use pounds of goods delivered to specific locations as a Measures of Merit since it is an indicator of output—or what is of use to the intended object populations of OUA. The JFACC reported values to the CSF staff on a daily basis

***What were the pre-planned critical success factors*?**

The need to actually be on site, do constant surveys of actual requirements, and document this information in JOPES is evident, and will pay large dividends in future HA/DR operations.

What critical success factors or key process indicators were reported?

In this 47-day effort, U.S. aircraft moved an average of about 270 tons of relief-related cargo per day. Over 3,400 sorties were flown resulting in logging more than a million miles flown across this broad region. This 25 million pound effort involved over

100 fixed and rotary wing aircraft from the Air Force, Marines, Navy, Special Operations and Coast Guard

How were communications handled?

"The end goal for AMC should be an air mobility system that requires all users to operate off the same basic information."

For tracking supplies being shipped into the theater (i.e. bottled water), only the Global Air Transportation Execution System (GATES) had the capability to provide level 6 detail on cargo aboard a particular mission; however, the deployed TMO [Transportation Movement Office] troops could not use the DGATES [Deployed Global Airlift transportation and Execution System] systems they brought with them.

In HA/DR operations, ITV is the enabler for the JFACC/COMAFFOR to assess how the operation is meeting the JTF commander's intent and priorities. Establishing ITV with capability, such as: (1) connectivity at forward locations, (2) de-centralized tracking of cargo, (3) ITV-trained personnel at forward locations, and (4) remote ITV equipment

For future operations, it is important to prioritize requirements jointly, to ensure the joint commander is fully resourced to accomplish the mission in an expeditious and efficient manner.

Numerous personnel required to relay Mission Reports (MISREPs) stated that one of the biggest hindrances to their job was the inability to pass secure MISREPs. Three weeks into the operation, the CSF at Utaphao was using a SIPRNET café style operation with all secured computers shared and located in one central point, with no printer support available.

Although communication shortfalls were readily apparent in OUA, additional communications requirements were never received by either the A6 or A6 Forward in Thailand.

Identifying and assigning the responsibility for communications support must be addressed and coordinated well before the next Joint operation.

There was no cogent IM plan in use or disseminated by USPACOM, or CSF-536 during this operation.

Appendix F.

Operation Unified Response Case Study – Haitian Earthquake

An organizational case study (vs individual)

Introduction

Operation unified response was conducted in response to the Haitian earthquake of 2010. This response evolved to include multinational partners as well as multiple non-governmental agencies (500+) and ultimately became the largest humanitarian relief effort associated with the United States military. Transportation Command (TRANSCOM) became the primary Command and Control agency responsible for unifying military response and ordered the formation and deployment of a response force known as a Joint Task Force Port Opening Element (JTF-POE).

This JTF became one of the first responders and filed an After Action Report (AAR) to TRANSCOM at the conclusion of their 27 day mission.

Specific Data Sources

- Joint Task Force Port Opening element after action report
- Archival documents
    - Email
    - PowerPoint
- Literature review: Harvard Case Study

Overview of Report

Date ranged covered in report: 14 Jan – 10 Feb 2010

Sent to: USTRANSCOM/J3, USTRANSCOM DDOC, AFSOUTH DIRMOBFOR, AMC A3MM, TACC/XOP//XOPM, 621 CRW/CC//XP, 817 CRG/CC, 688 RPOE SDDC

Supported Units: USTRANSCOM, Unites States Southern Command (USSOUTHCOM)

Location: Toussaint Louverture International Airport, Port Au Prince, Haiti

MISSION DATA

Operation UNIFIED RESPONSE	
C-17 Missions/Sorties	253/506
C-130 Missions/Sorties	283/566
US Commercial Missions/Sorties	1339/2678
International Missions/Sorties	1131/2262
TOTAL Missions/Sorties	3006/6012
Air Evacuation Missions:	301 Litter, 10 Ambulatory
Off-Load Passengers:	9,509
Off-Load Cargo:	15,450 ST
On-Load Passengers:	15,495
On-Load Cargo:	253 ST

