THE ROLE OF PREPOSITIONED STOCKS: SUSTAINING AND RESPONDING TO FOREIGN HUMANITARIAN ASSISTANCE AND DISASTER RELIEF (HADR) OPERATIONS

A thesis presented to the Faculty of the U.S. Army Command and General Staff College in partial fulfillment of the requirements for the degree

MASTER OF MILITARY ART AND SCIENCE
General Studies

by

DUSTIN A. MENHART, MAJOR, U.S. ARMY
M.A., California University of Pennsylvania, California, Pennsylvania, 1997
M.S., University of Georgia at Athens, Athens, Georgia, 2011

Fort Leavenworth, Kansas
2015

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. REPORT DATE *(DD-MM-YYYY)*	**2. REPORT TYPE**	**3. DATES COVERED** *(From - To)*
12-06-2015	Master's Thesis	AUG 2014 – JUN 2015

4. TITLE AND SUBTITLE

The Role of Prepositioned Stocks: Sustaining and Responding to Foreign Humanitarian Assistance and Disaster Relief (HADR) Operations

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Menhart, Dustin Alan

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
U.S. Army Command and General Staff College
ATTN: ATZL-SWD-GD
Fort Leavenworth, KS 66027-2301

8. PERFORMING ORG REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

10. SPONSOR/MONITOR'S ACRONYM(S)

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for Public Release; Distribution is Unlimited

13. SUPPLEMENTARY NOTES

14. ABSTRACT

The majority of the international natural disaster relief operations that the USG responds to are led by the United States Agency for International Development's Office of Foreign Disaster Assistance. One of the leading issues of the study examines the inter-working relationships and coordination efforts regarding seamless humanitarian logistics from prepositioned sites supported from the DOD, interagency partners, and coalition partners for the affected state. A major problem within a geographical disaster region is the response time of aid into the affected region. The ability to foresee and anticipate the massive logistical processes, would be a major breakthrough in successful HADR response. In addition, the knowledge assembled through multiple lessons learned and decades of HADR operations should encourage subject matter experts to collaborate from within the humanitarian community, both internally among the USG and externally throughout the International humanitarian partnerships.

15. SUBJECT TERMS
Foreign Humanitarian Assistance and Disaster Relief; Prepositioned Programs and Stocks; Humanitarian Logistics; Transportation Mangement; Humanitarian Coordination; Logistical Enablers; Joint Planning

16. SECURITY CLASSIFICATION OF:			**17. LIMITATION OF ABSTRACT**	**18. NUMBER OF PAGES**	**19a. NAME OF RESPONSIBLE PERSON**
a. REPORT	**b. ABSTRACT**	**c. THIS PAGE**			**19b. PHONE NUMBER** *(include area code)*
(U)	(U)	(U)	(U)	119	

Standard Form 298 (Rev. 8-98)
Prescribed by ANSI Std. Z39.18

MASTER OF MILITARY ART AND SCIENCE

THESIS APPROVAL PAGE

Name of Candidate: Major Dustin Alan Menhart

Thesis Title: The Role of Prepositioned Stocks: Sustaining and Responding to Foreign Humanitarian Assistance and Disaster Relief (HADR) Operations

Approved by:

_____, Thesis Committee Chair
Allan S. Boyce, M.S.

_____, Member
Russell B. Crumrine, M.A.

_____, Member
O. Shawn Cupp, Ph.D.

Accepted this 12th day of June 2015 by:

_____, Director, Graduate Degree Programs
Robert F. Baumann, Ph.D.

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

THE ROLE OF PREPOSITIONED STOCKS: SUSTAINING AND RESPONDING TO FOREIGN HUMANITARIAN ASSITANCE AND DISASTER RELIEF (HADR) OPERATIONS, by Major Dustin Alan Menhart, 119 pages.

The majority of the international natural disaster relief operations that the USG responds to are led by the United States Agency for International Development's Office of Foreign Disaster Assistance. One of the leading issues of the study examines the inter-working relationships and coordination efforts regarding seamless humanitarian logistics from prepositioned sites supported from the DOD, interagency partners, and coalition partners for the affected state. A major problem within a geographical disaster region is the response time of aid into the affected region. The ability to foresee and anticipate the massive logistical processes, would be a major breakthrough in successful HADR response. In addition, the knowledge assembled through multiple lessons learned and decades of HADR operations should encourage subject matter experts to collaborate from within the humanitarian community, both internally among the USG and externally throughout the International humanitarian partnerships.

ACKNOWLEDGMENTS

First and foremost, I want to thank my magnificent wife Jolene and our children Dalton and Gavin for their undivided assistance and tolerance throughout our stint here at the U.S. Army Command and General Staff College.

I want to also thank my thesis committee, Mr. Allan Boyce, Dr. Shawn Cupp, and Mr. Russell Crumrine. Each of my committee members provided priceless and instrumental direction, guidance, and leadership during this monumental task. Honestly, it was their ultimate perfection, professionalism, and attention to detail that made this journey such an enjoyment and success.

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ACRONYMS

CIVMIL	Civilian-Military
DART	Disaster Assistance Response Teams
DOD	Department of Defense
DOS	Department of State
HADR	Humanitarian Assistance and Disaster Relief
HN	Host Nation
IGO	International Governmental Organizations
JDDOC	Joint Deployment and Distribution Operations Center
JIACG	Joint Interagency Coordination Group
ND	Natural Disaster
NGHO	Non-Governmental Humanitarian Organizations
NGO	Non-Governmental Organizations
OCHA	Office for the Coordination of Humanitarian Affairs
OFDA	The Office of Foreign and Disaster Assistance
PREPO	Prepositioned stocks
SCM	Supply Chain Management
STRAT AIR	Strategic Airlift
STRAT SEA	Strategic Sealift
UN	United Nations
USAID	Untied States Agency for International Development
USG	United States Government
USIP	United States Institute for Peace

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CHAPTER 1

INTRODUCTION

Background

The world today is an ever-changing and complex environment with uncertainties created by specific environmental complications.[1] In order to respond to natural occurring calamities the United States, international organizations, and coalition countries established a process known as humanitarian assistance and disaster response (HADR). The United States Government (USG) consistently identifies HADR as a national strategic and global interest,[2] as do many of our country partners from a Diplomatic, Informational, Militarily, and Economic (DIME)[3] standpoint. Globally, there are approximately 70-80 major natural disasters occurring annually.[4] Of those, the Department Of Defense (DOD) only responds to roughly 10-15 percent of the international foreign disasters. The majority of the international natural disaster relief operations that the USG responds to are led by the United States Agency for International Development's (USAID) Office of Foreign Disaster Assistance (OFDA). One of the leading issues of this study tests the inter-working relationships and coordination efforts regarding seamless humanitarian logistics from prepositioned sites sustained by the DOD, interagency partners, and coalition partners to the affected state. For example, the United Nations and other international and non-governmental organizations maintain and manage prepositioned stocks to humanitarian assistance and disaster response missions. This is discussed in further detail within the literature review in chapter two.

Another issue of concern within an environmental disaster region is the response time generated to the affected state. The ability to foresee and anticipate the massive

sustainment processes that take place logistically, would be a major breakthrough in coordinating successful HADR response. In addition, the knowledge assembled through multiple lessons learned over decades of HADR operations should encourage subject matter experts from within the humanitarian partnership, both inside the USG and externally with international partners. Connecting the primary research question on the effectiveness of prepositioned programs such as, identifying DOD, interagency, and international HADR prepositioned stocks can potentially alleviate response time to the affected state. Establishing set roles and responsibilities by the use of programs developed for monitoring and evaluation for prepositioned stock policies can provide vast improvements within the HADR community.[5] Further humanitarian training by the USG along with non-governmental organizations (NGOs), and international governmental organizations (IGOs) can produce outcomes that can be specifically identified and implemented in HADR missions especially in the PACOM geographical region.[6] The secondary questions highlight the significance of communication and synchronization as well as DOD logistical enablers between non-governmental organizations (NGOs) and DOD military members. The relationships between humanitarian responders striving for a common understanding of HADR operations occur through a collective practice known as civil and military relationships (CIVMIL). With all the national and international humanitarian personnel worldwide, it requires all parties and partners involved to establish roles and responsibilities. Many humanitarian subject matter experts (SMEs) have expressed a need for the development of a prepositioned stocks program guide that affords knowledge of working relationships within the CIVMIL community.[7] For

instance, the United Nations' (UNs') Office for the Coordination of Humanitarian Affairs (OCHA) has developed specific guidelines known as the Oslo Guidelines.[8]

Thesis Statement

This research study determines whether prepositioned stock programs within the Department of Defense (DOD) and United States Agency for International Developments Office of Foreign Disaster Assistance (USAID/OFDA) provide timely response to natural disaster in geographical regions. The initial investigation, Phase I, explores the DOD response time (inter-workings) that occurs in the first 48 hours of a foreign disaster. Once USAID/OFDA becomes involved as the USG lead, phase II of the examination begins. The goal is to recognize how USAID/OFDA and DOD as well as NGOs/IGOs, utilize prepositioned stocks to expedite the support to an affected state/nation. The ultimate purpose of this examination delves into the requirements and capabilities of logistical prepositioned stocks in response to natural disasters through the lens of interagency, inter-organizational, interoperability, and DOD perspectives. The intent of the study is to analyze technique's the research questions has verified regarding, successful response to and sustaining HADR efforts from prepositioning sources. Important outcomes of this examination identify advantages and disadvantages of logistical enablers i.e. supply chain management and strategic mobility triad, among the numerous humanitarian partners for HADR operations.

