INTERAGENCY COORDINATION BETWEEN FEMA, USNORTHCOM, AND USTRANSCOM DURING A HURRICANE RESPONSE

GRADUATE RESEARCH PAPER

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Abstract

There are many organizations involved that take predictive and reactive actions when destructive weather systems are projected toward the United States. Three of those organizations, the Federal Emergency Agency (FEMA), United States Northern Command (USNORTHCOM), and United States Transportation Command (USTRANSCOM) are critical in spearheading coordination and requirements to ensure the Global Air Mobility Support Systems (GAMSS) and support airlift are used effectively and efficiently. The 2017 hurricane season especially stressed the coordination and capabilities among these agencies and tested their response when multiple hurricanes barreled toward and through the United States. Dynamic communications required during these Defense Support of Civil Authorities (DSCA) events is well-intentioned and often successful. However, due to software limitations, verbal/telephone workarounds have become normalized, which can lead to miscommunications and redundant efforts. This paper explores the relationship and the communications procedures among these three agencies to determine areas for improvement. This research project uses a semi-structured interview process to collect qualitative data. Subsequently, a thematic analysis was conducted on the collected interview data to determine trends that led to recommendations for action. Solutions included recommendations to improve situational awareness when operating using the Total Force Enterprise (TFE), and methods to overcome software limitations.

Acknowledgments

I would like to express my sincere appreciation to my wife and children for always being there for me and allowing me the time to write this research project

Daniel P. Diemer

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INTERAGENCY COORDINATION BETWEEN FEMA, USNORTHCOM, AND USTRANSCOM DURING A HURRICANE RESPONSE

I. Introduction

Background

The Department of Defense (DoD) has a responsibility to the American people to provide assistance during natural disasters (Chairman of the Joint Chief of Staff, 2018). The level of assistance provided is highly variable with each natural disaster and depends upon individual States' needs. In recent years and most notably in 2017, several hurricanes have been severe enough to warrant federal assistance. When federal aid is requested, state, federal agencies, and other non-governmental agencies (NGOs) work to evacuate, care for, and respond as needed. A critical piece of that response network includes communication and coordination between Combatant Commands and the Federal Emergency Management Agency (FEMA). The planning and coordination between these agencies is the single most important factor to improve the speed and effectiveness of the DoD response (Chairman of the Joint Chief of Staff, 2014c:xii). Planning and coordination have not always received the attention and resources, leaving room for miscommunications and uncoordinated responses.

Problem Statement

FEMA, USNORTHCOM, and USTRANSCOM coordinate information and requirements supporting the DSCA operations during a hurricane response. That coordination requires timely and accurate information to ensure that assets are utilized effectively. During the coordination process, the uncertainty of the operating environment and the dynamic nature of the operation creates opportunities for misinterpreted

requirements, un-executable plans, and misunderstood capabilities (492 LL Office, 2018). The purpose of this paper is to: 1) Evaluate the interagency coordination process between FEMA, USNORTHCOM, and USTRANSCOM during a hurricane response event, 2) Identify what misinformation exists and how that misinformation impacts execution, and 3) identify how communications can be improved to strengthen operations.

Research Objectives/Questions

This paper proposes that FEMA, USNORTHCOM, and USTRANSCOM stand to gain considerable coordination and communications advancements by better understanding each-others' capabilities, communicating and anticipating requirements, and minimizing misinterpretations. For example, regarding communication and minimizing interpretations, during hurricane responses in 2017, several special operations MC-130s arrived at locations to move cargo only to find out that the load plan was coordinated for a different variant of C-130. The load plan then had to be determined real-time which delayed delivery (492 LL Office, 2018). The load plan incompatibility could have been caught sooner in the process to eliminate the delay. Another area of concern is the anticipation required for many agencies to respond effectively. Fundamentally, USTRANSCOM works with USNORTHCOM and FEMA to anticipate state requirements. Anticipation is required due to the dynamic nature of the responses. Specifically at USTRANSCOM, response capability is sometimes required within hours. USTRANSCOM cannot afford to rely in linear processes like Joint Operation Planning and Execution System (JOPES) as many steps and validations are required that slow the

generation timeline (Chairman of the Joint Chief of Staff, 2014b). To operate in this dynamic environment and with JOPES limitations, verbal orders of the commanding officer (VOCOs) are sometimes required to ensure jets and crews are postured for response, sometimes while awaiting a state's request of federal support (492 LL Office, 2018). The risk with posturing these forces is the mission could change, therefore invalidating the generation timeline or wasting resources altogether. To determine what the limitations in the process are and how these miscommunications could be mitigated, this research project seeks to answer the following research question and investigative questions.

Research Question: When preparing and responding during a hurricane event, how can USTRANSCOM, USNORTHCOM, and FEMA improve their communication process to anticipate and receive requirements ensuring they are executed on time and delivering the intended effect?

Investigative Question 1 (IQ1): Using the VOCO process, what information communicated from FEMA, to USNORTHCOM, USTRANSCOM, or the 618 AOC, would drive the AOC to generate crews and jets to alert status.

Investigative Question 2 (IQ2): What is the critical information that needs to be passed between FEMA, USNORTHCOM, and USTRANSCOM dynamically that has an impact on planning and processing?

Research Focus

The focus of this research is on the communication process between FEMA, USNORTHCOM, and USTRANSCOM, and the impacts of miscommunications between

these agencies. By understanding the directives and constraints placed on each organization, requirements can be better anticipate and coordinate in a dynamic environment.

Methodology

Semi-structured interviews were used to collect qualitative data for this research. A semi-structured interview contains the components of both structured and unstructured interviews (Leedy, Paul D. & Ormrod, 2016). The researcher asked predetermined questions, but also asked individually tailored follow-up questions in order to gain clarity regarding certain responses (Leedy, Paul D. & Ormrod, 2016). Twelve participants were asked a series of questions related to answering the research and investigative questions. Interview participants ranged in experience level and rank, but were recommended by Air Mobility Command (AMC) and determined to be critical to the success of communications during a hurricane response and were considered subject matter experts (SME's) in their field at the time of the interview. Responses were analyzed using a thematic analysis to find common process deficiencies and determine where communications can be improved.

Assumptions/Limitations

The researcher assumes that all interviewees have given their honest opinions from their perspective during the interview process. There may naturally be bias introduced by some informants that carry a certain opinion for a course of action but all informants were informed to ensure their responses remained objective.

The primary limitation of this research project was that the researcher was limited by available funds to be used for trips to multiple SME locations. Additionally, the approach taken included a higher number of USTRANSCOM and USNORTHCOM participants due to access and experience availability, but all responses carried individually similar weight to ensure the quality of the data and interpretation of results. Many of the interviews were able to be completed face-to-face at USTRANSCOM and the 618 Air Operations Center (AOC), but USNORTHCOM, FEMA, and the 601 AOC interviews had to be completed via phone conversations and correspondence.

Implications

The results of this study aim to contribute to the Deputy Secretary of Defenses' directives to improve the DoD's response to hurricanes (Chairman of the Joint Chief of Staff, 2017). These directives came as a result of the 2017 hurricane season which greatly taxed the response network and exposed weaknesses within the current DoD processes (Chairman of the Joint Chief of Staff, 2017).

Summary

This paper is much more than informative. It provides analytical results and highlights the gap in knowledge that this research is filling. The literature review sets foundational knowledge the reader should be familiar with followed by the methodology section, which that discusses the semi-structured interview style used and the thematic analysis structure. Conclusions are then drawn using the thematic analysis in the results and analysis chapter. Several recommendations and areas for future research conclude the research project.

II. Literature Review

Chapter Overview

This chapter explores the relevant documentation associated with the subject matter of this paper. The topics include a history of hurricanes since 2017, a deputy Secretary of Defense Memorandum directing action following the tumultuous 2017 hurricane season, the most current standing USNORTHCOM DSCA Execution Order (EXORD) from 2018, past research on the subject of FEMA and hurricane support, and the current communication process for airlift requests supporting DSCA operations. Important terms, software, and situational awareness tools are also discussed with commonly used acronyms located in the appendix.

The 2017 Hurricane Season

Every year has challenges for the states and the United States Government (USG) regarding hurricane response and preparedness, but the 2017 season in particular required historic levels of attention and capability, stretching capacity to the max. In late August, when Hurricane Harvey inundated South-Eastern Texas with torrential rain and flooding, hundreds of Air National Guard (ANG) and active duty (AD) forces responded to provide relief efforts (492 LL Office, 2018:3). This was just one of the three major hurricanes that made landfall this season, the other two hurricanes being Hurricane Irma and Maria. The 2017 season, officially described as "hyperactive," was among the top 10 most active in history (492 LL Office, 2018:5). By November 30, the last day of the hurricane season, there were 17 named storms, 10 of which reached hurricane status (492 LL Office, 2018:5). This section includes information on each of these three hurricanes for

background on why hurricane response processes are continually evaluated, and concludes with recommendations.

Hurricane Harvey became the first hurricane to make landfall in the United States since Wilma in 2005. The hurricane also set the record for most rainfall dropped by a tropical cyclone in the U.S. Over a four-day period, many areas received more than 40 inches of rain as the system slowly meandered over eastern Texas and adjacent waters (492 LL Office, 2018:6). The resulting floods inundated hundreds of thousands of homes, displaced more than 30,000 people, and prompted more than 17,000 rescues(492 LL Office, 2018:6).

In early September, Hurricane Irma became the first Category 5 hurricane on record to impact the northern Leeward Islands. Hurricane Irma was the most powerful Atlantic hurricane in recorded history (492 LL Office, 2018:7). It was a Category 5 storm when it made landfall on Barbuda on September 6, 2017 (492 LL Office, 2018:7). Its winds were 185 miles per hour for 37 hours (492 LL Office, 2018:7). With Hurricane Maria striking Puerto Rico as a top-end Category 4, the season was the first on record to feature three Atlantic hurricanes making landfall anywhere in the United States or one of its territories at Category 4 intensity or stronger (492 LL Office, 2018:7).

Originating from a tropical wave, Maria became a tropical storm on September 16, east of the Lesser Antilles The hurricane reached Category 5 strength on September 18 just before making landfall on Dominica, becoming the first recorded Category 5 hurricane to strike the island (492 LL Office, 2018:10). After weakening slightly due to crossing Dominica, Maria achieved its peak intensity over the eastern Caribbean with

maximum sustained winds of 175 mph, making it the tenth most intense Atlantic hurricane on record (492 LL Office, 2018:10).