Overview

TRANSCOM's JTF-PO arrived within 2 days of Haiti's magnitude 7.0 earthquake. The leadership of this JTF was liaising with the highest elected official, the Prime Minister, within one day arrival. The JTF was not the first cadre of US personnel to arrive on scene as Combat Controllers had arrived less than one day prior. The JTF gained ground in the area of command and control specifically working with other agencies to establish a regional air movement control center (RAMCC) which was renamed the Haiti Flight Operations Control Center (HFOCC). This allowed for the stabilization of aircraft slot (arrival) time and leveled the inflow of relief personnel and equipment into the country. Additionally, the JTF-PO focused on alleviating bottlenecks at the cargo distribution facility as well as facilitated the creation of forward distribution nodes. Other primary responsivities included American citizen evacuation, passenger processing for both inbound and outbound personnel, and management of airport real estate.

Timeline

Deployment Timeline (10 days from WARNORD to 100% received)

12 Jan – Earthquake occurs

12 Jan – 621 Contingency Response Wing (CRW) placed on telephone standby

13 Jan – Warning Order (WARNORD) received by 621st CRW

13 Jan – 688 Rapid Port Opening Element (Ft. Eustis, VA) identified as sister unit to create JTF-PO with CRW forces

13 Jan (aprox midnight) – 12 Combat Controllers arrive

14 Jan – Execution Order received by both JTF-PO and Joint Assessment Team (JAT)

14 Jan – Tanker Airlift Control Center (TACC) allocated lift (5 C-17s) to transport the JTF-PO and JAT

14 Jan – JTF-PO began downsizing equipment to meet allocation

14 Jan (2353Z) – CRW main body chalk arrived Port au Prince

15 Jan – CRW fully received at Port au Prince

16 Jan – RFF for security forces (although this date is inconsistent in AAR)

17 Jan – 3 chalks of RPOE arrive

18 Jan – 24 AEG ADVON arrives (replacement forces for JTF-PO)

23 Jan – All personnel and equipment associated with JTF-PO arrive –this includes final RPOE

23 Jan – 823 Security Forces Squadron personnel arrive in response to RFF

19 Feb – Transition of JTF-PO to 24 AEG and 7 SBDE

Pre-planned Logistics

UTC determination

- Chose to add 2 additional pallets for food, water an d fuel
- Added light cart
- Pared UTC 7E1bC which is 2 Alaskan tents(used for work area for JOC)
- MHE package was unchanged
- Recommended moving 4 ATV's to earlier chalk for increased ramp mobility

- Most units arrived without any plan for food, water, shelter.

- Command and Control Manning

  - JTF-PO forces not added to the Joint Manning Document of USSOUTHCOM‟s JTF-Haiti
  - 10% attrition on 37-day deployment to positions associated with the JTF-PO
  - Volume of inbound personnel and equipment exceeded JTF-POs ability to manage
    - Safety was a persistent issue
  - Request for Forces (RFF) was made for additional security forces personnel by JTF-PO
  - Created cell for helo-ops due to congested airspace and multiple partners
  - Most media wandered the tarmac at-will without an escort
  - Security was provided by 82nd Airborne and JTF-PO forces
    - Responsibilities changed hands on multiple occasions
  - JTF-PO SF apprehended 20-30 people per day attempting to gain access to the airfield, ramp or in a few isolated cases aircraft
  - Senior Airfield authority – responsibility of all airfield ops
    - MOU by gov Haiti to relinquish control to SAA within 24hrs of arrival
    - JTF-PO Commander assumed this position
  - Managed the distribution of second-hand information from the US Embassy consular office
    - Many times specific to outbound passenger information
  - Daily teleconference with AFNORTH J3; agencies present on the call
    - USSOUTHCOM
    - JCS
    - JTF-Haiti
    - AF South
    - JTF-PO
    - US Embassy in Haiti
  - Daily agency interaction with JTF-PO
    - - USSOUTHCOM
    - - USNORTHCOM
    - - JTF-Haiti staff
    - - JTF Haiti ACCE
    - - 3rd ESC
    - - JSOAC
    - - 24 AEG
    - - 618th AOC (TACC)
    - - 601st AMD – USNORTHCOM
    - - 612th AMD – USSOUTHCOM
    - - AFSOUTH DIRMOBFOR
    - - USTRANSCOM J3

- - HFOCC
- - USAID
- - US Embassy Consular Office

Joint Special Operations Air Component (JSOAC)