Research Questions

Primary Research Question

Do prepositioned stocks effectively assist the response time for humanitarian assistance and disaster relief (HADR) operations?

Secondary Research Questions

Do DOD logistic enablers, such as, strategic airlift, sealift, and supply chain management expedite multinational/interagency HADR response? Do DOD coordination processes and procedures properly frame the organization and synchronization that needs to occur with other interagency groups during HADR Operations?

Assumptions

Recognizing that prepositioned programs are a part of multi-faceted operations not related to humanitarian assistance and disaster relief is fundamental to the examination. For example, the Army Prepositioned Strategy (APS) deals with multiple contingencies focusing on combat operations as well as humanitarian missions. This study only focuses on prepositioned assets essential for humanitarian assistance and disaster relief.

Delimitations

The U.S. Military or Department of Defense (DOD) is not a tool for initial recourse concerning humanitarian response; however, the DOD does provide provision to civilian relief agencies.

The USAIDs' Bureau for Democracy, Conflict, and Humanitarian Assistance works around the world focusing on four primary objectives: Prevention, Response,

Recovery, and Transitions. For the focus of this study the author only emphasize on the response objectives regarding military and interagency focus.

Limitations

The USG has specified tasks and benchmarks that must be accomplished prior to DOD participation. In order to be involved, the DOD has three criteria that categorizes participation.

1. The military can provide a unique capability.
2. The civilian response/relief capacity is overwhelmed.
3. The Civilian (Host Nation) authorities request assistance through the Department of State (DOS) or the Host Nation Ambassador.

However, before the criteria can ever be applied, DOD must receive an executive memorandum from the Department of State (DOS) that establishes initial DOD participation possibilities. Additionally, multiple catastrophic events occurring simultaneously throughout the world could be problematic regarding the scope of this study.

Defining Terms

Terms defined as part of this thesis are described below. These are the method in which the expressions are used within the framework of this examination. Additional definitions are identified and incorporated throughout the study.

CIVMIL: Is a term defined as a coordination effort between civil and military organizations focused on a specific requirement of synchronization and cooperation for a

successful operation.[9] This thesis defines the term as a working function of response to a natural disaster.

DART: Disaster Assistance Response Teams can assemble in response to a natural disaster through the permissions of the Ambassador and the State or Nation affected.[10] DARTs' have specific capabilities from an operational perspective focusing on: technical assistance; developing USAIDs' response strategy; analysis of critical infrastructure; identifying non-governmental organizations, multinational coalitions, and USGs' relief efforts for synchronization of support.

HADR: Humanitarian Assistance and Disaster Relief is a recently combined term merging the two concepts of Foreign Humanitarian Assistance (FHA) and Foreign Disaster Relief (FDR).[11] For the rest of this work, we consider HADR an umbrella term for both FHA and FDR.

Natural Disaster: A natural disaster is defined as an emergency situation posing significant danger to life and property that results from a natural cause.[12]

OFDA: The Office of Foreign and Disaster Assistance is a subset of the United States Agency for International Development.[13] OFDA is delegated the responsibility to provide international disaster and humanitarian assistance by synchronizing the response of declared disasters in affected foreign states

Prepositioned Stocks: Prepositioned stocks is a DOD program that requires a maintained afloat and land based strategic policy for material and equipment to be aligned for expediting the movement of personnel and equipment abroad.[14]

United Nations: The United Nations is an international organization comprising of 51 countries developed after the Second World War in 1945. The mission is to promote social progress while ensuring international peace and security worldwide.[15]

Having an understanding of the terms and definitions applied within this thesis benefits the contextual manner for which these concepts are observed. In addition to this list of terms and definitions, multiple other key words are addressed regarding the response of prepositioned stocks to foreign natural disasters for HADR operations. Throughout the framework of this thesis, the terms and definitions are cited accordingly.

Significance of Study

The research is significant because logistical planners need to understand how to plan efficiently and effectively when disasters strike. Logistical estimation tools can assist in determining consumption rates. Past data regarding supply and humanitarian services expended allows for accurate forecasting based off the severity of catastrophic damage. These approximation's can drive requirements on the amount and type of logistics prepositioned within a geographical region or Combatant Commanders area of operation (AO).

Conclusion

Chapter 2 addresses the significant literature reviewed regarding the scope of the study and discusses the issues concerning prepositioned programs, humanitarian response, and natural disasters have to foreign disasters. Following the literature review, conclude the studies research and data collection instruments required to identify the

problem. Forthcoming chapters pertaining to the analysis, findings, and recommendations follow accordingly.

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[1] Intergovernmental Panel on Climate Change, "Working Group III-Mitigation of Climate Change," accessed October 13, 2014, http://mitigation2014.org/.

[2] White House, *National Security Strategy* (Washington, DC: Government Printing Office, 2013).

[3] Joint Chiefs of Staff, Joint Publication (JP) 1-0, *Doctrine for the Armed Forces of the United States* (Washington, DC: Joint Chiefs of Staff, March 2013).

[4] Department of Defense, GTA 90-01-030, *Support to Foreign Disaster Relief* (Washington, DC: Department of Defense, July 2011), 2.1.

[5] COL Eugene V. Bonaventure, US Air Force, "Monitoring and Evaluation of Department of Defense Humanitarian Assistance Programs," *Military Review* (January-February 2008): 69.

[6] Center for Excellence in Disaster Management and Humanitarian Assistance, "About CFE-DMHA," accessed November 22, 2014, https://www.cfe-dmha.org/About-CFE-DMHAURL.

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[8] United Nations, *Guidelines On: The Use of Military and Civil Defense Assets in Disaster Relief*, November 2006, accessed January 23, 2015, http://reliefweb.int/report/world/guidelines-use-military-and-civil-defence-assets-disaster-relief-oslo-guidelines.

[9] Joint Chiefs of Staff, Joint Publication (JP) 3-29, *Foreign Humanitarian Assistance* (Washington, DC: Government Printing Office, 2014), II-28.

[10] Department of Defense, GTA 90-01-030, 1-11.

[11] Joint Chiefs of Staff, JP 3-29, 1-10.

[12] Joint Chiefs of Staff, Joint Publication (JP) 1-02, *Department of Defense Dictionary of Military and Associated Terms* (Washington, DC: Government Printing Office, 2010 (as amended through 16 July 2014)).

[13] Department of Defense, GTA 90-01-030, 1.4.3.2.

[14] Joint Chiefs of Staff, Joint Publication (JP) 3-35, *Deployment and Redeployment Operations* (Washington, DC: Government Printing Office, 2013).

[15] The United Nations, "About the UN," accessed May 5, 2015, http://www.un.org/en/aboutun/index.shtml.

CHAPTER 2

LITERATURE REVIEW

Introduction

Detailed USG law and policy[1] clarifies the authority of all participants within United States Government agencies in relation to HADR operations. USG policy identifies USAID/OFDA as the lead agency for all USG HADR operations. The process begins with the initial request from the affected state to the U.S. Ambassador. The ambassador sends a "disaster declaration cable" to DOS. Then, there is a DOS/DOD executive memorandum completed. Finally an OFDA action cable is generated for USG involvement. An action cable summarizing the guidance from USAID/OFDA before, during, and after a natural disaster is provided to supporting agencies. Once the cable is sent, inter-working relationships begin to occur focusing on each of the interagency, military, and affected nation's capabilities to support the onset of disaster response. From this analysis USAID/OFDA[2] determined the assets required from the DOD. If necessary and identified through the working groups' initial analysis, the Secretary of Defense orders assets from the DOD to participate in a supporting role. For example, DOD has multiple prepositioned stock programs strategically placed globally for military expeditious reaction. In addition, DOD has capabilities from United States Transportation Command (USTRANSCOM) Air Mobility Command (AMC), Maritime Sealift Command (MSC), and the Surface Deployment and Distribution Command (SDDC) to capitalize on air, sea, and port opening resources.[3] Ensuring coordination after the disaster occurs is critical for mission success and is addressed in figure 1 and figure 2 and

is directly correlated to prepositioning stocks, humanitarian coordination, and logistic enablers available.[4]