Several recommendations from these hurricanes were discussed in the conclusion section of this report. Below are the selected relevant topics to the research and investigative questions in this project (492 LL Office, 2018).

1. Immediately develop and post on SharePoint a contact list of response agencies and participants

2. Follow up all telephone calls with a confirmatory email

3. Add special operations forces (SOF) aircraft configurations in logistics systems (load plan issues)

4. Load plans should be prepared specifically for the type of inbound airlift platform. Load plan problems were a repeat occurrence. Crews arrived to upload cargo that had been load planned for AMC C-130s vice SOF MC-130s.

These hurricanes by themselves are dangerous and require preparation and in-depth responses from the DoD and many other organizations. What made them unique other than their strengths listed above was the fact that they happened concurrently in a single season. The sequential nature of these storms taxed the DoD response system and was severe enough to warrant a response from the Deputy Secretary of Defense to review how the United States responds to these events.

Deputy Secretary of Defense Memorandum from 2017

This short memorandum directed at the DoD underpins the importance of further strengthening DSCA responses and serves as the catalyst necessary to improve communications and processes. The memorandum in its entirety is given below, signed by the Deputy Secretary of Defense (Chairman of the Joint Chief of Staff, 2017).

The extraordinary 2017 hurricane season presented a challenge to the Federal Government as a whole and the Department in particular to respond to the significant requirements created by Hurricanes Harvey, Irma, and Maria. Disasters of this scope and magnitude are rare, and it is incumbent for the Department to take this opportunity to draw from lessons learned to inform DoD's response to future catastrophic events.

In light of this, I am directing the DoD Components to conduct a review of their actions in response to the effects of Hurricanes Harvey, Irma, and Maria and to be prepared by February 26, 2018, to present the top areas for improvement and sustainment to the Deputy Secretary. OSD Policy, Assistant Secretary of Defense for Homeland Defense & Global Security, is the Department lead.

CJCS Defense Support of Civil Authorities EXORD 2018

The purpose of this EXORD is to demonstrate the standing guidance already in-place that explains a COCOMs' requirements to respond. They have a responsibility to ensure communications are established and responses are expeditious. The implication of this document is that USNORTHCOM and USTRANSCOM must overcome whatever limitations they have i.e., JOPES or other processes, in order to respond rapidly.

The CJCS Defense Support of Civil Authorities EXORD is a SECDEF approved

execute order that supports national preparedness in accordance with Presidential Policy

Directive 8 (PPD-8) and enables rapid department of defense response in support of civil

authorities within USNORTHCOM and U.S pacific command (PACOM) domestic

geographic areas of responsibility (Chairman of the Joint Chief of Staff, 2018, p. 5). The

purpose of the DSCA EXORD is to delegate limited approval authority to the

commander, USNORTHCOM (CDRUSNORTHCOM), and Commander, USPACOM

(CDRUSPACOM), for DSCA operations to provide a rapid and flexible response by the

DoD (Chairman of the Joint Chief of Staff, 2018:5). This document also outlines

responsibilities directly for FEMA.

FEMA is the LFA responsible for coordinating and providing federal assistance to

state and local authorities for disasters and emergencies (Chairman of the Joint Chief of

Staff, 2018:5). This EXORD directs the supported CCDRs to prepare for and conduct

DSCA operations for national disasters and emergencies or special events within the

CCDRs' AOR and provides the CCDRs with the limited authority to approve and provide

DSCA (Chairman of the Joint Chief of Staff, 2018:6). CDRUSNORTHCOM or

CDRUSPACOM will attempt to source DSCA support requirements within assigned or

allocated forces (Chairman of the Joint Chief of Staff, 2018:6). In the event of a large-

scale incident, such as predicted landfall of a major hurricane or an incident that occurs

without warning, LFA requests to DOD may greatly exceed the capabilities listed in this

EXORD (Chairman of the Joint Chief of Staff, 2018:8). For any additional required

forces, to the maximum extent achievable, the joint staff J35 and the military departments

will source requests for forces (RFFs) submitted within 24 hours (Chairman of the Joint

Chief of Staff, 2018:8). Only the President or SECDEF may authorize DoD to conduct

DSCA if such support would significantly impact on-going DoD operations (Chairman of

the Joint Chief of Staff, 2018:6).

FEMA 2017 After Action Report (AAR)

The 2017 hurricane season was devastating for millions of Americans (Federal

Emergency Management Agency, 2018:ii). To put it in context, the 2017 year had more

disaster survivors registering for assistance than the previous ten years (Federal

Emergency Management Agency, 2018:ii). The season is a reminder of the importance of

preparedness of government agencies (Federal Emergency Management Agency,

2018:ii). While FEMA has and will continue to work with all levels of government to get

much-needed commodities to survivors, the hurricanes also showed that governments

need to be better prepared with their supplies (Federal Emergency Management Agency,

2018:ii). Responding to overwhelming incidents requires emergency managers to adapt,

innovate quickly, and engage new partners to address unanticipated impacts and

cascading effects (Federal Emergency Management Agency, 2018:ii). While plans are

based on the best information available, no disaster follows the plan (Federal Emergency

Management Agency, 2018:ii). Every response requires adaptation, which is why flexible

authorities and programs are important (Federal Emergency Management Agency,

2018:ii). FEMA references that the nation has more work to do collectively to prepare for

and respond to major infrastructure outages (Federal Emergency Management Agency,

2018:iii). With this report, FEMA and the emergency management community have an

opportunity to learn from the 2017 Hurricane Season and build a more prepared and

resilient nation (Federal Emergency Management Agency, 2018:iii). The following are key findings (KF) and recommendations (R) within the FEMA AAR that are pertinent to this research project (Federal Emergency Management Agency, 2018:vi). Figure 1 displays the cost compared to historic hurricanes, a visual account of the 2017 devastation (Federal Emergency Management Agency, 2018:vi).

1. (KF) FEMA leaders at all levels made major adaptations to Agency policy and programs to respond to significant operational challenges during the hurricane season.

2. (KF) FEMA could have better leveraged open-source information and preparedness data, such as capability assessments and exercise findings, for Puerto Rico and the U.S. Virgin Islands.

3. (R) Work with the whole community partners to improve risk management and strengthen capabilities.

4. (R) Create preparedness and planning products that are easily accessible, modular, inclusive, and readily executable.

5. (KF) FEMA experienced challenges in comprehensively tracking resources moving across multiple modes of transportation to Puerto Rico and the U.S. Virgin Islands due to staffing shortages and business process shortfalls.

6. (R) Broaden FEMA's capability to quickly get teams on the ground to stage and deliver key commodities to disaster survivors, even in the most remote locations.

7. (R) Streamline storage and movement across multiple modes of transportation that facilitate and speed delivery.

8. (R) Include continuity and resilient all-hazards communications capabilities in plans and guidance.
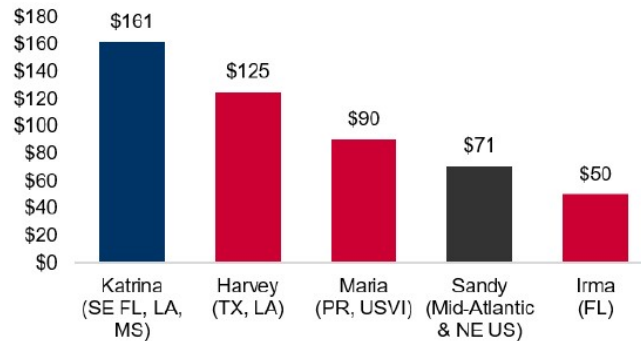
Figure 1. Top 5 Most Destructive Hurricanes ($ Billion) (Federal Emergency Management Agency, 2018)

The report concludes by emphasizing the importance of working collectively, and that the work of emergency management does not belong just to FEMA (Federal Emergency Management Agency, 2018). It is the responsibility of the whole community and private citizens to build collective capacity and prepare for the disasters that we will inevitably face (Federal Emergency Management Agency, 2018). FEMA champions that the enterprise must continue to move forward by leveraging innovative approaches, engaging with new technology, reducing complexity, and strengthening our partnerships to improve outcomes for the Nation's affected communities and provide support for survivors (Federal Emergency Management Agency, 2018:50). The key findings and recommendations have applicability to the main research question of this research project. Mainly, key finding #2 and recommendation #4 which discuss planning products and the use of open-source information and exercise data. There is historical precedent on these problem-sets which is why the DEPSECDEF scripted the memo to review all processes related to DSCA responses (Chairman of the Joint Chief of Staff, 2017).

Center for Excellence: Disaster Management and Humanitarian Assistance (CFE-DM)

This document is a pamphlet summary of best practices for information sharing between organizations dedicated to foreign disaster relief. Though the CFE-DM's mission is focuses outside the CONUS, the organizations share similar problem-sets and solutions that are compatible across multiple spectrums. A list of their best practices are listed below (Center of Excellence, 2019).

1. Keep information unclassified to the extent possible

2. Share Unclassified information to major humanitarian platforms when appropriate, in coordination with USAID/OFDA

3. Promote and practice Civil-military Information Sharing in training and exercises

4. Promote face-to-face communication as a way to establish relationships and trust between civil-military responders

5. Establish and maintain organizational relationships

6. Attempt to establish ways to share information ahead of time or develop an information sharing plan with other civil-military responders ahead of an emergency

7. Work on communicating in a common language understood by both civilian and the military; additionally, ensure translation is available for responding forces to communicate in the local language

USTRANSCOM Support of FEMA

There has been a plethora of research conducted regarding the processes and relationships between federal organizations. One such project pertinent to this research was written in 2003 and titled "USTRANSCOM Support to the Federal Emergency Management Agency" (Mathews, 2003:vii). This research project analyzed the process and relationship between FEMA and USTRANSCOM during DSCA operations (Mathews, 2003:vii). It detailed the procedures implemented during past operations and evaluated the differences between actual and written procedures (Mathews, 2003:vii). An area of interest that was evaluated centered around when USTRANSCOM and FEMA work together (Mathews, 2003:vii). It evaluated what processes the two organizations should follow to provide the best, most efficient and most cost-effective support for recovery operations (Mathews, 2003:vii).