- Managed airfield ops before JTF-PO and relinquished airfield control upon JTF arrival
- Maintained:
  - ATC
  - MEDIVAC
  - Rotary
- Were there for 14 days total

Rapid Port Opening Element

- Operation Unified Response RPOE is comprised of 58 Army personnel
- Primary responsibility for establishing forward distribution node
  - All distribution occurs in proximity to flight line until forward node is established
- RPOE completed deployment 9 days after EXORD
  - Delayed forward node establishment
  - Forward node was designated less than 1 mile from airfield
- Cargo arrived on other than 463L pallets
- The JAT selects the forward node

Airfield management and base operations

- A capability included within the JTF-PO deployment package

Communications

- 36 hours to bring the communications system online (called DACE)
  - Email server was never established
- DACE was reliant on the Joint Operations Center tent being erected (8hr op)
- DACE
  - 3 NIPR drops
  - 8 SIPR drops
  - 19 DSN voice drops
    - Only 8 could be used simultaneously(would drop call otherwise)
- SPICE UTC was recommended for future missions of this scope
- Recommended for more power-pro airmen
- GATES terminal could not be established at PAX terminal due for manifesting

- Daily SITREPS sent on SIPR

Misinformation Examples

- During the height of the operation, when PaP was the center of gravity for the relief operation, it was announced that the JTF-PO had closed the airfield due to ramp congestion. At the time the calls came in, one from the AMD, another from the HFOCC, and yet another from the DIRMOBFOR, the ramp was not even close to being full. The root of this misinformation was never discovered although it was reported to have come from CNN
- Information regarding the condition of the runway/pavement was misconstrued and passed via multiple channels to the highest levels. The nature of the operation with PaP being the single COG created much over-reaction to this invalid piece of information
    - RFFs were placed for assessment teams and repair teams when the JTF-PO had never reported anything wrong with the runway
- It was reported (DIRMOBFOR AAR) that the delay was due to a non-alert JTF-PO being tasked for the deployment. While true that the 817 CRG was not on alert, this had absolutely nothing to do with the delayed arrival. Within hours of the earthquake occurring, the 817th assumed alert status and were ready waiting on airlift. As soon as airlift became available, cargo and personnel were being processed and loaded.

Non-combatant Evacuation (NEO)

- Exceeded capacity
- “chaotic”
- Injured people
- 700 adopted children
- 15,500 American citizens

Parking MOG: 10 C-17’s, 15+ aircraft on main parking ramp

Working MOG:

- First 3 days: 2
- Day 4-8: 3 once additional aerial porters arrived w/ equipment
- Day 9+: 5
- Ground time graph included in AAR

COCOM inputs

- Airlift of 82nd airborne #1 priority for security purposes
  - Constrained airlift for JTF-PO

  Managing Slot times

- Ramp space was limiting factor

Request for Forces

- Response not timely enough
- JSOAC USSOUTHCOM and the 82d Airborne had dedicated airlift, the JTF-PO needed the same.

Case Study Questions

Should AMC become the lead enabling (supporting) agency within the first 72hrs of an OCONUS HA/DR event?

This case study presents several examples which corroborate what's discussed in literature: timeliness of response greatly affects success of the relief effort.

Timeliness

- "Perhaps if the JTF-PO had arrived sooner, control of the parking ramp would have been achieved before of the situation lost control. By the time the JTF-PO arrived, media, relief workers and NGOs had already set up camp on the parking ramp and were moving around at will."
    - This acknowledges the presence of multiple agencies prior to the AMC's first response package
    - Multiple reporting channels (chains of command) and agendas on scene before arrival of JTF-PO
- JTF-PO was given control of the airfield within 24hrs of arrival by Haitian government
    - Demonstrates willingness of foreign nation to place trust in capabilities of JTF-PO
- Other units were slower to respond or not present on location
- CRW (AMC forces) completed 100% arrival 8 days ahead of RPOE (Army Forces) even though both had same time of notification

AMC Forces were integral to operations: "The establishment of an Integrated Base Operations was one of the most important decisions made and was absolutely integral to the success of the overall operation"

Can we optimize DOD's response to HA/DR by further leveraging AMC and KPI/CSF identification?