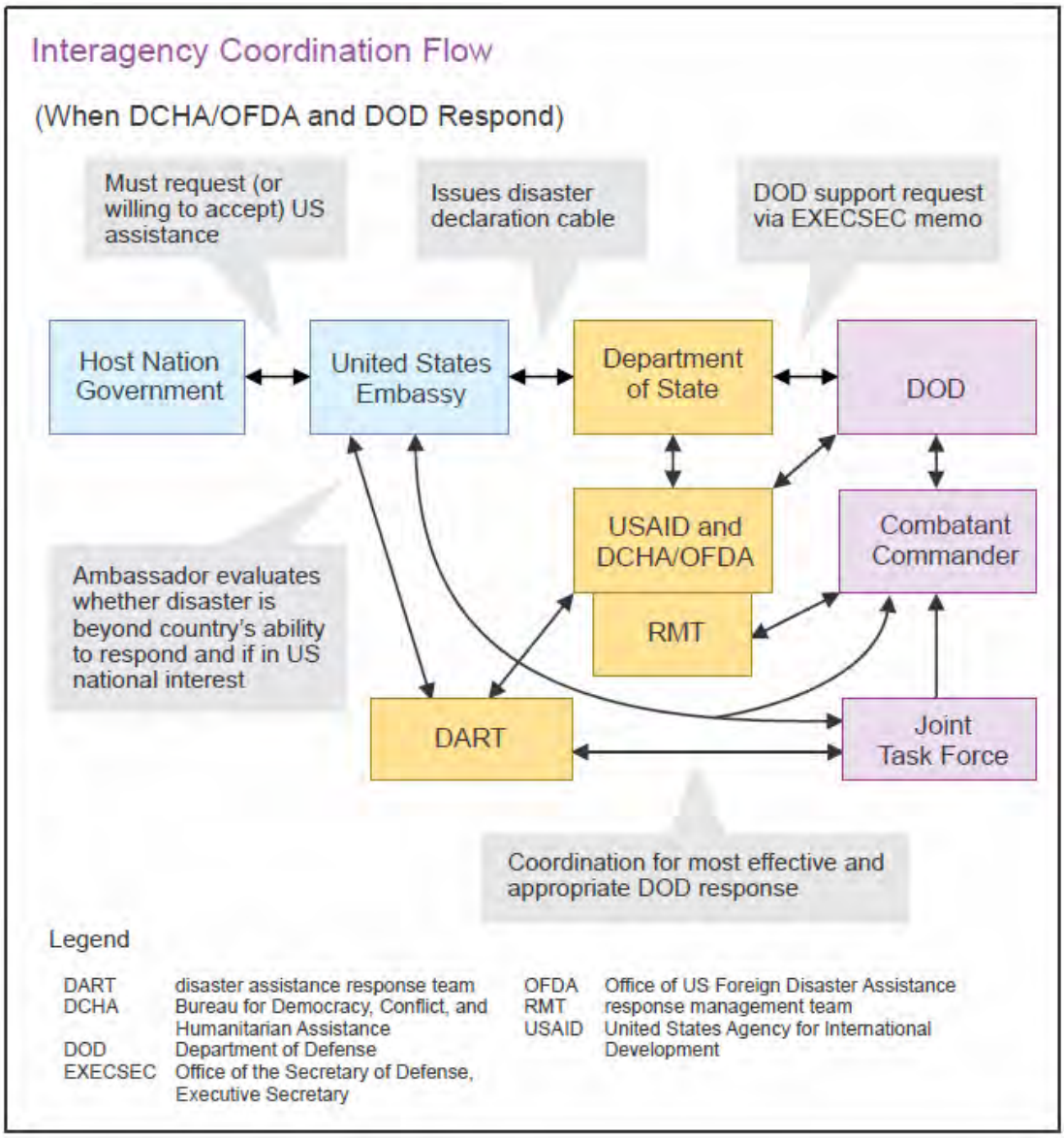
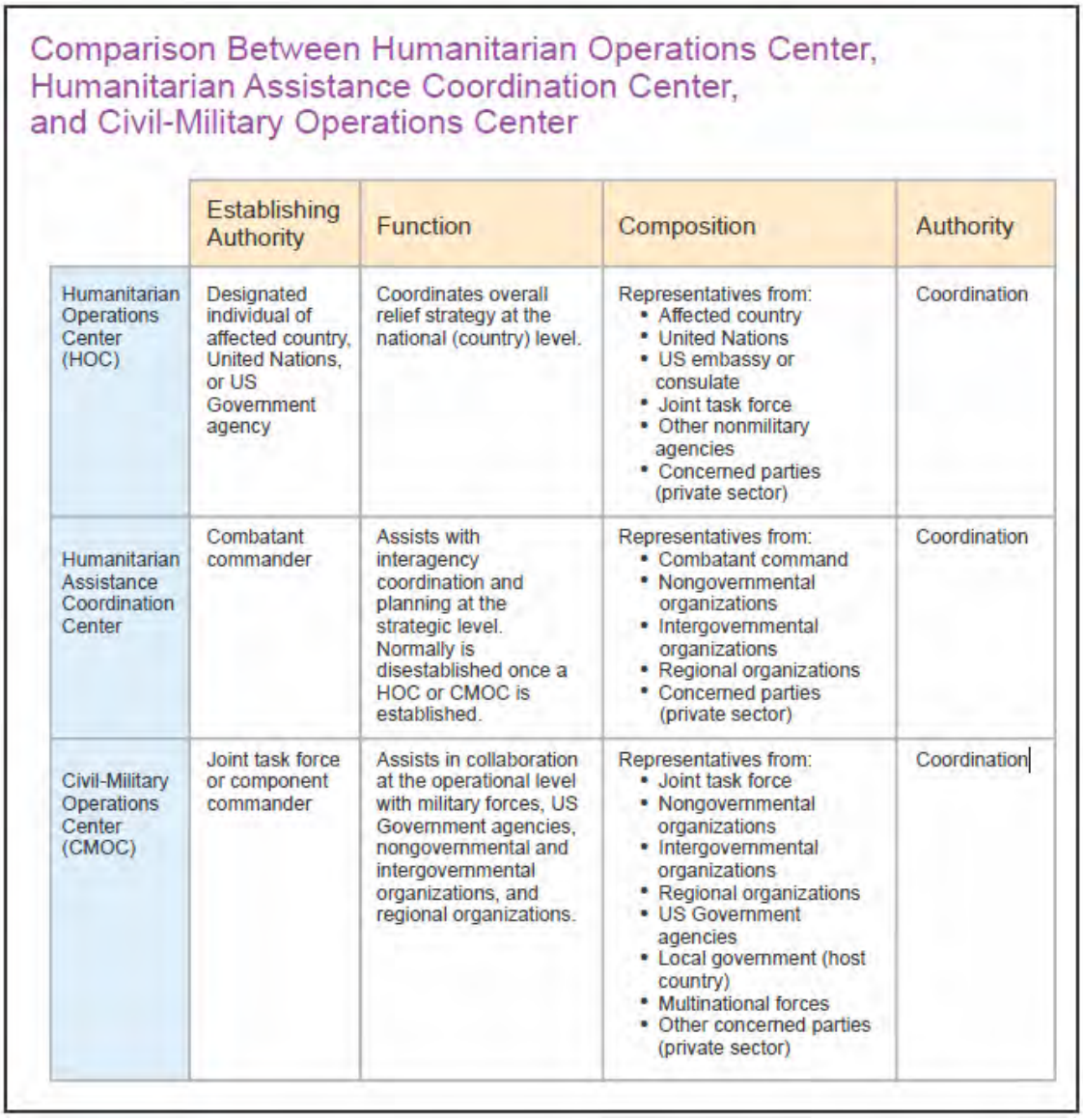


Figure 1. HADR Interagency Coordination Flow Chart

Source: Joint Chiefs of Staff, Joint Publication (JP) 3-29, *Foreign Humanitarian Assistance* (Washington, DC: Government Printing Office, 2014), II-20, accessed January 6, 2015, http://www.dtic.mil/doctrine/new_pubs/jointpub_operations.htm.



Comparison Between Humanitarian Operations Center, Humanitarian Assistance Coordination Center, and Civil-Military Operations Center

	Establishing Authority	Function	Composition	Authority
Humanitarian Operations Center (HOC)	Designated individual of affected country, United Nations, or US Government agency	Coordinates overall relief strategy at the national (country) level.	Representatives from: • Affected country • United Nations • US embassy or consulate • Joint task force • Other nonmilitary agencies • Concerned parties (private sector)	Coordination
Humanitarian Assistance Coordination Center	Combatant commander	Assists with interagency coordination and planning at the strategic level. Normally is disestablished once a HOC or CMOC is established.	Representatives from: • Combatant command • Nongovernmental organizations • Intergovernmental organizations • Regional organizations • Concerned parties (private sector)	Coordination
Civil-Military Operations Center (CMOC)	Joint task force or component commander	Assists in collaboration at the operational level with military forces, US Government agencies, nongovernmental and intergovernmental organizations, and regional organizations.	Representatives from: • Joint task force • Nongovernmental organizations • Intergovernmental organizations • Regional organizations • US Government agencies • Local government (host country) • Multinational forces • Other concerned parties (private sector)	Coordination

Figure 2. Comparison of Humanitarian Coordination Cells

Source: Joint Chiefs of Staff, Joint Publication (JP) 3-29, *Foreign Humanitarian Assistance* (Washington, DC: Government Printing Office, 2014), II-28, accessed January 6, 2015, http://www.dtic.mil/doctrine/new_pubs/jointpub_operations.htm.

Problem Statement and Scope

Reviewing lessons learned from of previous HADR operations allows for appropriate analysis and investigation of logistical programs. In particular, focusing on the coordination and synthesis for prepositioned material and equipment are of importance to the success of a foreign humanitarian operation. Ensuring the relationships within international and interagency working groups support the effective and efficient response to natural disasters remains a fundamental component.

HADR Policy

This section looked at the impacts of HADR policy to determine the foundation of the humanitarian strategy looking across all sources i.e. USG, DOD, UN, and included roles and responsibilities. These HADR policies were then applied to the humanitarian prepositioning of stocks, coordination of humanitarian responses, and to the determination of additional logistic enablers supporting relief efforts.

USG Policy

Roles

The essence to which the USG becomes involved in HADR operations is determined by the President of the United States (POTUS) and the National Security Staff as defined within multiple government documents[5] such as the National Security Strategy, the National Defense Strategy, the National Military Strategy, Defense Planning Guidance, and the Quadrennial Defense Review. The Foreign Assistance Act (FAA) of 1961 not only provides the guidance to the USG regarding commitment with foreign governments, but it, also decrees the lawful authority for all USG participation in Foreign

HADR operations set by the Congress of the United States of America.[6] The FAA of 1961 also provides policy management within the DOS regarding Foreign HADR programs and processes.