The author made the following recommendations based on their research. The first recommendation was for FEMA and USTRANSCOM to develop a central database to track military support to civil authorities (Mathews, 2003:61). The next recommendation was to educate FEMA or DOT personnel in acquiring airlift efficiently. (Mathews, 2003:61). With regards to when USTRANSCOM and FEMA should work together, the author noted that USTRANSCOM should be used to support FEMA operations, but only when the commercial sector cannot provide assets due to availability (Mathews, 2003:61). Time is also a concern and should be evaluated. If commercial assets cannot respond in the time required to prevent loss of life, USTRANSCOM should be used (Mathews, 2003:62).

Maintaining Situational Awareness

It is important to have background knowledge on some of the current software and communication systems currently in use as they have applicability on why VOCO processes are in place and explain the types of information that is communicated. Situational awareness is key to ensure requirements can be validated and resource waste can be kept to a minimum. It should be noted that many of these systems are not compatible with each other. For example, the DOD Defense Support of Civil Authorities Automated Support System (DDAS) is not compatible with JOPES. This means when mission data is delivered from FEMA, who uses DDAS, to USNORTHCOM, who uses JOPES, the information must be manually imported, creating unnecessary work and an opportunity for misinterpretation. During a dynamic event such as hurricane relief efforts, maintaining situational awareness is key to mission success and effective support. This section contains a review of the different information methods used during coordination and responses and lists what they are used for.

1. **NIPR email** – The common network used by the Department of Defense for email services. Though this is a very basic form of communication and one that every DoD member is familiar with. It is one of the most commonly used methods for sending information quickly.

2. **USNORTHCOM Portal** – This is a USNORTHCOM owned website. It is useful for tracking orders, information being pushed to combatant commanders, maintaining a common operating picture (COP), internal & external synchronization across USNORTHCOM and up and out to Joint Staff (JS) & OSD. It is user friendly but

sometimes information is hard to find on the difficult-to-navigate portal. This website is mostly used to keep leadership informed and for historical tracking.

3. **Homeland Security Information Network (HSIN)** – A web-based platform run by the Department of Homeland Security designed to allow local, state, tribal, and federal government agencies to share "sensitive but unclassified (SBU)" information with each other over a secure channel. It provides a SharePoint web portal system, a chat system, and a common operational picture (Department of Homeland Security, n.d.).

4. **Web-Emergency Operations Center (EOC)** – A federal software system. It is used by states and federal employees as a communications platform for local, county, and state emergency managers/homeland security partners. During an emergency or disaster, the system allows emergency management partners to share information, document issues and track missions supporting local incident commanders. USNORTHCOM can get in the system and build awareness, but it typically causes more problems than it solves as people will start planning/working on what they see in Web-EOC but if it doesn't survive the DDASS/DOD review/approval process, they have just wasted their time (USEPA/Environmental & Team, 2013).

5. **Integrated Computerized Deployment System (ICODES)** – This software is used by the DoD and FEMA. FEMA uses it communicate load plans to USNORTHCOM. It is a software suite configured to support the movement of supplies in the military deployment and sustainment operational domain. The application is focused on creating and communicating load-planning information, including the staging of

cargo in marshalling yards, assembly areas, and rail heads (Diaz, Naylor, Driscoll-packer, & Sylvester, 2006).

6. **Transverse** – A military chat software that uses Java API technology. Features of Transverse include creating buddy lists, chat rooms based on users on a given server, specialized rooms that contain other rooms, and automated discovery of a server's available chat rooms. (Arnold, 2006:49)

7. **All Partners Access Network (APAN)** – Provides effective information exchange and collaboration between the United States Department of Defense and any external country, organization, agency, or individual that does not have ready access to traditional DoD systems and networks. It enables professional networking and communication, increases situational awareness, establishes pre-defined communications channels, relationships and information work flows, and provides a forum for sharing lessons learned and best practices in a wide variety of contexts including crisis response, humanitarian assistance, disaster relieve, and training and exercises (Chairman of the Joint Chief of Staff, 2019a).

8. **Adaptive Planning and Execution (APEX), Joint Planning and Execution System (JPES) and Joint Operation Planning and Execution System (JOPES)** – APEX is the system in which JPES and JOPES operates. JPES is a portfolio of capabilities supporting joint policies, processes, procedures, and reporting structures. JOPES is an integrated joint command and control system used to support military operation monitoring, planning, and execution activities. JOPES by design is a linear process. It is very effective when used for time phased force deployment data (TPFDD) information and deliberate planning, but has process shortfalls when used for crisis

planning. Among other things, it is the software used to ensure validation of cargo movements in support of hurricane responses (Chairman of the Joint Chief of Staff, 2019b). NOTE: Joint Publications (JPs) are in conversion to referencing JPES as the new terminology for JOPES. To reduce confusion and maintain continuity, this research project will reference to JOPES when discussing the software related to processing requirements.

9. **DDASS (DOD Defense Support of Civil Authorities Automated Support System)** - Among other agencies, this is used by FEMA and USNORTHCOM. USNORTHCOM uses it as a primary tracker for Mission Assignments (MAs). USNORTHCOM can see as request are made of DOD and then go through the DOD approval process. This software is a reference point for all previous MAs and Mission Assignment Task Orders (MATO). FEMA and USNORTHCOM use this software constantly. This is the primary way the DOD is tasked and accepts those tasks (Department of Defense, 2019).

10. **DAART (Domestic Operations {DOMOPS} Awareness and Assessment Response Tool)** – This software is similar to google maps functionality where there are lots of layers/boundaries/embedded capabilities used improve the overall common operating picture. This is more of a tactical or maybe operational level product (USASMDC/ARSTRAT Public Affairs Office, n.d.).
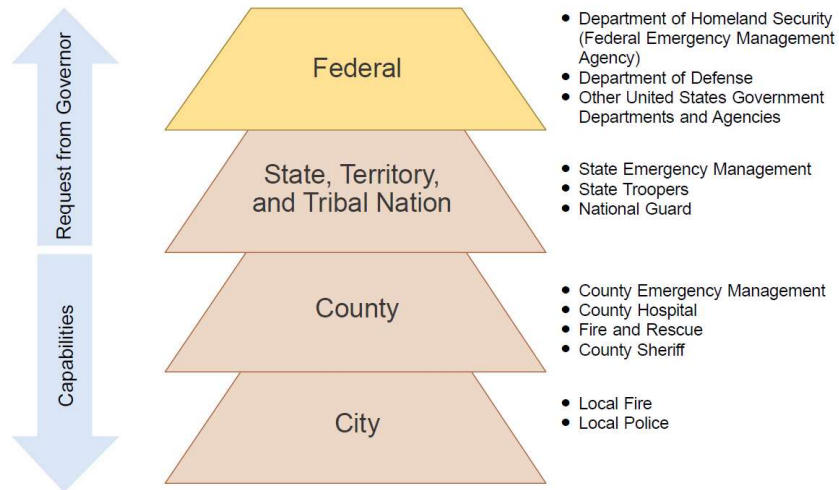
Federal Emergency Management Agency (FEMA)

The Department of Homeland Security (DHS) is the LFA for mitigating vulnerabilities, threats, and incidents related to terrorists (Chairman of the Joint Chief of

Staff, 2018:5). Its responsibilities also include preparing for, responding to, and recovering from natural disasters. Conversely, FEMA is the LFA during natural disasters in the contiguous United States (CONUS) (Chairman of the Joint Chief of Staff, 2018:5). There are several steps states take when preparing for a hurricane and one of those steps is requesting federal assistance if the situation warrants. This is considered one of the fundamentals of response.

State and local officials are responsible for preparing and coordinating the provision of assistance to their populace for domestic emergencies and disasters(Chairman of the Joint Chief of Staff, 2014c:1). The USG maintains a wide array of capabilities and resources that can be made available upon request of the governor of a state or local civil authorities for immediate response or under mutual aid agreements (Chairman of the Joint Chief of Staff, 2014c:1). When an incident occurs that exceeds or is anticipated to exceed state, local, or tribal resources, both neighboring states and the USG may provide resources and capabilities to support the response (Chairman of the Joint Chief of Staff, 2014c:1). Figure 2 demonstrates this process. When these capabilities are exceeded and USG support is requested, FEMA is the LFA. They in turn, request help from the DoD for airlift and medical evacuation support. This support is requested in the form of a MA through the DDASS system. Once approved, the MA receives additional details and becomes a MATO. An example MATO is given in Appendix A.

When a situation is beyond the capability of an affected state or territory, the governor may request federal assistance from the President.

Federal
- Department of Homeland Security (Federal Emergency Management Agency)
- Department of Defense
- Other United States Government Departments and Agencies

State, Territory, and Tribal Nation
- State Emergency Management
- State Troopers
- National Guard

County
- County Emergency Management
- County Hospital
- Fire and Rescue
- County Sheriff

City
- Local Fire
- Local Police

Request from Governor / *Capabilities*

Figure 2. Layers of Redundant Capabilities

Unites States Northern Command (USNORTHCOM)

USNORTHCOM has many responsibilities including setting the battle rhythm for hurricane responses to ensure synergy between agencies and processing the MATOs the DoD receives from FEMA. The most important responsibility however is to support the states by supporting FEMA when federal assistance is requested (Chairman of the Joint Chief of Staff, 2018:5). USNORTHCOM operates under a periodically updated Execute Order (EXORD) so their span of control and support can be agile and effective. According to the CJCS Defense Support of Civil Authorities EXORD, USNORTHCOM is provided authority over a limited amount of forces to respond to a large-scale incident such as a hurricane event (Chairman of the Joint Chief of Staff, 2018:5). These forces are assigned within three categories which include authorities and capabilities. For additional information on the categories of forces, see CJCS Defense Support of Civil Authorities

EXORD 2018. If the capacity of these three categories of forces is exceeded, more forces can be requested via the request for forces (RFF) process (Chairman of the Joint Chief of Staff, 2014a).

United States Transportation Command (USTRANSCOM)

The United States Transportation Command serves as the owner of the mobility forces. They provide airlift and mobility support when requested. Support for hurricane responses in particular is usually in the form of C-17s, C-130s, CRG forces, and patient movement missions. USTRANSCOM uses the APEX/JPES, formerly JOPES software and processes to validate and execute passenger and cargo movements (Chairman of the Joint Chief of Staff, 2019b:1). The 618 AOC then in turn uses this validated JOPES information to execute missions. It is important to note that USTRANSCOM participates in communication events such as teleconferences with FEMA, but there are no formal processes between the two organizations. FEMA coordinates with USNORTHCOM, who coordinates with USTRANSCOM for mobility support.