Critical Success Factors

Effective distribution: RPOE was significantly delayed behind AMC, forward node est. delayed

Strategic planning: no plan for NGO/NPO interaction, equipment/personnel pared/tailored, support personnel arriving with no sustainment means

Inventory management: unknown

Transportation capacity planning: no projection of trans needed to forward node; airspace heavy with diverts within first week

Information management: 3 cases of significant misinformation, SIPR was limiting factor, connection via multiple telecoms

Human resource management: many redeployments prior to mission complete (10% attrite), RFF slow to respond

Supplier relationships and sourcing: difficulty in estimating water and fuel sources initially

There were several other areas where identifying various KPI's could have helped

- % complete est. communication suite
    - % operations
- Ground time metrics established to maximize turn-time and throughput
    - Would also influence AMC resourcing
- Demand data and fulfillment for evacuees

Additionally, resources were spread to other services which hampered response and C2: "Commit to some dedicated airlift for JTF-PO forces as part of the agreement with the supported COCOM."

Is it possible to improve DOD HA/DR effectiveness by reducing AMCs response time?

Yes; centralized first response and capability/capacity build-up for follow-on C2

How was NGO/NPOs integration anticipated and resourced?

No report of how this was planned for but was consistently mentioned as a necessity for daily operations. Daily telecons occurred with these players and these agencies occupied much of the operating area. One quote was telling: "Consideration should be given to better inter-agency coordination and maximizing forward node square footage...as numerous users will inevitably use the node as a warehouse"

What were the pre-planned key process indicators?

None listed but some pieces which point toward a need were found:

- Initially, there was no way to track civilian aircraft
- Many Alert UTCs were missing critical parts, pieces, etc. or were inoperative
- "The number of non-JTF-PO personnel arriving without any means for self-sustainment placed a burden on the JTF-PO. housing and feeding over 100 non-JTF-PO personnel putting a strain on our ability to accomplish the mission and stressing our limited food and water supplies"
- large number of Distinguished Visitors varying from Heads of State
- C-17 and C-130 missions were rarely validated to take outbound cargo.

***What were the pre-planned critical success factors*?**

- Only one mentioned was "maximize throughput"

What critical success factors or key process indicators were reported?

Throughput, ground time (MOG related) & diverted aircraft who had pre-approved slot times

How were communications handled?

-"Our request to submit the SITREP via NIPRNET was disapproved by TACC/XOPM. Sending the report via SIPRNET significantly reduced the availability/ease of access, consequently reducing the number of people who had access to it."

- "Reporting instructions of all services must state the situation on the ground and ensure troops are equipped and prepared for self-sustainment"

- "JTF-PO needs improved immediate, portable DSN capability"

- "JTF-PO forces need pre-identified organizational email accounts or distribution lists"

- "DACE telephones were hard to hear on"

- "No pre-established teleconference numbers"

- "JTF-PO radios were incompatible with Motorola radios"

- "PRC-152 system is intermittent at greater ranges"

- "Multiple Network Spy Ware incidents"

- “Not enough capacity for HELAMS (a telecom package)”

- “GATES can’t be easily located in 2 geographically separated locations”—used for aircraft load planning and manifesting

Appendix G.
Operation Tomodachi Case Study

An organizational case study (vs individual)

Introduction

Taken from the PACAF Lessons and Observation Report:

On 11 March 2011, a 9.0 earthquake centered off the east coast of Honshu caused great damage and triggered a tsunami along the eastern coast of Japan (Fig. 1). The Japanese Government requested the assistance of the United States through the US Embassy in Tokyo. US Military efforts, named Operation TOMODACHI for the Japanese word meaning friend, were in support of the US State Department and USAID Office for Foreign Disaster Assistance. On March 12, the Fukushima Daiichi nuclear power plant experienced explosions and fires within four reactor units. This created a significant radiological threat to the surrounding area.

Operation TOMODACHI (OT) was a Department of Defense (DoD) named operation in support of the Humanitarian Assistance/Disaster Response (HA/DR) to the Japan earthquake and tsunami that occurred on 11 March 2011. The operation consisted of elements from DoD, Department of State (DoS), United States Agency for International Development (USAID), Government of Japan (GoJ), other US Government (USG) agencies/entities and Non- Governmental Organizations (NGOs).