Responsibilities

When a disaster declaration cable is sent by the United States (U.S.) Ambassador, in an affected country multiple coordination efforts for the USG response are initiated by the POTUS, Secretary of Defense (SecDef), and the Secretary of State (SecState).[7] Multiple levels of synchronization occur among many different humanitarian groups within USG, international agencies, and non-governmental organizations. For example, The Executive Secretariat Operations Center is the Secretary of State's emergency forum to manage the harmonization and communication instruments within all the humanitarian response organizations.[8] Additionally, the Chief of Mission (COM) and/or the Ambassador of an embassy/diplomatic mission appoints a Mission Disaster Relief Officer (MDRO), as the primary point of contact within the embassy for a disaster operation. As a prearranged task, the MDRO's responsibilities include gathering HADR data, preparation for, and relief undertakings related to the affected host nation or state.[9]

DOD Policy

Roles

Department of Defense (DOD) Directive 5100.46 established the conditions for foreign humanitarian assistance and disaster relief operations and policy guidance to occur.[10] DOD combatant commands and service component organizations may participate in foreign HADR operations only after the DOS controls the official

declaration for involvement.[11] DOD resources can only be used where the military can provides a unique service, when the international civilian capacity of the host nation is overwhelmed, if the civilian authorities of the host nation request and are willing to accept HADR assistance.[12] Additionally, Executive Order 12966 of Title 10, United States Code (USC), directs the SecDef to respond to HADR missions when required to prevent loss of lives.[13] The SecDef delivers HADR resources at the direction of the USAID's administrator and the POTUSs' special coordinator for International Disaster Assistance as seen in figure 3.[14]

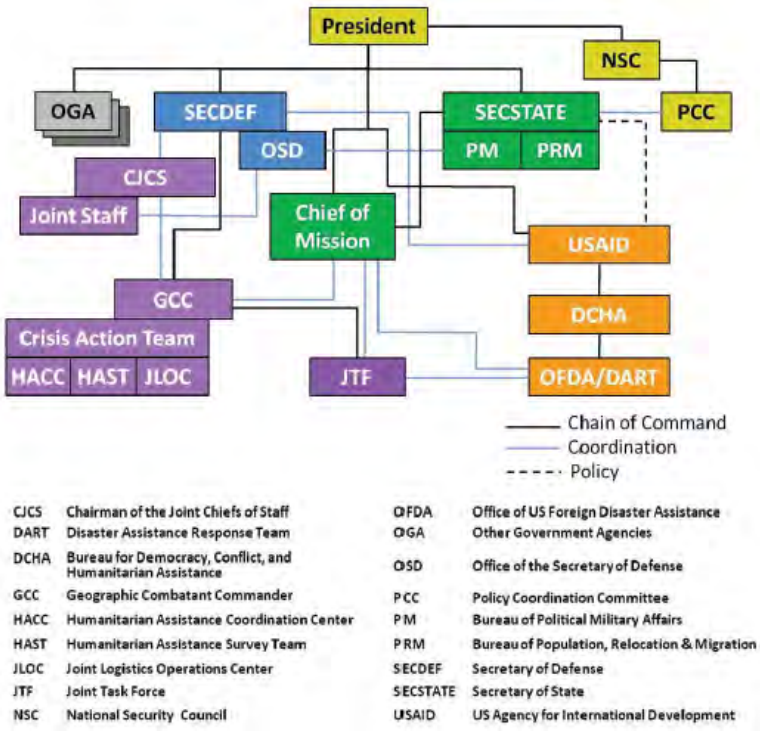


Figure 3. Interagency Coordination for Humanitarian Assistance

Source: Department of Defense, *Support to Foreign Disaster Relief, Handbook for JFC Commanders and Below* (Washington, DC: Government Printing Office, 2011), 1-3, accessed January 22, 2015, http://www.fas.org/irp/doddir/dod/disaster.pdf.

Responsibilities

The Office of the Secretary of Defense (OSD) is the lead staff element within the SecDefs' policy guidance, resource regulation, and fiscal responsibilities. Various other departments and organizations within the OSD are responsible for management purposes related to foreign HADR operations, such as: the Under Secretary of Defense for Policy (USDP); Assistant Secretary of Defense for International Security Affairs (ASD/ISA); Assistant Secretary of Defense for Asia/Pacific Security Affairs (ASD/APSA); Assistant Secretary of Defense for Special Operations and Low Intensity Conflict (ASD/SOLIC); Assistant Secretary of Defense for Health Affairs (ASD/HA); Assistant Secretary of Defense for Homeland Defense and America's Security Affairs (ASD/HD&ASA); and Assistant Secretary of Defense for Networks Information and Integration (ASD/NII).[15] Furthermore, Joint Publication (JP) 3-29 (Foreign Humanitarian Assistance) and JP 3-33 (Joint Task Force Headquarters) provides valuable information regarding command and control (C2) capabilities as well as resources available regarding the DODs' roles and responsibilities. The Geographic Combatant Commanders (GCC) in conjunction with the COM identifies the HADR requirements for the operation and determines the DOD forces necessary based off of the Area of Responsibility (AOR) within the affected host nations' region.[16]

United Nations Policy

Roles

Within the United Nations system, the Office for the Coordination of Humanitarian Affairs (OCHA) ensures that the organization and response for HADR operations are successfully synchronized.[17] OCHA's goal is to provide assistance to

people when they most need resources and/or protection through interwoven relationships of international and national humanitarian partners.[18] General Assembly Resolution 63/139 identifies and reaffirms the principles for facilitating humanitarian assistance response as neutrality, humanity, impartiality, and independence.[19] In order to improve overall synchronization, knowing the robust coordination efforts have toward successful HADR operations among United Nations (UN) organizations, should be considered for closer monitoring by other national governments.[20] OCHAs' primary role confronts five core functions for successful HADR missions: Coordination; Policy; Advocacy; Information Management; and Humanitarian Financing.[21] When a natural disaster occurs, OCHA deploys the United Nations Disaster Assessment and Coordination (UNDAC) team as part of the international response to HADR operations.[22] UNDAC teams deploy on short notice and can provide assessment, coordination, and information management through the On-Site Operations Coordination Centre (OSOCC) organizing response for the international humanitarian community.[23]

Responsibilities

Similar to the roles stated above, OCHA's mission is to provide the following: marshalling and managing the partnership among international and national humanitarian groups; promoting the privileges of people in desperate necessity; endorsing deterrence and readiness.[24] When a disaster occurs globally, the UN responds with the help and assistance of its assemblage of programs and organizations. For instance, the World Food Programme and the World Health Organization, just to name a few, are the leaders in international humanitarian response. HADR efforts and operations would not be as effective without the multi-faceted capabilities of the UNOCHA. In addition to the role

and responsibilities of responding to natural disasters and humanitarian crisis, the UN also advocates for disaster preparedness, ensuring the international community is improving knowledge of the hazards of the natural environment in various regions prone to natural disasters.

Prepositioning Programs

The purpose of prepositioning humanitarian logistics is a streamlined response and coordination efforts by improving the efficiency and effectiveness of HADR operations. From a military perspective, prepositioned supplies and materials expedite the transportation strategy and ensure humanitarian logistics are in the right place, at the right time, with the right material.[25] In addition, strategically placed and positioned humanitarian logistics both afloat and ashore contributes to expeditionary response and demonstrates commitment to affected host nations with HADR operations.[26] The prepositioning concept is based off of the forward power projection platform required to rapidly mobilize or commit to a disaster response.

United States Government

Capabilities

As the lead executive of the USG for foreign HADR operations, the United States Agency for International Development's (USAID) Office of Foreign Disaster Assistance (OFDA) expedites and synchronizes the transportation and distribution of humanitarian logistics globally.[27] Through new reform and policy guidance within the USAID's procurement section, OFDA now has the ability to purchase humanitarian goods and services from approximately 90 countries.[28] Furthermore, USAID/OFDA continuously

utilizes monitoring and assesses performance from a supply chain management perspective to observe patterns and trends that exist within the distribution and response of HADR logistic operations.[29]

Locations

The USAID/OFDA professional logisticians are located in Washington, D.C. for the purpose of managing and directing the distribution and transportation of humanitarian supplies to the affected host nation by way of the mobility triad (air, sea, prepositioned warehouses (ashore and/or afloat)).[30] USAID/OFDA has three independently run warehouses located in: Miami, Florida; Pisa, Italy; and Dubai, United Arab Emirates (UAE).[31] In addition, having the procurement policy guidance to partner with the 90 or more countries ensures the purpose and objectives of prepositioning humanitarian logistics are accomplished.

Department of Defense

Capabilities

Individually, the armed services maintain diverse alignments of resources to sustain their prepositioning agendas. For instance, the Army manages the Army Prepositioned Stocks (APS) program that supports the National Security Strategy (NSS) of the United States of America through the strategic locations and accessibility of warehouses as well as ships afloat.[32] The Marine Corps maintains expeditionary sustainment to deployed Marines and humanitarian logistics from prepositioned stocks afloat and ashore.[33] The Military Sealift Command (MSC) and Air Mobility command

(AMC) combine with the Army's prepositioning program (PREPO) to establish the strategic mobility triad[34] as seen in figure 4.