The Current Communications Process Between FEMA, USNORTHCOM, and USTRANSCOM

This section explains the communication process of how a request by FEMA is made for mobility support from USTRANSCOM. The communications required to fulfill a request can be divided into two areas of concern. One is the formal request process that includes MA and processing. The second is the day-to-day required direct communications that take place between agencies for coordination. Important to these communications is the order in which information is passed. Specifically, FEMA

communicates with USNORTHCOM, and USNORTHCOM communicates with USTRANSCOM. As noted above, USTRANSCOM does not formally communicate with FEMA directly.

The request process FEMA uses is depicted below, known as the MA Process. The MA is the vehicle used by the Department of Homeland Security/Emergency Preparedness and Response/Federal Emergency Management Agency to support federal operations in a declared Stafford Act major disaster or emergency declaration that orders immediate, short-term emergency response assistance when an applicable state or local government is overwhelmed by the event and cannot perform, or contract(Chairman of the Joint Chief of Staff, 2014c, p. 2). Figure 3 follows the process outlined below. Steps 1-7 are FEMA operations. Steps 8 and 9 are USNORTHCOM operations. Steps 10 and 11 are USTRANSCOM/618 AOC operations.

1. State Requests Assistance

2. FEMA Produces MA

3. Defense Coordinating Officer (DCO) Validates MA

4. CCMD Reviews MA

5. DJS Approves MA

6. Sec Def Approves MA

7. Supported Commands Tasked (USNORTHCOM) via EXORD/DEPORD

8. USNORTHCOM receives MATO in DDAS

9. USNORTHCOM J33 uses MATO to input information into JOPES

10. USTRANSCOM DDOC J3, America's Branch, receives JOPES information and accomplishes validation process

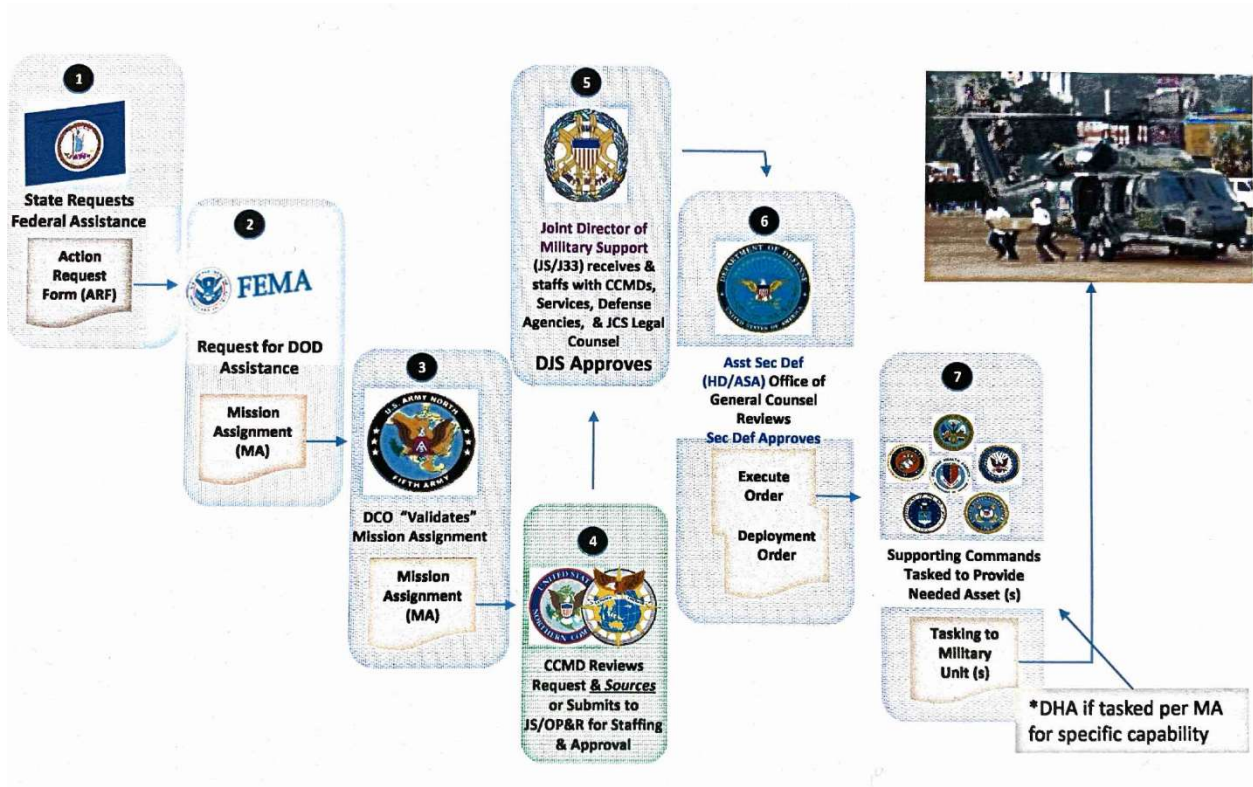11. 618 AOC uses JOPES data to plan and execute missions

Figure 3: Mission Assignment Process

Discussed separately, but completely integrated within the formal process is the

ongoing communications that take place constantly between agencies to ensure

effectiveness. Active communications include phone conversations, emails, blog

postings, and situational awareness software are all used to stay informed and current.

Additionally, a battle rhythm is established by the 601 AOC, the USNORTHCOM AOC,

as they are the designated integrator of DSCA support for hurricane operations. The

battle rhythm sets the daily order of events and schedule to ensure coordination is

happening and effects are being delivered. Several events happen during this battle

rhythm but the most notable is the twice-daily telephone conference calls between all

participating agencies. These are initiated by the 601 AOC and serve to ensure communication and collaboration. They also serve as a safety net in case information was lost in an email or other software. In addition to the formal MA/JOPES process and day to day communications exists a VOCO process. The VOCO process is not a codified process and is generally only used for emergency or time-sensitive operations. VOCO's are necessary to overcome the limitations of the normal operating procedures of the MA and JOPES process.

Literature Review Summary

The 2018 CJCS EXORD demonstrates the importance of standing guidance that is in place between FEMA, USNORTHCOM, USTRANSCOM and other supporting agencies. They direct expectations regarding why USNORTHCOM must act swiftly when communicating requirements between FEMA and USTRANSCOM (Chairman of the Joint Chief of Staff, 2018). The 2017 hurricane season is well documented and was taxing enough on the DoD to warrant action from the DSECDEF. As a result, there have been literally dozens of lessons learned that justify the strategic objectives located in CONPLAN 3500, specifically regarding anticipation and rapid deployment (Chairman of the Joint Chief of Staff, 2014c). It is the job of the COCOMs to communicate, sustain, and support the LFA (Chairman of the Joint Chief of Staff, 2014c). Building on lessons learned from the 2017 FEMA AAR, and previous research projects such as "USTRANSCOM Support for FEMA" written in 2003, this research project aims to contribute improvements and recommendations in the communication process so the desired effect can be delivered at the desired time.

III. Methodology

Chapter Overview

This study used a semi-structured interview analysis to produce qualitative information specific to this research topic. Following the collection of information, a thematic analysis using a six step process was applied to determine common themes (Braun & Clarke, 2006). Twelve interviews were conducted using targeted questions designed to answer the research and investigative questions. The participants interviewed varied in experience and background, but are considered experts in their fields. All had some level of military experience, but a diverse pool of participants was used including personnel from FEMA, USNORTHCOM, USTRANSCOM, the 618 AOC, the 601 AOC, and AMC. Some SMEs were selected from outside FEMA, USNORTHCOM, and USTRANSCOM to determine outside perspectives and minimize bias. What follows is a description of the interview process used for this research and information regarding the expertise and credibility of the interview participants.

Interview Procedures

The actual data collection method used borrowed procedures from the book, "Practical Research." The semi-structured interview followed standard questions with one or more individually tailored questions to get clarification or probe a person's reasoning (Leedy, Paul D. & Ormrod, 2016:142). Eight of the interviews were face-to-face, which had the distinct advantage of enabling the researcher to establish rapport with potential participants and therefore gain their cooperation (Leedy, Paul D. & Ormrod, 2016:142). Based on the experience of this project, cooperation and quality of responses

was notably higher when conducting face-to-face interviews vice telephone. However, due to limitations mentioned in the first chapter, telephone interviews were required. Four of the interviews were conducted via telephone and further email correspondence. In general, telephone interviews are less time-consuming and often less expensive as travel is unnecessary (Leedy, Paul D. & Ormrod, 2016:142). The eight face-to-face interviews were conducted at Air Mobility Command (AMC) at Scott AFB, IL.

Thematic Analysis

The method chosen to analyze the data is known as thematic analysis. Thematic analysis is a method for identifying, analyzing, and reporting patterns (themes) within data (Braun & Clarke, 2006:79). It minimally organizes and describes the data set in detail (Braun & Clarke, 2006, p. 79). Thematic analysis is a poorly demarcated and rarely acknowledged, yet widely used qualitative analytic method within and beyond psychology (Braun & Clarke, 2006:77). Central to the "Braun and Clark" thematic analysis is a 6 step approach (Braun & Clarke, 2006:87). The 6 steps (phases) used in this approach are:

1. Become familiar with the data
2. Generate initial codes
3. Search for themes
4. Review themes
5. Define themes
6. Write up

The data from the interview was scribed on a prepared interview sheet, typed up for record keeping and completeness, and redistributed to the participants to ensure accuracy of information (Creswell, 2014). The confirmed accurate information from interviewees was the draft of information used for this project. Follow-on questions that were not in the original interview were asked periodically to some interviewees to ensure intent, clarification, and any additional required information in accordance with semi-structured interview procedures (Leedy, Paul D. & Ormrod, 2016). These procedures are in-line with a semi-structured interview process (Leedy, Paul D. & Ormrod, 2016).Following further analysis of the data, one additional question was asked to the twelve participants; which is question 8 below..

Once all data was received, the information was consolidated into a more useable format in preparation for phase 1 of the process. The format used focused on specific questions selected from the interviews and pooled the data for each question into a single document so the qualitative analysis could be accomplished. Following this write-up and familiarization with the data, step, or phase 2 was accomplished which included initially coding the information. Phase 2 begins when you have read and familiarized yourself with the data.