Unlike any other HA/DR operation in recent history, OT presented USG, DoD, and the USAF with new challenges dealing with a significant radiological challenge. The radiological incident at the Fukushima nuclear power plant highlighted knowledge gaps, but also forged new relationships with nuclear expertise from across the government and academia that will be critical in future operations in radiological situations.

Operation PACIFIC PASSAGE ended on 27 March 2011, while Operation TOMODACHI continued through 31 May 2011. By 2 April 2011, the USAF had moved 1,686.4 short tons of relief supplies, the Royal Australian Air Force (RAAF) moved 216.4 short tons, the USMC moved 448 short tons, Special Operations Forces (SOF) moved 82.8 short tons, and Commander Task Force 70 moved 241.3 short tons. At the official end of Operation TOMODACHI on 31 May, the USAF had flown 680 total sorties, moved 1795 pax and 2490 short tons. For Operation PACIFIC PASSAGE, operated strictly by AMC chartered airliners, a total of 25 missions were flown from Japan that airlifted 5,265 pax and 409 pets.

Specific Data Sources

- **AF/A5XPC-Ops L2 powerpoint**
- USPACOM TaskOrder
- TCJ3 Quad Chart
- Military Health Conference Power Point
- PACAF lessons and observations report
- Special Operations Airmen supporting Operation TOMODACHI reposition to Okinawa- Article

Timeline

Timeline

11 Mar – Tsunami devastates Honshu

11 Mar – TASKORD P-140 for Operation Tomodachi sent by HQ USPACOM

12 Mar – Tactical airlift arrives Yakota Air base

12 Mar – DoS stands up task force Japan, SECDEF pledges DoD assistance

12 Mar – Fukushima nuclear power plant explodes

12 Mar – USAID DAT arrives Tokyo

13 Mar – Strategic Airlift arrives Yakota Airbase

15 Mar – USFJ order to plan and execute HA/DR ops

17 Mar – PACOM activates JTF-505 and JTF-519

18 Mar – Alert Ord ISO JTF-505

19 Mar – Exord by PACOM

25 Mar – PACOM exord for Op Tomodachi

8 Apr – JSF updates C2 relationships/tasks

12 Apr – PACOM exord mod 5 designates CDRUSFJ and COMJSF

11 May – JSF-J final order and C2

31 May – Operation Tomodachi officially concludes

Overall Response

- Command relationships were confusing
- Strategic airlift responded before PACOM activates JTF
- Training of personnel and choosing the correct personnel is paramount
- The DIRMOBFOR should be in place early with adequate staff
- Interagency Coordination was poor

KPI and CSF Establishment

- DoD personnel needing evacuation
- Initial Exord had no factors or indicators
- Daily environmental monitoring

Command and Control

- Incomplete, confusing, contradictory
- Forces not assigned to Commanders
- Inadequate COCOM guidance
- PA guidance contradictory
- Command relationships challenging
- Lines of Authority unclear

Communications and Information Management

Info management

- PA guidance issues which negatively affected the ability to implement effective strat comm and messaging
- Majority of Air Operation planning tools were on classified networks. AOC divisions had to manually build NIPR hosted versions of their SIPR hosted tools to ensure widest dissemination
- Defense Connect Online (DCO) became the predominate work-around for many connectivity issues
- Access issues for Army personnel using Air Force systems at Yakota
    - "DOD components, government agencies, NGOs, and partner nations should have access to a single, unclassified, user-friendly web solution for the purpose of quick and convenient information exchange".

Case Study Questions

Should AMC become the lead enabling (supporting) agency within the first 72hrs of an OCONUS HA/DR event?

This case demonstrates the preponderance of airlift assets needed when NEO is involved. Additionally, this shows how long it takes for a COCOM to establish a JTF and the resulting authorities, information pathways and relationships.

Can we optimize DOD's response to HA/DR by further leveraging AMC and KPI/CSF identification?

The following were some factors and indicators used during Operation Tomodachi:

- DoD personnel needing evacuation
- Daily environmental monitoring

These are not sufficient to manage a global, responsive supply chain.

Is it possible to improve DOD HA/DR effectiveness by reducing AMCs response time?

This response time was fast and no room for improvement could be assessed

How was NGO/NPOs integration anticipated and resourced?

Strong relationships were established with the Government of Japan but to a lesser degree with NGOs and DoS. These relationships remained unclear to many of the primary stakeholders.