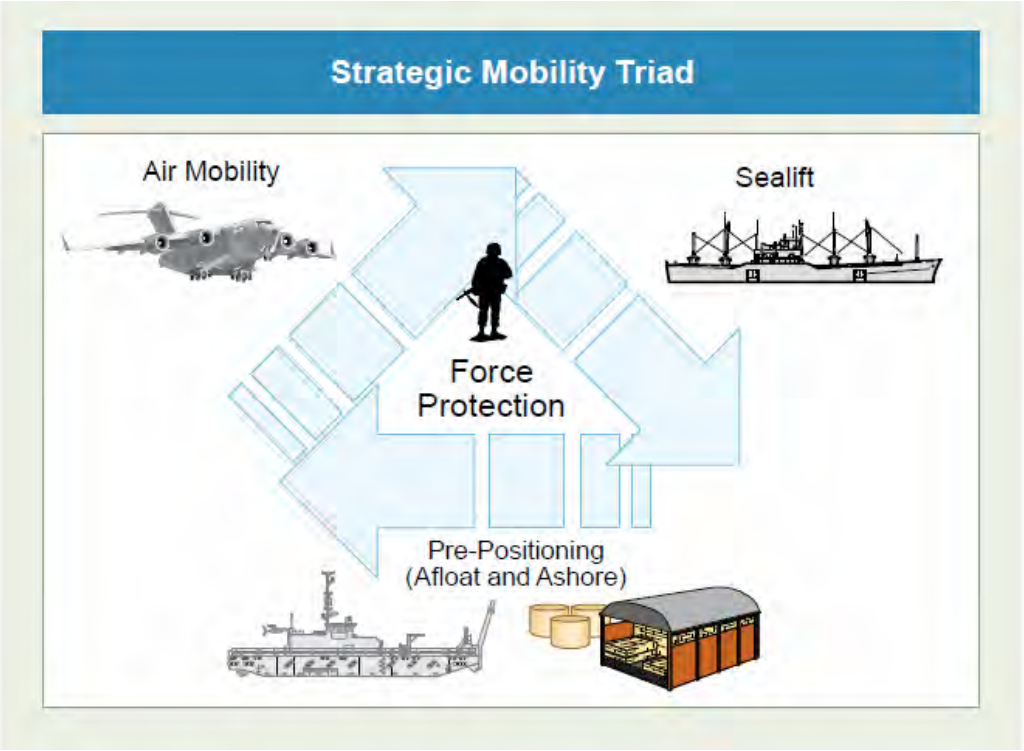


Figure 4. Strategic Mobility Triad

Source: Joint Chiefs of Staff, Joint Publication (JP) 4-01.2, *Sealift Support to Joint Operations* (Washington, DC: Government Printing Office, 2011), 1-3, accessed June 22, 2012, http://fas.org/man/dod-101/sys/ship/docs/jp4_01_2.pdf.

Locations

The DOD manages, in association with other USG agencies and organizations, multiple locations globally to expedite response in support of emergency missions and crisis. Shown in figure 5, the Army's APS currently maintains five strategic locations the DOD can pull from for HADR operations.[35] Similarly, the Marine's sustain the Norway

Air-Landed Marine expeditionary Brigade (NALMEB) with multiple prepositioned capabilities of afloat and ashore logistical resources.[36] Moreover, the MSC and AMC are the transportation managers under the guidance of United States Transportation Command (USTRANSCOM) that ensures the reliability and validity for military prepositioned resources.[37]

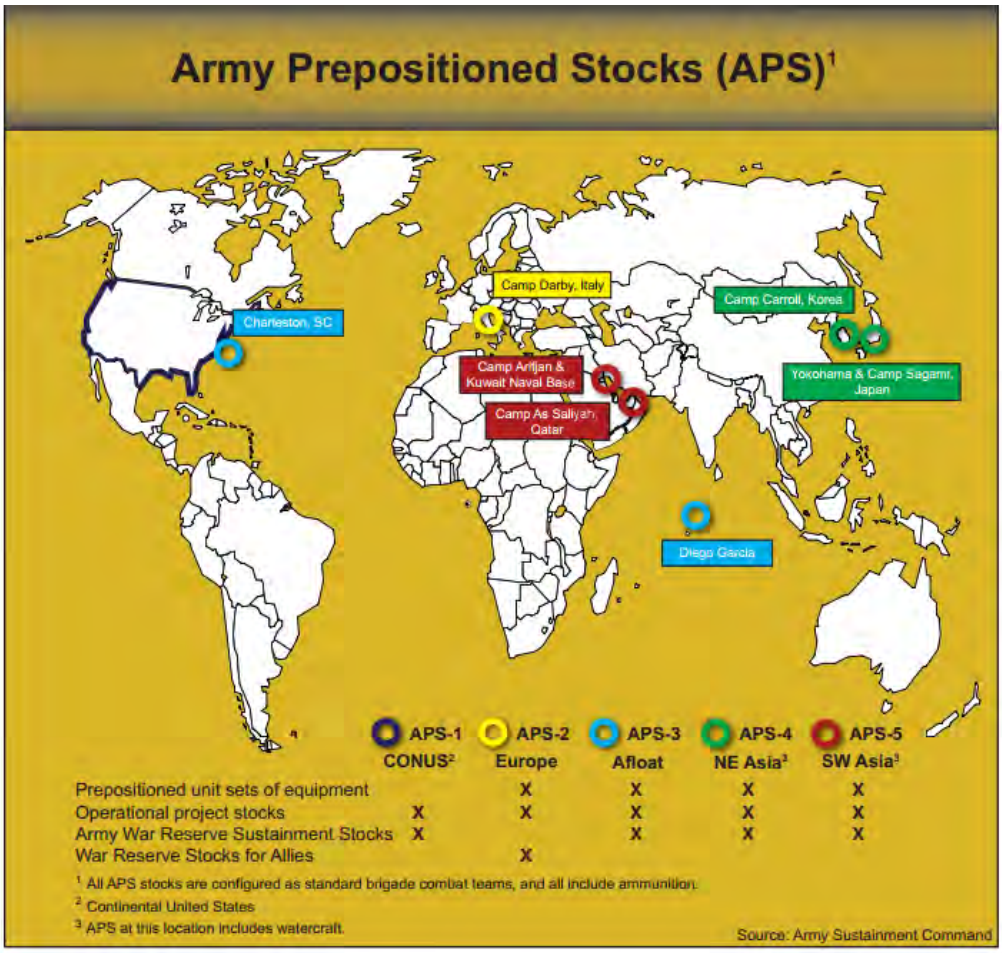


Figure 5. Army Prepositioned Stocks

Source: Association of the United States Army, "Army Prepositioned Stocks: Indispensable to America's Global Force-projection Capability," accessed December 1, 2014, http://www.ausa.org/publications/torchbearercampaign/torchbearerissuepapers/documents/tb-ip_120308.pdf.

United Nations

Capabilities

The United Nations Office for the Coordination of Humanitarian Assistance (OCHA) works with multiple organizations, governments, and coalition partners to ensure best practices and commodity management are streamlined and standardized. Within OCHA, an organization known as United Nations Humanitarian Response Depot (UNHRD) provides rapid and expeditionary response of humanitarian logistics anywhere in the world within a 48 hour period through use of a warehouse.[38] The UNHRD warehouse was created to support UN agencies, NGO's, governmental organizations, and international humanitarian organizations (IHOs).[39] The UNHRD is a complex system guided by the World Food Programme (WFP) capabilities and capacity for HADR operations.[40] The WFP is the transportation and food distribution lead in the UN Cluster for Logistics.[41]

Locations

Multiple facilities and locations of prepositioned stocks for HADR operations are strategically placed around the world. The WFP, headquartered in Rome, the Italian capital has offices in eighty other participating countries globally.[42] Ensuring synchronization among all the IHOs, governments, NGO's, and other humanitarian partners regarding humanitarian prepositioned supplies is key to the UNHRDs' success. The significance of UNHRD is its' ability to provide prepositioned stocks to UN agencies and other NGO/IHO organizations.

Non-Governmental and International Organizations

Capabilities

Various types of non-governmental, international governmental, and international humanitarian organizations exist for the sake of ensuring rapid and efficient response to nations in crisis from catastrophic events. Many of these organizations and groups are fundamental to the UN's mission and objectives. For example, the Red Cross and Red Crescent Societies work closely with UN peacekeepers to ensure seamless distribution of humanitarian goods.[43]

Locations

Several of the locations that the UN manages within the UNHRD and WFP also correspond with NGOs, IGOs, and IHOs worldwide. The number of humanitarian prepositioned sites of NGOs, IGOs, and IHOs are what make the system and network more responsive. Ensuring the right humanitarian support, at the right time, to the right person is a foundational and fundamental vision within these organizations.

Humanitarian Logistics

After a natural disaster occurs, countries devastated by the recent occurrence tend not to have the capabilities to restore the transportation infrastructure that was critically damaged. The multiplying effects from the natural disaster response in terms of reaction time, impedes proper supply line distribution. This in turn, slows response to the victims increasing the level of difficulties for the relief effort immeasurably. For instance, during the 2010 Haiti earthquake,[44] the transportation infrastructure (Air ports/ Sea ports/Roads/Rail) was so severely compromised that it required multiple layers of

organization and refurbishment in order to ensure logistical response was precisely accomplished. The total destruction of the transportation infrastructure can be seen in figure 6. The damage postponed vital response times even though distribution of humanitarian goods eventually occurred. One of the explanations, acknowledged that a more robust understanding of the strategic mobility triad be recognized.