The actual coding of the data can be referenced on appendix B. The codes chosen were selected due to repetitions in the data or for applicability in answering the research and investigative questions. After the codes were established, the data was reviewed to determine percentages of that selected code. For example, in question 2, 83% of participants used text or email methods to communicate during a hurricane response. Following this coding process was phase 3. Phase 3 begins when all data have been

initially coded and collated, and you have a long list of the different codes that you have identified across the data set (Braun & Clarke, 2006, p. 89). This phase, which re-focuses the analysis at the broader level of themes, rather than codes, involves sorting the different codes into potential themes, and collating all the relevant coded data extracts within the identified themes (Braun & Clarke, 2006, p. 89). The selected themes can be referenced in Appendix B. Phase 4 begins when you have devised a set of candidate themes, and it involves the refinement off those themes (Braun & Clarke, 2006:91). Following the construction of the initial themes, they were reviewed for accuracy. The themes were backed up and determined consistent when compared to the coded information from phase 2. Phase 5 begins when you have satisfactorily charted the data. The themes were defined and refined (Braun & Clarke, 2006:92). Another round of evaluation was conducted and the titles of the themes concluded. This qualitative analysis for each identified question was used to interpret the final results and draw conclusions for recommendations, which is the essence of the final phase, phase 6. The final step includes a perspective write-up specific to FEMA, USNORTHCOM, USTRANSCOM, and outside agencies that ties information from the interview with the assessed themes.

The specific questions from the interviews used to create themes and draw conclusions for the research and investigative questions from the interviews are listed below.

1. How far out does your organization begin preparing for a hurricane response?
2. What methods of communications are used to coordinate between organizations during a hurricane response event? Are there other methods that would make this more efficient?

3. What information in your words communicates a requirement for a supporting

   capability such as airlift or Global Air Mobility Support System (GAMSS)

   support?

4. What is the most time-critical information?

5. What is other information critical during a hurricane response that needs to be

   communicated between USTRANSCOM, USNORTHCOM, and FEMA?

6. What works well coordination-wise between USTRANSCOM,

   USNORTHCOM, and FEMA during a hurricane response?

7. What are your priorities during a hurricane response?

8. What in your opinion slows this process down the APEX/JPES process the

   most? Is there a step of the process that could be accelerated, thereby

   minimizing the need to use a VOCO?

Interview Participants

Participants included subject matter experts (SMEs) from USTRANSCOM, USNORTHCOM, FEMA, the 618 Air Operations Center (AOC), the 601 AOC, and Air Mobility Command (AMC). The intent was to question personnel intimately involved in the relationship between USTRANSCOM, USNORTHCOM, and FEMA, but also draw on experience closely outside, but still involved and reliant on the communications and processes among those agencies. These participants were purposefully selected as they were identified to best understand the problems and assist in answering the research and investigative questions (Creswell, 2014). In order to reduce bias, the researcher determined that outside perceptions are of consequence and contribute to the overall

understanding of the process. This serves to improve communications across all levels of effort.

Summary

All responses contributed to the qualitative results and interpretations. Results drawn from the interviews are consolidated viewpoints and opinions from some of the most credible individuals associated with these processes. Their objective information was used to formulate the following results and recommendations.

IV. Analysis and Results

Chapter Overview

This section includes the areas of research accomplished and subsequent reviews of the collected information. Thematic analysis was used to determine themes between participant responses and draw conclusions that assisted answering the investigative and research questions. Eight questions were chosen from the interview questions that had direct influence on the conclusions. The interview coded data was then used to draw themes from the information. Perspectives from FEMA, USNORTHCOM, USTRANSCOM, and the interviewed outside participants are then described.

Interview Data Coded

Table 1. Coded Question Data

1	**How far out does your organization begin preparing for a hurrican response?**
2	**What methods of communications are used to coordinate between organizations during a hurricane response event?**
3	**What information in your words communicates a requirement for a supporting capability such as airlift or GAMSS support?**
4	**What is the most time-critical information?**
5	**What other information is critical during a hurrican response that needs to be communicated between FEMA, USNC, and USTC?**
6	**What works well coordination-wise between FEMA, USNC, and USTC during a hurrican response?**
7	**What are your priorities during a hurricane response?**
8	**Are there any steps in the APEX/JPES process that should be accelerated in order to avoid a VOCO?**

1. **How far out does your organization begin preparing for a hurricane response?**

   This subject applied to all participants with 100 percent providing an answer. Zero percent of participants prepared less than three days out. 83 percent of participants prepared approximately five days out. 17 percent of participants prepared greater than

five days out. This question highly depended on the origin and path of the weather system which had to be clarified during the interviews.

2. **What methods of communications are used to coordinate between organizations during a hurricane response event?** This subject applied to all participants with 100 percent providing an answer. 83 percent of participants used a combination of text and emails to communicate. 100 percent of participants voice methods, such as DSN, commercial, or cell-phones to communicate. 67 percent of participants used a situational awareness tool such as a knowledge or blog type website to communicate.

3. **What information in your words communicates a requirement for a supporting capability such as airlift or GAMSS support?** This subject applied to all participants with 67 percent providing an answer. Of that 67 percent, 50 percent of participants said they use the APEX/JPES process and software to receive a requirement. 38 percent of participants said receiving a VOCO is acceptable given the proper authorities. 38 percent said they use the MATO to ensure the requirement has been communicated from FEMA.

4. **What is the most time-critical information?** This subject applied to all participants with 100 percent providing an answer. 33 percent of participants said short-notice taskings such as airlift, or aeromedical evacuation are the most time-critical. 50 percent of participants said receiving a credible (e.g. validated and/or complete) requirement is the most time-critical information. 25 percent of participants said that receiving a workable load-plan is the most time-critical information.

5. **What is other information critical during a hurricane response that needs to be communicated between FEMA, USNORTHCOM, and USTRANSCOM?** This

subject applied to all participants with 83 percent providing an answer. 25 percent of participants reemphasized the importance of receiving a credible requirement either via APEX/JPES or via VOCO. 20 percent of participants said they at times lack details necessary to execute the mission such as APOE, airfield capabilities, or destination of cargo and had to find that information pro-actively.

6. **What coordination methods between FEMA, USNORTHCOM, and USTRANSCOM were effective during a hurricane response?** This subject applied to all participants with a 92 providing an answer. 73 percent of participants remarked how the twice-a-day teleconferences chaired by the DIRMOBFOR were incredibly helpful and a reliable form of communication and clarification. 27 percent of participants said setting a battle rhythm early with all participating organizations was key to effectiveness. 45 percent of participants said building and maintaining professional relationships between agencies was key to successful coordination and response.

7. **What are your priorities during a hurricane response?** This subject applied to all participants with 100 percent providing an answer. 25 percent of participants said any actions that result in life-saving become the priority. 20 percent of participants said that establishing reliable communications with their coordinating agencies is one of their priorities. 67 percent of participants said accomplishing synchronizing actions such as emailing contact lists with key players, or pinging contacts to see what they need are their priorities.

8. **Are there any steps in the APEX/JPES process that should be accelerated in order to avoid a VOCO?** This subject applied to all participants with 33 percent

providing an answer. 75 percent of participants noted that The JOPES process can be accomplished in a matter of hours. The delays in the process have more to do with the lack of fidelity of the requirement more than any inherently slow process within JOPES. Participants noted that it would be beneficial to build systems in the future that work together to communicate between different government agencies.

Consistent Themes from Interview Responses

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Table 2: Consistent Themes

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1	Preparation time depended on projected storm path
2	Teleconferences are the most effective form of communication during hurricane responses
3	Anticipating requirements is an art
4	JOPES linearity is overcome with the VOCO process
5	Changing priorities and pro-active personnel create rapid changes
6	Relationship building and teamwork is critical to success

1. **Preparation time depended on the projected storm path.** This theme applied to all participants. Some participants gave a bigger window, but generally speaking, all participants noted that about five days out is when serious coordination begins taking place between organizations. Battle rhythms are set, communications plans are verified accurate, and requirements begin to flow between agencies in the form or MATOs and APEX/JPES. Preparation time was a subject all participants took seriously and used similar good practices. All participants have methodologies in place to monitor storm cells, undertake initial actions, and begin establishing the working relationships.

2. **Teleconferences are the most effective form of communication during hurricane responses.** This theme applied to all participants. All participants remarked that they utilize teleconferences for communications. These teleconferences are established

near the same time as a battle rhythm and are chaired by the DIRMOBFOR at the 601 AOC. These teleconferences are synchronizing in nature and ensure a unity of effort is accomplished. These teleconferences also serve as a platform to clear up any miscommunications and provide any updates critical to all players.

3. **Anticipating requirements is an art.** This theme applied to all participants. 66 percent of USNORTHCOM, 66 percent of USTRANSCOM, the FEMA representative, and 33 percent of AOC participants said anticipating requirements takes a significant amount of their time. Information flows from the states to FEMA and eventually to USTRANSCOM. Information along this communication path can be undermined if the situation on the ground changes. These changes can happen hourly. Communicating the "ground truth" through this network is challenging in real-time. Participants noted, that several times they are asking for the who, what, when, data needed for an airlift mission, only to find out hours later that the mission is no longer needed.

4. **APEX/JPES (JOPES) linearity is overcome with the VOCO process.** This theme applied to USNORTHCOM and USTRANSCOM members. 43 percent of participants mentioned the JOPES process and the time it takes to process requirements. 71 percent of participants mentioned the VOCO process and why it is needed. USTRANSCOM remarked that 60 percent of the time, the timeline is too fast for JOPES' validation timeline so a VOCO is needed. It is important to note that the VOCO process does not replace the JOPES process. The VOCO process is in place due to the linearity of the JOPES process. Essentially, JOPES requires data, validation, and checks by many people for the requirement to be ready for execution.

To get around this shortfall, a VOCO is established with limited information so aircraft and crews can be prepared to go when the JOPES process catches up. This method carries a higher level of risk, which is dependent on the type of mission that is to be accomplished.

5. **Priority shifts and proactive personnel create rapid changes.** This theme applied to all participants. 100 percent of USNORTHCOM, 66 percent of USTRANSCOM, the FEMA and AMC representative and 33 percent of the AOC participants remarked that changing priorities need to be communicated expeditiously. The actual priorities are established by USNORTHCOM and disseminated to supporting agencies and are different for each event. They can change rapidly based on available airlift, ANG participation, Emergency Management Assistance Compacts (EMACs), and emerging requirements. USNORTHCOM remarked how requirements could be created to move items based on information from personnel at the scene. The personnel at the scene will make a formal request, but will still work to move the cargo through any means possible. Unintentionally, if the cargo is moved through another means, this information is not passed back up through the channels to USTRANSCOM, which creates the situation of an airlift asset landing at a location with no cargo to move. Several participants used this or a similar example when explaining the problem.