What were the pre-planned key process indicators?

- None
  •

***What were the pre-planned critical success factors*?**

- None

What critical success factors or key process indicators were reported?

None

How were communications handled?

- Information management remained as the single biggest limiting factor in the realm of communications. Multiple examples where this led to significant problems within the organization.

Appendix H.

Operation United Assistance Case Study – Ebola Outbreak

An organizational case study (vs individual)

Introduction

Operation United Assistance was a United States Agency for International Development (USAID) led mission in response to the largest Ebola outbreak in history. Geographically centered in Liberia and Senegal (western Africa), the US military played a significant role in supporting and enabling USAID and other agencies. The POTUS directed the deployment of these military forces under USAFRICOM during the second half of 2014. U.S. Army Africa (USARAF), followed by the 101 ABN DVN, was the command DOD unit for the response to the EVD outbreak in Liberia.

In addition to JTF-PO Liberia being tasked by TRANSCOM, the U.S. Air Force (Kentucky Air National Guard) 123 Contingency Response Group (CRG) and the U.S. Army 689 Rapid Port Opening Element (RPOE) were tasked in the latter weeks of September 2014 as a Joint Task Force-Port Opening (JTF-PO) team to rapidly deploy and open an APOD/ISB for West African EVD relief operations at Dakar, Senegal. The primary mission of this JTF-PO was to establish an Aerial Port of Debarkation and establish distribution channels to the nearby Seaport of Debarkation for cargo transload.

Data Sources

- AAR for JTF-PO Senegal//Sep 28 – Nov 11 2014
- AAR for Director of Mobility Forces on Operation United Assistance
- AAR for JTF-PO Liberia//Sep 18th – Nov 18 2014

Overview of Reports

Senegal Forces and Equipment

C-130 - 86

C-17 - 82

C-5 - 0

KC-10 - 2

KC-135 – 0

Other – 23

Total: 193

Personnel: 12 Officers/77 Airmen

Liberia Forces and Equipment

C-130 - 35

C-17 - 55

B-747 - 34

B-757 - 13

B-767 - 1

MD-11 - 17

Total: 155

Personnel: 14 Officers/76 Airmen

Note: Both JTF-PO's were stood up as directed by TRANSCOM

Timeline

15 Sep – JTF-PO forces directed to plan for support of APOD

16 Sep – JTF-PO Liberia sends ADVON personnel

20 Sep – Joint Assessment Team arrives

22 Sep – JAT report submitted; recommends bringing full JTF-PO capability

25 Sep – 1st main body chalk arrives

25 Sep – Full operational capability declared

13 Oct – JTF-PO achieves full strength of 89 personnel

"late October" – JFC-UA establishes 3rd staging area in Buchanan, Liberia

9 Nov – Transfer of Authority to 53d Movement Control Battalion (MCB)

"Weather caused main body to be deployed across 18 day period"

Agencies Involved

- USAID
- WHO
- Multiple Countries
- NGO/NPO
- DoD

Documented Improvements from JTF-PO

- Monrovia A/C parking plan
- Airfield security
- Medical screening
- Airfield management
- Airspace management

Significant Issues

- Communications
    - Services were not provided within 12 hours of main body arrival into APOD
    - In-transit Visibility not operational for majority of deployment ("outdated comm. equipment)
    - CRG Comm. Equipment was left behind so airlift operations could continue at GOOY, Dakar Senegal
    - 101 ABN comm equipment failed in Dakar upon arrival
    - 18th AF unaware of CRG arriving on station
    - "Army follow-on COMM systems ("SNAP" terminals) were useless"
        - Army SNAP terminals inop upon arrival
- 12 hr response time discussed as challenge by Liberia JTF-PO
- USTRANSCOM and USAFE/A3 sent assessment teams to Monrovia, Liberia
    - i.e. two airfield assessment teams completed surveys/analysis of the same airfield and with very different results