The strategic mobility triad[45] is a combination of prepositioning stocks, available airlift, and obtainable sealift to United States global power projection, including humanitarian assistance and foreign disaster relief/response. Traditionally provisions and material required for a response were moved by means of strategic airlift as well as strategic sealift capabilities. Understanding the challenges created by requirements and capabilities reinforce the criticality of the prepositioning program when immediate response is necessary. Another component of transportation management is the in-transit visibility (ITV) of material in the supply chain as well as the movement technique of delivery. Oversight of these two transport mechanisms are imperative for mission success and expeditious response. ITV is the ability to track the distinctiveness, position, and whereabouts of DOD organizations, shipments, and personnel from origin to destination.[46] ITV provides logistical planners and transportation managers the proficiency to assess cargo movements along with transport modes of the mobility triad. These types of resources permit the DOD to be an energetic foundation during HADR global operations. The response during Operation Damayan in the Philippines throughout 2013 encountered similar logistical challenges though the transportation infrastructure damage was not as extensive as that of Operation Unified Response.[47] Due to the exceptional logistical challenges and overall devastation resulting from the typhoon,

DOD units were fortunately prepositioned through forward basing and logistical nodes. This global presence and forward posture reduced the difficulties documented in the Haitian earthquake. Moreover, having the capacity and familiarization, particularly when dealing with prepositioned stocks/programs, can ultimately prove the difference in life and death when responding to HADR operations.

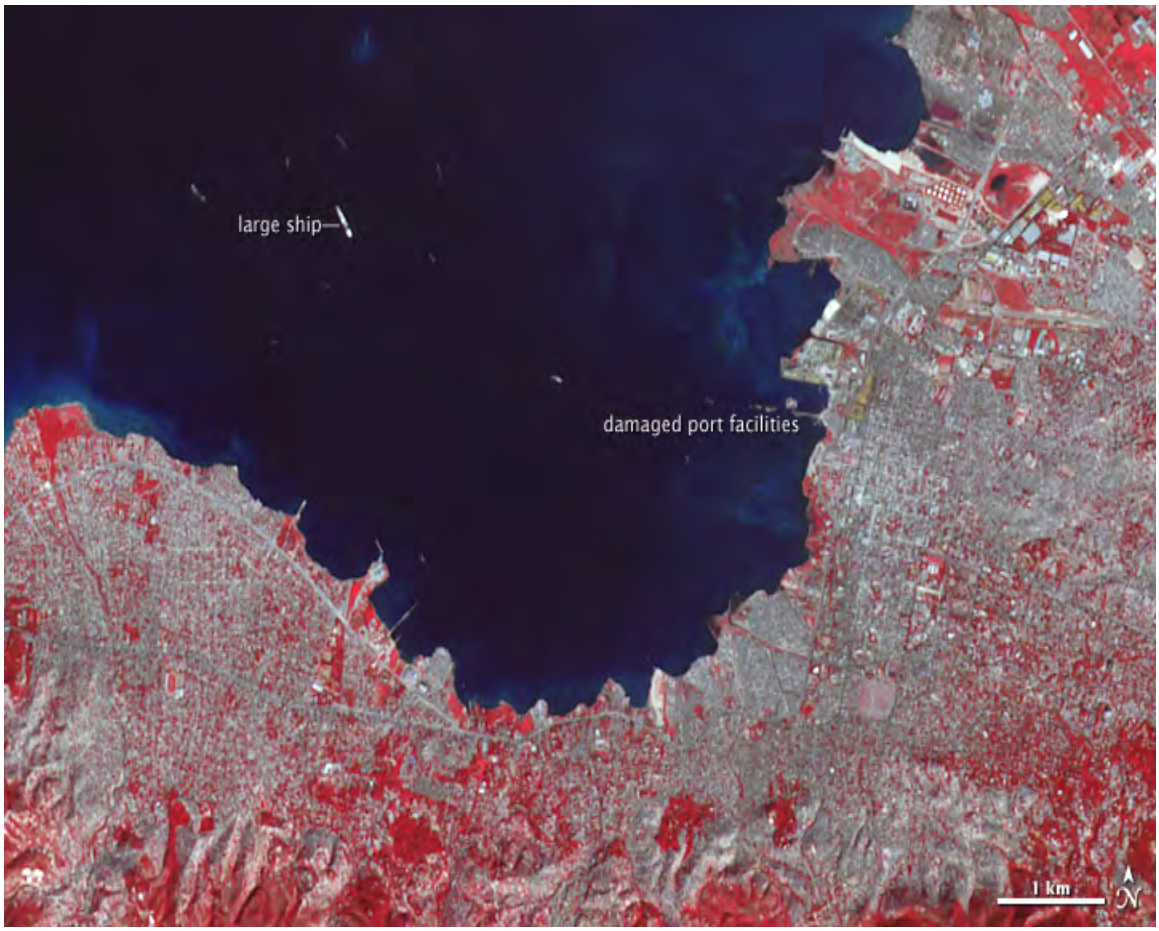


Figure 6. Damaged Transportation Infrastructure

Source: United States Geological Survey (USGS), "Earthquakes," accessed January 13, 2015, http://earthquake.usgs.gov/earthquakes/eqarchives/year/2010/.

Humanitarian Assistance Coordination/Synchronization

The USG is the foremost responder and provider to global relief efforts. Ultimately the decision of what type and kind of foreign disaster assistance the USG provides rests in the decision of the President of The United States (POTUS).[48] Classifications of humanitarian assistance can be categorized into relief and rehabilitation, logistical and operational backing, refugee strategies, and food programs.

In order to manage and facilitate these categorizations, three specific portions of the USG are identified: the USAID, the Department of State (DOS), and the DOD. During foreign or international disasters, OFDA can respond immediately with non-food humanitarian assistance to include funding, relief materials, and personnel usually already prepositioned in a geographical region.[49] The majority of relief personnel are provided through the UN agencies, international governmental and non-governmental organization (NGOs), and other international organizations (IOs). The need for seamless humanitarian coordination and synchronization is critical to overall mission success when you have such a diverse number of organizations. In addition to OFDA, one of the major facilitators within USG foreign disaster response is the USAID's Office of Civilian-Military Cooperation (CMC). USAID created CMC in 2011 in order to achieve sound results pertaining to the interworking relationships of civil-military communities.[50] The CMC is the primary USAID interface with the DOD and a CMC representative is aligned within each of the geographical combatant commanders (GCC's) and helps with identifying particular assessments regarding HADR.

With the increasing amount of HADR missions around the world, DOD members have found themselves responding in regions traditionally associated with non-

governmental humanitarian organizations (NGHOs) conducting humanitarian operations.[51] The overwhelming response of the NGO communities in conjunction with USG and UN agencies, led to the creation of guidelines enabling cooperation, coordination, and synchronization. The United States Institute for Peace (USIP) is the lead agency to ensure relationships were developed.[52] The guiding principles of the structure recommended seven implementations for the U.S. Armed Forces and seven implementations for the NGHOs. The guidelines directly link to processes of coordination between and within the humanitarian community regarding response to HADR operations.

U.S. Armed Forces Guidelines

1. When conducting relief activities military personnel should wear uniforms to avoid being mistaken for an NGHO representative
2. Visits by U.S. military members should be arranged prior to the meeting
3. U.S. Armed Forces should respect NGHO views
4. U.S. Armed Forces should give NGHOs the option to meet outside of military installations
5. U.S. Armed Forces should not consider NGHOs as “Force Multipliers: or partners
6. U.S. Armed Forces Personnel and units should avoid interfering with NGHOs relief efforts
7. U.S. Armed Forces personnel and units should respect the desire of NGHOs to serve as implanting partners with the military in response to relief efforts

NGHOs Guidelines

1. NGHO personnel should not wear military style clothing
2. NGHO travel in U.S. Armed Forces vehicles should be limited to liaison personnel
3. NGHOs should not have facilities co-located with U.S. Armed Forces
4. NGHOs should use their own logos, equipment, clothing, etc.
5. NGHOs visits to military bases should be prior arranged to the visit
6. NGHOs should minimize all visits to military installations
7. NGHOs may as a last resort request military protection during relief efforts and evacuation

USAID/OFDA coordinates globally with USAID missions in embassies to ensure preparedness and planning of HADR operations are concisely monitored. The coordination specifically identifies prepositioning stocks and resources globally and the resources required to coordinate and distribute the supplies in response to HADR missions. The Mission Disaster Relief Officer (MDRO) is selected by the Chief of Missions (CoM) for a particular HADR mission within a specific geographical region or affected host nation.[53] Desires to utilize U.S. military assistance for a HADR response is requested through an Executive memorandum from Department of State (DOS) with proper synchronization occurring between USAID/OFDA, DOD, and DOS. Illustrations of DOD support could involve transportation support via strategic airlift as well as relief commodities and humanitarian personnel teams.[54] Throughout the relief and response effort a Military Liaison Unit (MLU) would work on the coordination and cooperation within the HADR response mission ensuring proper synchronization is occurring.

HADR Operations and DOD Response Efforts

In order to fully understand and appreciate the context of this study, a brief familiarization with each of the case studies that were analyzed is necessary. Analysis and lessons learned were applied during chapter 3, 4, and 5. The three case studies represented the significance behind the research methodology which directly correlate to prepositioning stocks and programs, coordination and synchronization of humanitarian cells, and additional logistical enablers utilized to support and respond to HADR operations.