6. **Relationship building and teamwork are critical to success.** This theme applied to all participants. 66 percent of USNORTHCOM, 100 percent of USTRANSCOM, and none of AOC, FEMA, or AMC participants noted that relationships were key to success. This is a key statistic as it exposes the connections necessary at the joint staff

levels to "make things happen". There are many critical AD positions in this process. It was implied by several participants that continuity was a problem as AD personnel moved into key positions. Several participants mentioned that the quality of information they received at many times had to do with the level of professional relationships they had established with the individual. Several participants remarked that the relationships were important so they were all working together and not working against each other.

Perspectives

The following perspectives tie thematic information with additional interview data received from the participants. The perspective information will then be used to assist in answering the research and investigative questions. The information contained in these perspective summaries are the opinions of the participants and is a consolidation of their viewpoints.

FEMA Perspective

The MA document, referenced in Appendix A, is a standard form that all federal agencies use to request assistance from the DoD. Referencing theme #3, one of FEMA's responsibilities is to anticipate requirements from the states just like USNORTHCOM and USTRANSCOM. They track the path of incoming storms and reach out to state representatives to ensure their needs are met. From the FEMA representative, "Before any action is taken, there is a call with the affected region to discuss the tracking of the disaster along with the current posture of the state and the need to pre-position resources." This also ensures priorities have not changed or no short notice taskings have

developed as per theme #5. Following that contact, assuming a hurricane is imminent, they begin processing MA's with the intent for them to turn into MATOs. From FEMA's perspective, a MATO is a communicated requirement. Processing these MAs is the primary method FEMA uses to anticipate requirements; it is important to note that requirements can change rapidly. USNORTHCOM and USTRANSCOM also have visibility on these MAs and attempt to anticipate requirements. Participants noted that when the requirements change, pre-planning could become useless work. Following the MATO, additional communications take place regularly between FEMA and USNORTHCOM.

The FEMA participant noted the importance of The Movement Coordination Center (MCC), which is an element within the National Response Coordination Center (NRCC). The NRCC is stood up sparingly. For example, in the last six years, it has only been stood up ten times. If an anticipated disaster does not warrant the standup of the NRCC, the Transportation Management Branch, an element of the MCC is manned. The MCC is manned by FEMA personnel at their day-to-day desk. These are the FEMA personnel that communicate with USNORTHCOM. The FEMA participant noted that these are important facts to keep in mind as the only way USNORTHCOM and USTRANSCOM personnel would know which is stood up is through an established relationship and updated rosters, per theme #6.

The FEMA participant noted several challenges within the MCC. Redundant missions and de-conflicted missions are an on-going challenge the FEMA subject commented. Because several states have National Guard (NG) assets and state-to-state agreements known as EMACs, sometimes equipment can be moved while formal MA

requests are being processed through the DoD systems (JOPES and USTRANSCOM). Of note, "there is no visibility of these airframes moving resources." If this situation develops, the "rapid changes" are seldom communicated to USTRANSCOM in time to divert or terminate the mission, in line with theme 5. This makes anticipation of requirements redundant at best and wasteful if the process is far enough along.

Lastly, the FEMA representative noted that having a COCOM Liaison Officer (LNO) embedded within the MCC helped tremendously in the past. In 2017, a USNORTHCOM LNO, 2-star general, was postured within the MCC. He helped formulate requirements, gauge expectations, and keep personnel at USNORTHCOM and USTRANSCOM informed of the emerging situation. This was deemed invaluable during the hurricane IRMA response.

USNORTHCOM Perspective

The authority given to USNORTHCOM during hurricane responses includes setting priorities , and ensuring missions get loaded into applicable software for processing. They are also responsible for ensuring synchronization with FEMA and USTRANSCOM to ensure airlift requests are accurate. They directly receive information from FEMA in the form of MATOs.

The actual USNORTHCOM offices that receives the MATO are the USNORTHCOM/J33 and USNORTHCOM/J4. The J4 in particular is responsible for turning the MATO information into JOPES data for processing. It is important for these offices to have pre-established relationships with FEMA since they assist in requirements communications, consistent with theme #6. This is an important step because the data

provided in the MATO may be incomplete, requiring follow-up questions to ensure JOPES accuracy. Follow-up information retrieval slows down the process as well as the structure of the JOPES system. If a requirement is high priority enough, it may require a VOCO, consistent with theme #4.

However, if a VOCO is not required, in accordance with theme #3, this is an area where the art of anticipation is important. All levels are attempting to get fidelity; FEMA from the state, USNORTHCOM from FEMA and so on. Each level is anticipating the requirement with imperfect information, in a highly dynamic environment. When rapid anticipation is required, there is higher potential for time to be wasted. Moreover, according to USNORTHCOM participants, JOPES is typically a linear 21-day process. The linearity of the process makes JOPES effective for deliberate planning but subsequently worse when processing crisis action plans that need to be used for dynamic operations. In addition to timing and requirement anticipation, USNORTHCOM is responsible for setting the AORs response priorities.

According to theme #5, USNORTHCOM sets the priorities depending on the available resources and the severity of the impact of the storm system. These priorities are updated on an excel spreadsheet and disseminated accordingly. Similar to requirements, priorities can change rapidly based on the emerging situation. The changes can have a dramatic effect on the flow of assets as anticipated or real requirements now are obsolete. According to the AMC interviewed participant, "USNORTHCOM would change priorities which would disrupt airflow – it might accelerate one particular priority, but usually at the detriment to the overall flow of the operation." This is an unintended second-order effect of rapidly changing the priorities and assists in answering IQ2.

USTRANSCOM Perspective

According to USTRANSCOM participants, USTRANSCOM is required to consider the entire transportation enterprise holistically. They look at passenger or cargo moves that might be originating near the storm track and consider repositioning if required. These are preparatory steps taken in addition to any pre-staging of support personnel or equipment requested from FEMA. USTRANSCOM is also the final validator of mobility support within the JOPES system. This has direct impact on theme #4.

As discussed in the USNORTHCOM perspectives section, JOPES linearity and deliberate nature become problematic when responding dynamically. USTRANSCOM shoulders part of the responsibility to recognize this and execute workaround solutions such as a VOCO, consistent with theme #4. It is important to note that rarely does a mission have to be executed "only" using a VOCO. This is due to the nature of how a VOCO is used. The USTRANSCOM participants noted that a VOCO generally is used to pre-position jets and crews and put them on a timeline enabling them to accomplish the mission. Conversely, if a VOCO were not used to prepare the aircraft and crew for a short-notice tasking, JOPES linearity would be used for timing, which could drive a perceived "late" response. For example, if the JOPES linear process was followed, to include allocation and pairing of jets and crews, it is possible the intended cargo could instead be moved by the ANG or via ground assets (theme #4 and #5). According to USTRANSCOM participants, this is because during the chaotic nature of hurricane response events, first responders and personnel at the scene seek to solve problems by any method available. If the AD (T10) airlift is "late", the ground personnel may just find

a faster method of delivery… i.e. Air National Guard (ANG) (T32) support or truck. This is significant because a slow response leads to wasted missions. The AMC participant noted that 60 percent of the time, the timeline required to respond is shorter than the JOPES validation timelines, again, underpinning the impact of quick response capability. Additionally, when the commander issues a VOCO, he is taking on risk in the form of wasted assets, consistent with theme #3. The commander must be given clear enough information so he or she can make an informed decision on how to posture the jets and crews for response and execution.

Outside Perspectives

It is important for this research project to consider perspectives outside of FEMA, USNORTHCOM, and USTRANSCOM to consider what challenges they face. As can be expected, a decision made at the COCOM level has an impact at the tactical level of control within the 618 AOC and the 601 AOC. Consistent with themes #3 and #5, short notice changes and redundant efforts are some of the more common barriers to communication.

According to 618 AOC participants, the 618 AOC requires two pieces of information to execute a mission. They need authority and funding. The authority can be received by them either through JOPES or via VOCO. "The JOPES process is typically a 21-day process that at times is accelerated to 21 hours." When this happens, misinformation in the JOPES system has an impact on the mission (theme #4). Conversely, VOCO missions, which are used generally as preparatory actions for aircraft and crews, are also postured with limited information. The 618 AOC is the recipient of

the VOCO that puts jets and crews on alert. According to participants, two issues arise by moving fast using a VOCO. First, the mission may not have available load data for the mission to be successful; and second, the unit receiving the airlift support may not be notified that airlift is inbound until the aircraft has already arrived. This is a result of a rapidly changing environment as per theme #5. This creates the problem of airlift landing at a location with no cargo ready to be moved. These are second order effects of bypassing the JOPES system and using VOCO. A 618 AOC participant noted that generally they have to wait for information. However, in time-critical events, they must seek out information and sometimes act upon the best information they have available to make the mission happen. There is the AOC perception that FEMA, HHS, and other federal agencies do not understand the constraints (crew reset, duty day, load restrictions) they have to work with (This can be fixed by building the relationships necessary to understand each other's capabilities)These scenarios require the AOC to reach out, define the requirements, verify all customers/cargo are ready to move, and provide the airlift expectations. The last piece of information that the 618 AOC needs to be effective is a load plan. This is basic cargo information that the aircraft and aircrew need to be effective. A 618 AOC participant noted that too often they receive orders without actually knowing the load plan. This requires massive coordination from their end to ensure the crew is informed and the cargo is prepared and ready for the crew to move.

Secondly, money allocated for moves has to be verified at the 618 AOC level. AOC members noted that they do this by looking up MA's in the DAARTS system to ensure that the movement is validated and paid for by the state. This is laborious and directly impacts fast responses and theme #5. If a fast response is required, funding must

be verified prior to execution. This is an important note because the MA is a document created near the beginning of the process. The AOC, near the end of the process, is having to monitor this system to verify funding. This is not an efficient process.

It was noted by participants that the relationship between the 618 AOC and the 601 AOC is generally good. However, one area for improvement is the de-confliction between the Air National Guard (ANG) Title 32 (T32) missions and the active duty (AD) Title 10 (T10) missions. According to participants, it is currently the responsibility of the 601 AOC to ensure de-confliction of redundant efforts between T10 and T32 missions. That does not always occur effectively nor is it communicated to the 618 AOC so the mission can be terminated before it starts (theme #5). Secondly, the cargo or passengers that a T10 mission may be tasked to move may opportunistically be moved by a T32 mission. There is no current method to track this mission data between T32 and T10 forces at the 618 AOC. When they execute missions, they go off the best information available which may end up being a wasted resource. The 618 AOC cannot actively track mission data enroute. FEMA's AAR also noted this shortfall and the difficulty of tracking resources (Federal Emergency Management Agency, 2018:vii). This was especially impactful when resources were moved via multi-modal transportation (Federal Emergency Management Agency, 2018:vii).