    - The JTF-PO JAT is capable of a full airfield and cargo distribution assessment while the USAFE/A3 team was only capable of evaluating the runway
    - The conflicting data between the runway reports, specifically the PCN (pavement control number) of the runway, ignited wide-spread concern and significant confusion across the JOA, USAFE, USAFRICOM, USTRANSCOM and by 618 AOC planners and aircrew
- RFF issues; delayed not responsive (for both JTF-PO's)
- Command relationships not easily understood
- Problems navigating medical logistics issues
- Cargo yard space at Dakar
- C2 muddy at transfer of authority
    - "Need effective CR and/or APOD SMEs at AMD and/or JFC (or JFACC/equivalent)"
    - Role of DIRMOBFOR was limited due to geographic placement: Dakar vs. JFC
    - DDOC, JFC, JAACE, DIRMOBFOR, 18th AF, TRANSCOM—multiple C2 and reporting channels w/in military
- JFC took many days to prioritize cargo movement

Case Study Questions

Should AMC become the lead enabling (supporting) agency within the first 72hrs of an OCONUS HA/DR event?

This case demonstrates several areas where AMC's potential was not realized

1) The fastest to respond to two countries within the area of responsibility
    a. Est. fastest and most holistic logistics sight picture
2) Would have eliminated majority of messy C2 issues if designated lead
3) Great track record of improving port throughput and air traffic control
4) Could more quickly prioritize cargo

Can we optimize DOD's response to HA/DR by further leveraging AMC and KPI/CSF identification?

Critical Success Factors

Effective distribution: JAT assesses capability but not effectiveness

Strategic planning: Clear signs of lack of strategic planning across several areas: command and control, UTC inventory, distribution infrastructure between sea and air nodes, physical limitations

Inventory management: unknown

Transportation capacity planning: no projection of transportation needs planned. No discussion of assets brought for specific need.

Information management: multiple cases of information degradation or elimination as it proceeded up multiple chains of command.

Human resource management: RFF was significant problem

Supplier relationships and sourcing: DLA contracts for fuel and transportation; some issues sourcing locally

Is it possible to improve DOD HA/DR effectiveness by reducing AMCs response time?

This response time was incredibly slow and could have been avoided. Several decisions were made ignoring accurate data from those on the ground which led to poor site selection and subsequent delays of inbound infrastructure and personnel.

How was NGO/NPOs integration anticipated and resourced?

Very little mention of specific kinds of interaction beyond local governmental and airfield levels. No specific mention of relationship to main supported agency: USAID

What were the pre-planned key process indicators?

Again, none listed but several were discussed

- Cargo throughput
- Physical capacity improvements
- Airfield management and security
- Airspace management
- Medical screening

***What were the pre-planned critical success factors*?**

- None

What critical success factors or key process indicators were reported?

- MOG
- Reduction in Ebola deaths and contraction rate

How were communications handled?

Also, as with Haiti, THE most significant issues are found here and in Command and Control/Information management

- All pre-planned communications capabilities were delayed, degraded or did not work upon arrival!

Appendix I.
Quad Chart

EXAMINING TRANSCOM'S ROLE AS A LEAD ENABLING AGENCY DURING HA/DR EVENTS OUTSIDE THE CONTIGUOUS UNITED STATES

Maj Kazimir M. Kostrubala
Advisor: Lt Col Joshua Strakos, Ph.D.
Advanced Study of Air Mobility (ASAM)
Air Force Institute of Technology

Introduction

While forecasting the next conflict is fraught with uncertainty, the US Department of Defense (DOD) retains a robust logistics capability in its Transportation Command (TRANSCOM) in order to quickly respond to an array of global events.

Humanitarian Logistics (HL) literature has repeatedly pronounced the importance of coordination, communication, and overall logistics capability to a successful disaster relief effort.

However, a capabilities-to-execution gap exists in that TRANSCOM is not doctrinally positioned during a humanitarian assistance and disaster relief (HA/DR) operation to be in a command and control role where its unique capabilities can be fully utilized. Four recent DOD HA/DR cases and the HL literature are analyzed to identify critical capabilities in disaster response.

These capabilities are compared to the unique and organic capabilities of TRANSCOM. A model for closing the capabilities-to-execution gap is presented in which TRANSCOM acts as a functional first responder in establishing key logistics, communications, and coordination networks prior to being subsumed by the traditional military command structure. Extension of this model to the civilian sector forms a basis for the extension of general HL theory.

Research Goals

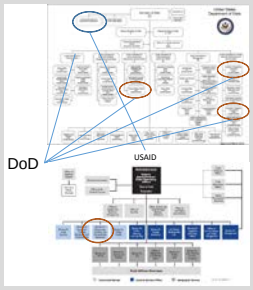
Investigative Question 1: Is the Joint Task Force the most appropriate command structure for OCONUS HA/DR event response?