Haiti

A natural disaster initiated the HADR mission lead by USAIDs' OFDA for Operation Unified Response, USGs' response to the earthquake that leveled Port-au-Prince, Haiti. The 7.2 magnitude earthquake took the lives of nearly 221,000 people while more than a million were displaced. The generally poor state of the country's infrastructure caused many of the problems due to the ground shaking as an effect of the powerful quake. The Joint Task Force Haiti was essential to establishing port openings along the coast for rapid distribution of humanitarian supplies and equipment. Even though JTF Haiti's success assisted the vast amount of people suffering, logistical challenges blocked much greater accomplishments.[55] An issue worth mentioning is the financial and budgetary allotments appropriated to the USGs DOD through the Overseas Humanitarian, Disaster, and Civic Action (OHDACA) annual account.[56] Understanding of OHDACA assists logistical planners in determining the amount of humanitarian equipment, funding, and supplies annually available for prepositioning within defined geographical regions. The role logistics play in determining successful HADR operations

is a trending theme that continues to arise throughout the analysis and examination of response time in HADR operations relating to prepositioned stocks. Understanding how prepositioned stocks are utilized to respond throughout an HADR operation is the very intent of the study. For instance, identifying the connection and relationship for certain humanitarian rations or supplies required to initially respond to a HADR mission is critical to the overall examination of this study. Figure 7 displays the USG response and flow of prepositioning stocks from their warehouse in Miami, FL as well as many other prepositioned sources that directly impacted the initial response of the affected region.

Figure 7. USAID response to Haiti Earthquake 2010

Source: United States Agency for International Development (USAID), "Humanitarian Assistance and Disaster Response Operations," accessed May 18, 2015, http://img.docstoccdn.com/thumb/orig/148660550.png.

Pakistan

The floods in early July of 2010 created one of the worse humanitarian disasters, in terms of displaced and effected human population.[57] The floods devastated critical transportation infrastructure needed to assist in the humanitarian logistical response as seen in figure 8. The United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA) estimated that nearly 2000 people were killed with approximately 20 million people affected seriously due to the flooding impacts on the regions' infrastructure.[58] Pakistan also suffered widespread destruction to the health, education, agricultural, and communication structures. The USG acknowledged that an insufficient response created the possibility of instability and conflict within the instable northwest region. The initial USG response of monetary aid, logistical supplies and services, and military assets to the Pakistani Government tremendously facilitated the early stages of the HADR operation. Again, knowing and understanding where the prepositioned stocks and resources are for utilization as well as the coordination and transportation efforts required, are of particular interest to the study. Furthermore, the case studies recognized above continues to identify the advantages and disadvantages associated with HADR missions regarding prepositioned stocks, coordination efforts, and logistical enablers.

Figure 8. The Pakistan Flood of 2010

Source: Walter Hays, "Lessons Learned From Past Notable Disasters. Part II B Pakistan's Floods" (Lecture, Global Alliance for Disaster Reduction, Vienna, VA), accessed January 6, 2015, http://www.dtic.mil/doctrine/new_pubs/jointpuboperations.htm.

Philippines

Typhon Haiyan devastated the Philippines central region on November 8, 2013 as seen in figure 9. The Category 5 tropical storm affected over 105 million people and severity of the portion of the population impacted immediately created a HADR operation. A declaration for support was sent out through USAID/OFDA to implement the emergency response program. A USG interagency task force along with DART capabilities was arranged instantly to provide critical assessment of infrastructure, set-up for relief supplies and support, and resources available. USG military resources located in

Japan allowed for quick response from a United States pacific Command (USPACOM) Joint Task Force (JTF) comprised of over 13,000 U.S. service members.[59] Much of the DOD assistance was airlift into and from the affected zones or aid workers, distribution of humanitarian supplies, and sustaining the flow of supplies within the theater of operation. JTF 505 transitioned their relief efforts for Operation Damayan on the 1st of December, 2013 after delivering approximately 4 million pounds of HADR supplies and equipment.

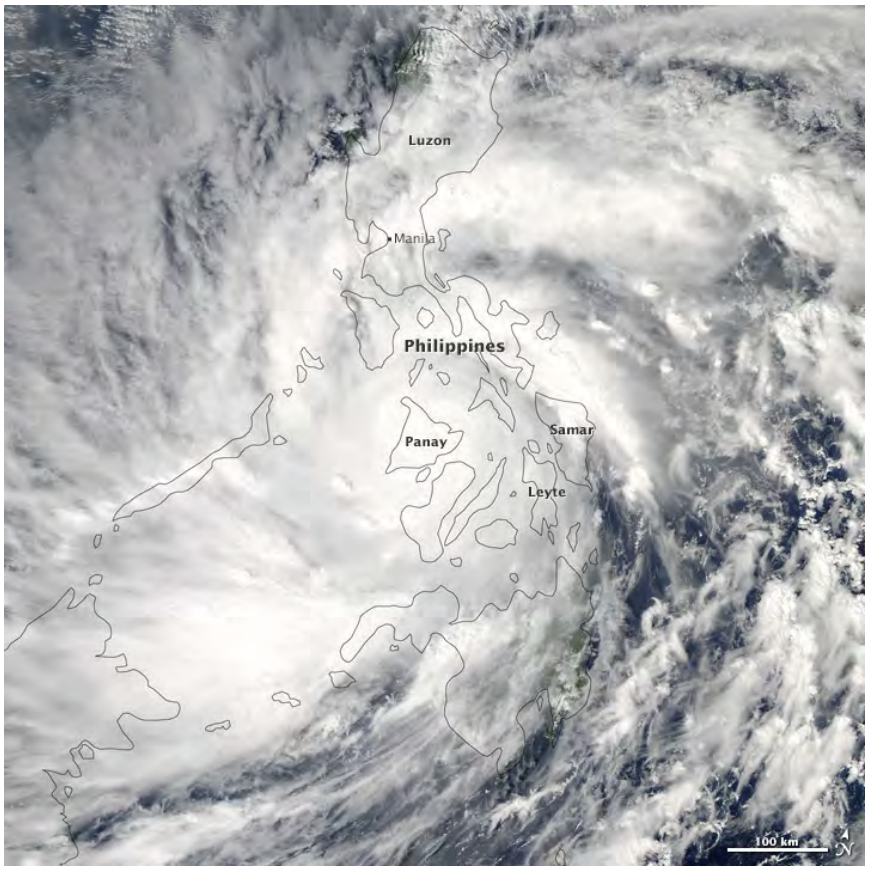


Figure 9. Satellite Image of the tropical storm Haiyan, 2013

Source: National Oceanic and Atmospheric Administration (NOAA), "Image of the day," accessed November 8, 2015, http://www.noaa.gov/satellites.html.

Conclusion

In summary, humanitarian crises and disasters remain worldwide issues. As more demographical and environmental concerns continue to disrupt the balance of the Earth's climate, the number of HADR missions increase statistically speaking.[60] The literature review showcased multiple topics within the HADR community to include, humanitarian policy, prepositioning programs, humanitarian logistics, HADR coordination and synchronization, and HADR geographical response/relief regions. The next chapter describes the research methodology identified to develop these same data points discussed previously in the exploratory question(s) of the thesis. The principles of logistics' are applied to prepositioning programs and stocks, synchronization of humanitarian support, and additional sustainment enablers'. Also, a qualitative analysis approach using the Nvivo software tool label's the patterns and trends from the case studies reviewed.[61]

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[6] Ibid.

[7] Ibid., 1-2.

[8] Ibid., 1-4.

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[11] Ibid.

[12] Department of Defense, GTA 90-01-030.

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CHAPTER 3

RESEARCH METHODOLOGY

Introduction

The research methodology used for this thesis is a case study procedure highlighting a multiple or collective case study approach.[1] This section identifies the processes to answer the primary research question: Do prepositioned stocks effectively assist the response time for humanitarian assistance and disaster relief (HADR) operations? The secondary research questions identified within the examination: Do DOD logistic enablers, such as, strategic airlift, sealift, and supply chain management expedite multinational/interagency HADR response? Do DOD coordination processes and procedures properly frame the organization and synchronization that needs to occur with other interagency groups during HADR Operations? Of particular interest is the response time to HADR operations from the use of prepositioned programs and stocks. Also of significance are, the coordination efforts applied within and throughout the humanitarian community as well as the logistical enablers such as strategic airlift and sealift utilized to respond and distribute the supplies recognized. Analyzing past natural disasters associated within the countries of Haiti, Pakistan, and the Philippines is the focus of measured and analyzed data for the examination. The goal and scope of the study is to observe humanitarian logistical procedures regarding prepositioning of stocks. Concentrating on areas of: the USGs; the International Governmental Organizations, and Non-Governmental Organizations, the coordination and synchronization of humanitarian communities, and the sustainment and logistical strength of the strategic mobility triad and supply chain.

Methodology Process

Principles of Logistics

The principles of logistics are applied to all three of the case studies identified, ensuring to answer the primary and secondary research questions. The principles of logistics are listed in figure 10. Of the eight principles of logistics, only five are identified and recognized for application in this examination. Anticipation, continuity, responsiveness, integration, and improvisation were selected because of the relevance and correlation the principles have to the primary and secondary research questions. The research methodology presented a solid portrayal of lessons learned as well as identifiable processes to improve humanitarian support missions by applying the principles of logistics as well as discussing the relationship the principles have regarding prepositioned stocks. In conclusion, an interactive map of all USG, DOD/Interagency, and other humanitarian partners' prepositioned stock facilities is suggested to enhance effective and efficient planning for future HADR responses. The principles of logistics are independent foundational values that allow commander's staff's, and coordination cell's the flexibility of categorizing operational requirements. The capacity to synchronize capabilities with HADR requirements is the strength and foundation of the principles of logistics application to prepositioned stocks, coordination efforts, and identifying logistical enablers.