V. Conclusions and Recommendations

Chapter Overview

This section covers the overarching conclusions of the research and recommendations for action and future research. The conclusions discussed below were ascertained through numerous interviews with DSCA and hurricane response professionals and experts to include FEMA, USNORTHCOM, USTRANSCOM, 618 AOC, 601 AOC, and AMC personnel.

Conclusions of Research

The overall goal of this research project is to determine where improvements might exist within the communication process between FEMA, USNORTHCOM, and USTRANSCOM to ensure requirements are executed on-time and delivering the intended effects. Based on the participant responses, personal research, and thematic revelations, the research is summarized into four conclusive areas. These four areas are take-aways that require solutions. They are expanded upon below.

1. **Changing Priorities.** Personnel on the ground during a hurricane response make requests to the state and FEMA for passengers or cargo to be moved. This request takes time, as this research project has discussed above. While that request is processing, ground personnel work other avenues (ANG, ground movements, etc..) to try and solve their own problems. This happens many times during hurricane response and drives the value of known priorities up dramatically. As priorities change on the ground, they change for FEMA, USNORTHCOM, and

USTRANSCOM. These priorities need to be rapidly promulgated to ensure an effective response.

2. **Synchronized situational awareness.** First, there are many software suites used for processing information, enabling communications, and maintaining a common operating picture. Many of these suites are proprietary or used for internal coordination. There does not seem to be an open source web-based solution that allows tactical level information to inform strategic level processes when events change rapidly. Second, it was a proven best practice to embed a USNORTHCOM LNO in FEMA's MCC during hurricane responses. This dramatically improved the flow of operations and should be used to the maximum extent possible. Third, there does not currently exist a process or program to integrate the operations of T10 and T32 forces to ensure missions are not redundantly executed and mission data (cargo or passengers) is tracked.

3. **Relationships.** Civilians are incredibly valuable in positions responsible for hurricane responses. They have the continuity, processes, and experience to evolve, network, and build lasting relationships over time. Active duty personnel are subjected to short term tenures in their positions and are forced to learn the complicated processes and quickly and establish relationships before the hurricane season is in full swing. This is not a new problem but is still important to note regarding hurricane response.

4. **Operational and tactical level implications.** The operational level for this research project is considered the 618 AOC and the 601 AOC; aircraft and crews are at the tactical level. AOCs are near the "tail end of the whip" in these

processes. Decisions made and information passed affect aircraft, crews, and more importantly the cargo and passengers they are slated to move. They must ensure authority and funding are in place before executing a mission. They also generally have the burden to close up any loose ends for a mission such as ensuring the cargo is ready to be moved, tracking download plans, and informing the crews of any dynamic changes.

Research and Investigative Questions Answered

IQ1: Using the VOCO process, what information communicated from FEMA, to USNORTHCOM, to USTRANSCOM, to the 618 AOC, would drive the AOC to generate crews and jets to execute a mission? At a basic level, the 618 AOC requires two things to execute a mission, authority and funding. The VOCO process is not a codified process. In the context of this paper, it is an understood process between USNORTHCOM and USTRANSCOM used for two reasons; to respond to very short notice or an emergency, or to prepare aircraft and crews by putting them in alert status so they are prepared to execute a short notice mission. While they are on alert, the JOPES process "catches up". Basic information required in the VOCO includes geographic area, airfield, expected # of passengers and short-tons, any special instructions, ending location, and final destination. So, to answer the question, authority via a VOCO, and funding via an MA is enough information to generate aircraft and crews.

IQ2: What is the critical information that needs to be passed between FEMA, USNORTHCOM, and USTRANSCOM dynamically that has an impact and second-order effects on planning and processing? The critical information that needs to be

communicated in a very fast manner are short notice taskings, changing priorities, and cancelations. For short notice taskings, the VOCO process is in place but is generally only used for missions within 24 hours. Outside of 72 hours, the JOPES process can generally be used. This leaves a gap of time where the JOPES process is ineffective for a mission but the VOCO process is not warranted yet. The second issue is changing priorities. AFNORTH within USNORTHCOM is responsible for setting the priorities. The priorities as discussed earlier in the paper are updated based on the event and promulgated via email, but could change dynamically based on the needs of the state, available assets, and commander intervention. Knowledge of canceled requirements also appears to be an area of concern.

RQ: When preparing and responding during a hurricane event, how can FEMA, USNORTHCOM, and USTRANSCOM improve their communication process to anticipate and receive requirements ensuring they are executed on time and delivering the intended effect? A fully integrated communication and situational awareness tool appears to be the best solution to improve communications. Near real-time information that can be displayed to multiple agencies is critical. This capability should provide notifications to select information that has an impact on all players. A web-based, easy-access solution appears to be the best. Examples of notification worthy data include priorities, emergency requirements, VOCOs, and cancelled requirements. Initially recommended players include FEMA, USNORTHCOM, USTRANSCOM, ARNORTH, 618 AOC, and 601 AOC. Further analysis is needed to determine if other participants are necessary. Regarding priorities and their changes, a central location for these priorities should be posted for all players to access. As an example,

USTRANSCOM hosts the APAN website, supported by DISA, which has capabilities to add comment rooms, hang important files, and live chat. According to USTRANSCOM, FEMA and USNORTHCOM did not participate on this website last season, though they could have been. The solution recommended should be a common web-based platform. Players can post updates, synchronize efforts, and post forthcoming information such as short notice taskings and priority lists.

Significance of Research

The hurricane season brings unique challenges every year and continues to challenge states and the federal government to respond, provide assistance, and to ultimately save human lives. Fortunately, there are many agencies and organizations committed to accomplishing this mission. This paper is continuing research that directly contributes to making the USG and FEMA better at response. It is in line with the DSECDEF memorandum directing a review of procedures and processes to ensure efficiency and effectiveness. This lesson learned document has, of the date of this paper, not been released and is still in coordination in the USG. There are previous bodies of research including the 2017 FEMA AAR and the CFE-DM best practices that conclude communication, situational awareness, and quick response capability are key to a successful hurricane response mission and this paper similarly concludes those items.

Recommendations for Action

Several recommendations should be considered based on the conclusions of this research project. The first is a review of the software suites used during a hurricane response. Those suites are listed in the literature review of this research paper. The

capabilities that appear to be lacking are as follows: expedient requirements processing, rapid load planning communication, cargo and aircraft real-time situational awareness between T10 and T32 forces, and quick notification of mission cancellations. In addition to this review of software it appears that the software programs do not communicate information between themselves. The USG and DSCA support agencies should ensure future systems are compatible and can freely share information that affects fast response.

Secondly, in-lieu of software that can fuse the data listed above, it may be advantageous to have a dedicated position capable of doing this work. This position would essentially be a full-time integrator and be responsible for maintaining the picture of the AOR and promulgating information expeditiously to ensure all players are constantly informed. Another human-based solution is to create a JOPES position or training that enables crisis-response validation. This person could have access to real-time approvals and data entry to ensure fast flow of information. This would be beneficial to show how USNORTHCOM and USTRANSCOM can expeditiously utilize the system without working around the system shortfalls and relying on a VOCO.

Lastly, there currently is not a solution to de-conflict and track mission data for T10 and T32 assets as they accomplish missions within the system. The result of this problem is a tactical level one, but the problem starts with a breakdown in communications for the original requirement. For example, if a high priority mission is requested to move cargo, the request has to go through layers of requests and approvals, through FEMA, USNORTHCOM, USTRANSCOM, and so on. Even if this process can be done in 24 hours, the original request for cargo movement could be fulfilled by a T32 mission since those missions are approved by the governor of the supported state or a

contiguous state. As it stands right now, the only integrating organization that has situational awareness on T10 and T32 forces is the 601 AOC. The responsibility is theirs to ensure this does not happen. They may have a process in place to solve this, but even if they do, the perception is that T10 missions are at times unnecessarily tasked.

Recommendations for Future Research

Two areas in particular should be further investigated; DSCA software shortfalls and 601 AOC mission situational awareness. Currently, the software suites listed in section two of this research project lack integration. It should be investigated to determine if the software can be linked in any way or if a human solution is the answer for incompatibilities. The second area for future research is the level of perceived or actual situational awareness at the 601 AOC. There exists an integration problem between T10 and T32 forces. It is recommended to determine if there is a way to consistently de-conflict these assets and keep stakeholders informed. For example, FEMA requests to use T10 forces for a cargo move, but T32 forces can do it faster and via "target of opportunity". Who makes this decision and how that information is promulgated for all stakeholders' situational awareness needs to be answered.

Conclusion

Responding to hurricanes and any natural disaster brings with it unique requirements and responsibilities. Ultimately, the preservation of human life is why this mission is so important. The researcher does not doubt that all participants understand this reality and work incredibly hard to maximize assistance. Overcoming challenges and

improving integration in the areas covered by this research project will contribute to build

a stronger and more capable network.