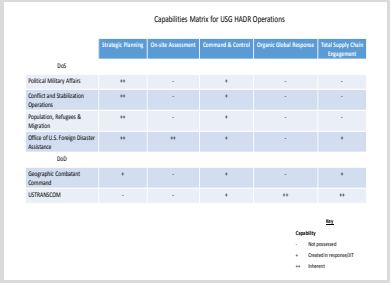
Investigative Question 2: Can we optimize the DoD's response to HA/DR by further leveraging TRANSCOM and KPI/CSF identification?

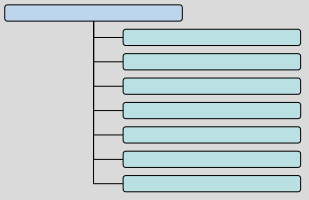
Investigative Question 3: Does the DoD organize, train and equip to improve its position as lead enabling (supporting) agency over time?

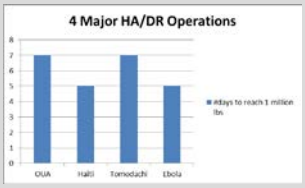
The goal of the research is to improve the DoD's ability as a supporting agency during major HA/DR operations.

AIR FORCE INSTITUTE of TECHNOLOGY









Methodology

The majority of this paper's research methodology is qualitative in nature, specifically using the Case Study Method and Grounded Theory. Yin states: "the case study is preferred in examining contemporary events, but when the relevant behaviors cannot be manipulated" (Yin, 1984). This seems a perfect fit for the HA/DR world and focuses in on the "decisions" being made before, during and after a response. Also fitting is that "case studies are generalizable to theoretical propositions and not populations or universes." This, I think, aligns very well with the point of doctrine and how we position ourselves within the DoD to achieve various ends. The "ends" in HA/DR are effectiveness of response but the devil is in the details. This is perhaps why it's so challenging to "get right."

Implications

1. OCONUS HA/DR Operations are logistics Operations and require strategic airlift.
2. Sufficient Key Process Indicators and Critical Success factors are not present during these major HA/DR Operations.
3. Recurring issues related to Command and Control, information management and NGO interface are seen in the four major HA/DR responses studied.
4. The JTF establishment by COCOMs is slow to form and deliver C2.
5. TRANSCOM responds as fast or faster to major HA/DR events as the COCOMs and delivers the preponderance of relief support.

Strategic Air Deliveries Compared to Others

Conclusions & Recommendations

Command and Control, Communications and Information Management will be significant issues during the next major OCONUS HA/DR operation. Logistics Critical Success Factors and Key Process Indicators will not be identified or measured both of which are critical for an efficient and effective response. The Joint Task Force will struggle for IOC while the strategic logistics effort is already underway.

TRANSCOM should gain certification as a JTF to respond to these major global events. Joint Publication 3-29 should incorporate appropriate logistics guidance and time phasing. Logistics experts should lead these major HA/DR responses. Training between DoS and DoD is inadequate for these major responses.

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14. ABSTRACT

While forecasting the next conflict is fraught with uncertainty, the US Department of Defense (DOD) retains a robust logistics capability in its Transportation Command (TRANSCOM) in order to quickly respond to an array of global events. Humanitarian Logistics (HL) literature has repeatedly pronounced the importance of coordination, communication, and overall logistics capability to a successful disaster relief effort. However, a capabilities-to-execution gap exists in that TRANSCOM is not doctrinally positioned during a humanitarian assistance and disaster relief (HA/DR) operation to be in a command and control role where its unique capabilities can be fully utilized. Four recent DOD HA/DR cases and the HL literature are analyzed to identify critical capabilities in disaster response. These capabilities are compared to the unique and organic capabilities of TRANSCOM. A model for closing the capabilities-to-execution gap is presented in which TRANSCOM acts as a functional first responder in establishing key logistics, communications, and coordination networks prior to being subsumed by the traditional military command structure. Extension of this model to the civilian sector forms a basis for the extension of general HL theory.

15. SUBJECT TERMS

HA/DR, TRANSCOM, JTF, Case Study, Operations

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