List of Acronyms

ADS – Automated Directives System
AETC – Air Education and Training Command
AFB – Air Force Base
AMC – Air Mobility Command
APOE – Aerial Port of Embarkation
ASD(HD) – Assistant Secretary of Defense for Homeland Defense
CDRG – Catastrophic Disaster Response Group
CFO – Chief Financial Officer
CJCS – Chairman, Joint Chiefs of Staff
CMC – Crisis Management Center
CONUS – Continental United States
DCE – Defense Coordination Element
DCO – Defense Coordination Officer
DFO – Deployed Federal Officer
DIRMOBFOR – Director of Mobility Forces
DMAT – Disaster Medical Team
DOD – Department of Defense
DOMS – Director of Military Support
DOT – Department of Transportation
DRF – Disaster Relief Fund
DTG – Date Time Group
DTIC – Defense Technical Information Center
DTS – Defense Transportation System
EOD – Emergency Ordinance Disposal
EMAC – Emergency Management Assistance Compact
ERT – Emergency Response Team
ESF – Emergency Support Function
ESF 1 – Emergency Support Function for Transportation
ESF 8 – Emergency Support Function for Health and Medical Support
ESFLG – Emergency Support Function Leaders Group
EST – Emergency Support Team
EXORD – Execution Order
FBI – Federal Bureau of Investigations
FEMA – Federal Emergency Management Agency
FRP – Federal Response Plan
FY – Fiscal Year
GPMRC – Global Patient Movement Requirements Center
GTN – Global Transportation Network
HSPD – Homeland Security Presidential Directive
ITV – In-transit Visibility
JDOMS – Joint Department of Military Support
JICTRANS – Joint Intelligence Center for Transportation
JMCG – Joint Mobility Control Group

JOPES – Joint Operations, Planning and Execution System
JOSAC – Joint Operational Support Airlift Center
JTMO – Joint Traffic Management Office
KBKF – Buckley Air National Guard Base, Colorado
KCHS – Charleston AFB, South Carolina
KDYS – Dyess AFB, Texas
KHOU – Houston International Airport, Texas
KIKR – Kirtland AFB, New Mexico
KLSV – Nellis AFB, Nevada
KNUQ – Moffett Field, Oakland, California
KPOB – Pope AFB, North Carolina
KRIV – March AFB, California
KSUU – Travis AFB, California
KSWF – Stewart AFB, New York
KWRI – McGuire AFB, New Jersey
LNO – Liaison Officer
MA – Mission Assignment
MACA – Military Assistance to Civil Authorities
MATO – Mission Assignment Tasking Order
MAST – Military Assistance to Safety and Traffic
MCC – Movement Coordination Center
MERS – Mobile Emergency Response Support
MOA – Memorandum of Agreement
MSC – Military Sealift Command
MSCA – Military Support to Civil Authorities
MST – Medical Support Team
MTMC – Military Transportation Management Command
NAS – Naval Air Station
NIMS – National Incident Management System
NRP – National Response Plan
PACAF – Pacific Air Forces
PID – Plan Identification
ROC – Regional Operations Center
RETCO – Regional Emergency Transportation Coordinator
RFA – Requests for Assistance
SAAM – Special Assignment Airlift Mission
SECARMY – Secretary of the Army
T10 – Title Ten Forces
T32 – Title Thirty-two Forces
TACC – Tanker Airlift Control Center
TCC – Transportation Component Command
TCN – Transportation Control Number
TPFDD – Time-Phased Force Deployment Data
TPFDL – Time-Phased Force Deployment List
ULN – Unit Type Code

USAF – United States Air Force
USAID – United States Agency for International Development
USCINCJFCOM – United States Commander in Chief Joint Forces Command
USD(P) – Under Secretary of Defense for Policy
USJFCOM – United States Joint Forces Command
USNORTHCOM – United States Northern Command
USPHS – United States Public Health Service
USTRANSCOM – United States Transportation Command

Appendix A. Mission Assignment Tasking Order

MA TASK ORDER FORM *

Federal Emergency Management Agency

MATO #:	▮▮▮▮▮		MA #:	▮▮▮▮▮
RRF #:	▮▮▮▮▮		Date :	09-24-2017

Requestor:	▮▮▮▮▮		Telephone:	▮▮▮▮▮

☐ Supporting Documentation Attached

PRIORITY LEVEL				Beginning Date	Completion Date	Cost Estimate **
☐ Normal	☐ High	☐ Life saving	☑ Life sustaining	09-25-2017	09-26-2017	200,000

Description of Task:

Request DOD provide airlift for US&R Task Force Virginia -TF-02 (80 personnel with 200 lbs. of gear per person, and 4 Canines) and cache from Luis Munoz Airport in San Juan, Puerto Rico, Naval Air Station Oceana, Virginia on approximately 9/25/2017 or soonest.

Please see the attached Load Plan for data information.

Accepting Official (Federal Agency Action Officer):	▮▮▮▮▮	Agency#: FEMA
Site Point of Contact (if different from AO):	▮▮▮▮▮	
Address:		
Phone:	▮▮▮▮▮	Fax:
E-Mail:		

COMMENTS: (use back or separate page for additional space):

*** Project Manager's Name:	▮▮▮▮▮	Phone #:	▮▮▮▮▮
Project Manager's Signature:		Date:	

* Not to be used for subtasking to another (supporting) Federal Agency
** The tasking form does not obligate further funds. It details expenditures of existing obligation
*** Following signatures please provide information copy to FEMA MA Staff

Appendix B. Coded Question Data

	Data Coding				% Answered Question
1	How far out does your organization begin preparing for a hurricane response?	< 3 days 0%	≈ 5 days 83%	> 5 days 17%	100%
2	What methods of communications are used to coordinate between organizations during a hurricane response event?	Text/Email 83%	Telephone 100%	SA tool 67%	100%
3	What information in your words communicates a requirement for a supporting capability such as airlift or GAMSS support?	APEX/JPES (JOPES) 50%	VOCO 38%	MATO 38%	67%
4	What is the most time-critical information?	Short Notice 33%	Requirement 50%	Load plan 25%	100%
5	What other information is critical during a hurricane response that needs to be communicated between FEMA, USNC, and USTC?	Priorities 25%	Requirements 25%	Loc Info 20%	83%
6	What works well coordination-wise between FEMA, USNC, and USTC during a hurricane response?	Teleconferences 73%	Battle Rhythm 27%	Relationships 45%	92%
7	What are your priorities during a hurricane response?	Lifesaving Actions 25%	Reliable Comms 20%	Synchronizing Actions 67%	100%
8	Are there any steps in the APEX/JPES (JOPES) process that should be accelerated in order to avoid a VOCO?	Requirements 75%	JOPES 0%	Load Plan 50%	33%

	Consistent Themes from Interview Responses
1	Preparation time depended on projected storm path
2	Teleconferences are the most effective form of communication during hurricane responses
3	Anticipating requirements is an art
4	JOPES linearity is overcome with the VOCO process
5	Changing priorities and pro-active personnel create rapid changes
6	Relationship building and teamwork is critical to success

Appendix C. Quad Chart

KC-135 FORCE STRUCTURE: IDENTIFYING OPERATIONAL AND FISCAL INEFFICIENCIES

Maj Daniel Diemer
Advisor: Dr. Jason Anderson, PhD
Advanced Study of Air Mobility (ENS)
Air Force Institute of Technology

Abstract

There are many organizations involved that take predictive and reactive actions when destructive weather systems are projected toward the United States. Three of those organizations, the Federal Emergency Agency (FEMA), United States Northern Command (USNORTHCOM), and United States Transportation Command (USTRANSCOM) are critical in spearheading coordination and requirements to ensure the Global Air Mobility Support Systems (GAMSS) and support airlift are used effectively and efficiently. The 2017 hurricane season especially stressed the coordination and capabilities among these agencies and tested their response when multiple hurricanes barreled toward and through the United States. Dynamic communications required during these Defense Support of Civil Authorities (DSCA) events is well-intentioned and often successful. However, due to software limitations, verbal/telephone workarounds have become normalized, which can lead to miscommunications and redundant efforts. This paper explores the relationship and the communications procedures among these three agencies to determine areas for improvement. This research project uses a semi-structured interview process to collect qualitative data. Subsequently, a thematic analysis was conducted on the collected interview data to determine trends that led to recommendations for action. Solutions included recommendations to improve situational awareness when operating using the Total Force Enterprise (TFE), and methods to overcome software limitations.

Collaboration

FEMA, USNC, USTC, AMC, 618 AOC, 601 AOC

Mission Assignment Process

Conclusions

- Changing Priorities
- Synchronized Situational Awareness
- Relationships
- Operational and Tactical Implications

Recommendations

- Deep Dive: software suites used during a hurricane response.
- Dedicated position capable of doing this work.
- De-conflict and track mission data for T10 and T32 assets as they accomplish missions within the system.

Significance

This paper is continuing research that directly contributes to making the USG and FEMA better at response. It is in-line with the DSECDEF memorandum directing a review of procedures and processes to ensure efficiency and effectiveness. There are previous bodies of research including the 2017 FEMA AAR and the CFE-DM best practices that conclude communication, situational awareness, and quick response capability are key to a successful hurricane response mission and this paper similiarly concludes those items.

Methodology

A semi-structured interview analysis was used for this research project. A semi-structured interview contains the components of both structured and unstructured interviews (Paul D. Leedy and Jeanne Ellis Ormrod, 2016). The researcher asked predetermined questions, but also asked individually tailored follow-up questions in order to gain clarity regarding certain responses (Paul D. Leedy and Jeanne Ellis Ormrod, 2016). Twelve participants were asked a series of questions related to answering the research and investigative questions. Participants ranged in experience level and rank, but were identified as critical to the success of communications during a hurricane response and were considered subject matter experts (SME's) in their field at the time of the interview. The interview responses are qualitative by design. Responses were analyzed using a thematic analysis process to find common process problems and determine where communications can be improved.

Future Research

Two areas in particular should be further investigated; DSCA software shortfalls and 601 AOC mission situational awareness. Currently, the software suites listed in section two of this research project lack integration. It should be investigated to determine if the software can be linked in any way or if a human solution is the answer for incompatibilities. The second area for future research is the level of perceived or actual situational awareness at the 601 AOC. There exists an integration problem between T10 and T32 forces. Is there a way to consistently de-conflict these assets and keep stakeholders informed? i.e. a cargo movement is requested by T10 forces, but T32 forces can do it faster and via "target of opportunity". Who makes this decision and how is that information promulgated for all stakeholders' situational awareness.

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14. ABSTRACT

There are many organizations involved that take predictive and reactive actions when destructive weather systems are projected toward the United States. Three of those organizations, the Federal Emergency Agency (FEMA), United States Northern Command (USNORTHCOM), and United States Transportation Command (USTRANSCOM) are critical in spearheading coordination and requirements to ensure the Global Air Mobility Support Systems (GAMSS) and support airlift are used effectively and efficiently. The 2017 hurricane season especially stressed the coordination and capabilities among these agencies and tested their response when multiple hurricanes barreled toward and through the United States. Dynamic communications required during these Defense Support of Civil Authorities (DSCA) events is well-intentioned and often successful. However, due to software limitations, verbal/telephone workarounds have become normalized, which can lead to miscommunications and redundant efforts. This paper explores the relationship and the communications procedures among these three agencies to determine areas for improvement. This research project uses a semi-structured interview process to collect qualitative data. Subsequently, a thematic analysis was conducted on the collected interview data to determine trends that led to recommendations for action. Solutions included recommendations to improve situational awareness when operating using the Total Force Enterprise (TFE), and methods to overcome software limitations.

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