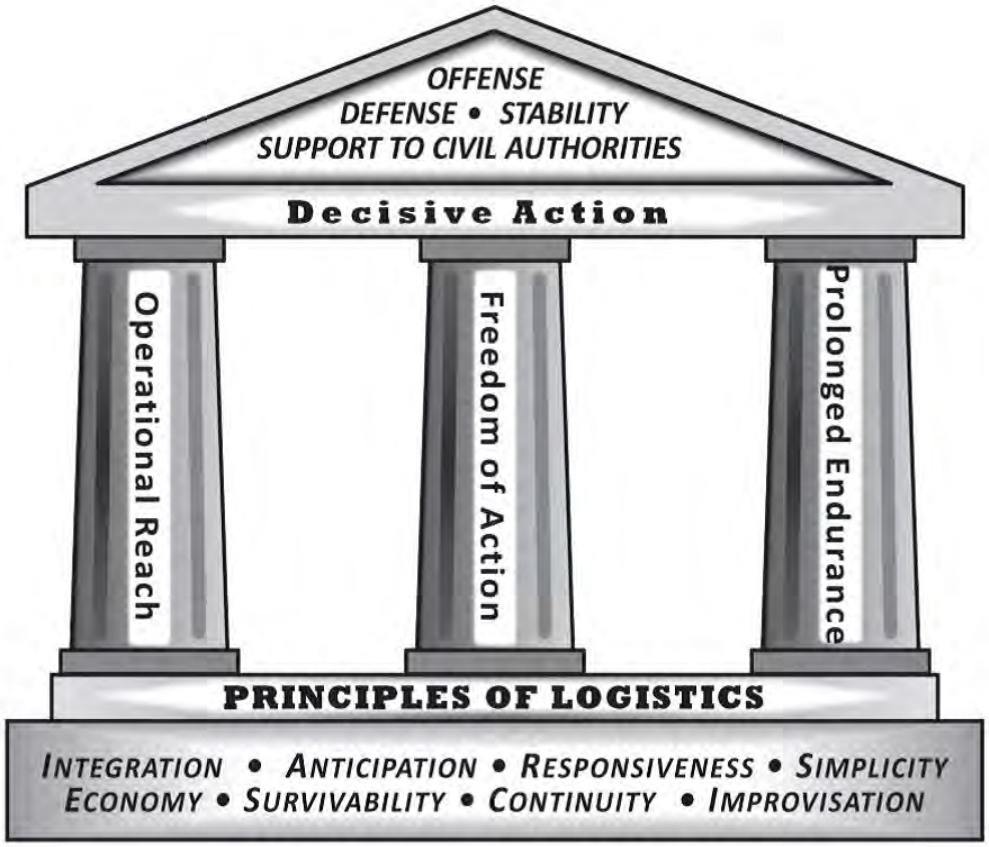

Figure 10. Principles of Sustainment

Source: Department of the Army, Field Manual (FM) 4-95, *Logistics Operations* (Washington, DC: Government Printing Office, 2014), 1-3, accessed January 6, 2015, http://www.dtic.mil/doctrine/new_pubs/jointpub_operations.htm.

Methodological Approach

The case study qualitative analysis approach outlines specific steps necessary to examine in depth humanitarian assistance and disaster relief (HADR) response operations. Focusing on the significance of prepositioned stocks within each of the geographical regions examined helped answer the primary research question. Selecting the case study design ensured rigorous data collection and analytical methods of input are

accurate. The case study design explored multiple systems within the humanitarian discipline ensuring good academic standards.[2] In order to validate the case study analysis, multiple reports were analyzed from academic and government sources that contain data with precise themes and patterns of review. The study evaluated three particular regions, which constituted the disaster responses evaluated affected by natural disasters and the association with prepositioned stocks, coordination and synchronization, and logistical enablers regarding, the Haitian earthquake of 2010, the Pakistani flood of 2010, and the Philippine Typhoon of 2013. The subjects looked at particular advantages and disadvantages of prepositioned supplies/programs, response time, coordination, and supplemental logistic enablers utilized during HADR operations applying the principles of logistics to each of these disaster affected regions as well as the primary and secondary questions are the foundation to the research design and methodology. Analyzing the themes allowed the research to combine the data into groups with similar facts known also as "development of issues."[3] A bounded system of case study research, ensures the reliability of time and place is considered throughout data collection. In addition to the bounded system, cross-case analysis is applied to safeguard thoroughness and consistency of themes and patterns that come to light.[4] Capturing the advantageous elements of observation and document review through the case study methodology provides additional benefits of the thesis analysis. Utilization of the cross-case analysis methodology shown below is described in the next chapter, during the analysis and findings section of the thesis.[5]

Step 1

Case Context: The case context analyzes the set conditions of each of the case study environments, to determine significance of patterns and trends when compared and contrasted against the primary and secondary questions.[6] The case studies identified for analysis were the: Haiti Earthquake of 2010; The Pakistan Flood of 2010; and the Philippine Typhoon of 2013. Throughout each of the case study examinations, multiple open source data from government document reviews to portable document format files are assessed using the Nvivo qualitative software tool[7]

Step 2

Case Description: The case description analyzed the case studies separately based off of the ability to distinctly examine prepositioning stocks, humanitarian coordination, and additional logistic enablers.[8] Each of the three case studies analyzed, focused on the same three questions of prepositioning stocks, humanitarian coordination and synchronization processes, and the ability to utilize logistical enablers as it applies to HADR operations.

Step 3

Within-Case Theme Analysis: The within-case theme analysis inspect patterns and trends established from within the case studies. I.e. Haiti, Philippines, and Pakistan.[9] These three case studies were selected from a suite of other foreign disaster and relief operations due to the relevance and application to the primary and secondary research questions recognized. The Nvivo qualitative tool examines the case studies to specifically identify the trends and patterns established from the data measured.[10] The Nvivo

qualitative tool's ability to connect, link, match, and sort the data with regards to prepositioning stocks, coordination processes, and logistical enablers allowed the clarity of themes while ensuring academic rigor is established.[11]

Step 4

Cross-Case Theme Analysis: Cross-case theme analysis describes each individual case in its own setting and environment to determine emerging configurations from the analysis.[12] The ability that The Nvivo qualitative tool provides' regarding the tracing and links to cross-case analysis, is part of the power that the Nvivo software package delivers.[13] Throughout the cross-case analysis each individual case study was examined and investigated, using the prepositioned stocks, humanitarian coordination, and logistic enabler's codes and nodes of classification.[14]

Step 5

Assertions and Generalizations: The standards of rigor are the assertions and generalizations of the author to interpret and mitigate personal bias. The two standards of rigor used for this examination are reliability and validity.[15] Rigor is required in qualitative analysis, in order to ensure the findings and outcomes of the study are accurate. Understanding that qualitative analysis is significant to capturing the tasks associated with specific phenomenon and applying those associated tasks to the analysis conducted is vital to the validity and reliability of this study. Reliability is the degree to which outcomes are steady over time and are a correct representation of the case study examined.[16] Validity is defined as being a representation of the data measured as it correlates to the research that is being evaluated.[17] By introducing reliability to the study,

problems are mitigated with the perception of data regarding prepositioned stocks, coordination efforts, and logistic enabler availability.[18] Establishing reliability to the study addresses the establishment of rigor and ensure the findings of the examination can be trusted.[19]

Identify Problem

Applying the Principles of Logistics

Applying the principles of logistics[20] to the research methodology focuses on the issues and concerns of the HADR response effort for each of the three case studies. The analysis from the application of the principles of logistics is the foundation to answer the primary research question, "Do prepositioned stocks effectively assist the response time for humanitarian assistance and disaster relief (HADR) operations?" Also, the principles of logistics assist in the explanation of the secondary questions of the research, "Do DOD logistic enablers, such as, strategic airlift, sealift, and supply chain management expedite multinational/interagency HADR response?" "Do DOD coordination processes and procedures properly frame the organization and synchronization that needs to occur with other interagency groups during HADR Operations?" For the purpose of this study, only five of the eight principles applying to HADR operations were used. These five principles have been vetted and selected, based off of a direct correlation and relationship to the case studies identified from humanitarian logistics and expeditionary response and are relevant to the primary and secondary questions stated above.[21] The five principles of logistics applied are:

Integration

Integration is merging all resources of sustainment to ensure unity of command and effort are established in military operations.[22] The integration required during HADR operations is of particular importance and one of the main reason's the study identified integration as a specific principle to apply to the research methodology. Integration is the one principle of logistics that involves continuous synchronization within the military forces. Integration is defined as coalescing all of the sustainment elements (Logistics, Personnel Services, and Health Service Support) guaranteeing unity of command and effort.[23] Geographical regions of the combatant commanders encompass massive tracts of land, space, air and water requiring continuous efforts of coordination. Understanding how to integrate different levels of HADR resources and prepositioned programs and apply those programs to HADR operations are a valuable lesson learned from the analysis.

Anticipation

Anticipation is the aptitude to predict sustainment operational requirements that satisfy a response using the mission command philosophy Anticipation is the creativity portion of sustainment and logistical planning. Anticipation is having the capacity to predict strategic, operational, and tactical sustainment packages, notwithstanding, initiation of operations or fragmentary orders.[24] The USGs' HADR community has the ability at all levels of logistics to incorporate regional knowledge through the operational variables of the Political, Military, Economic, Social, Infrastructure, Information, Physical Environment, and Time (PMESII-PT) rubric.[25] DOD's ability to examine and calculate the humanitarian and disaster logistical requirements, capabilities, gaps, and

shortfalls of a particular region is an obligation that we as military leaders owe the combatant commanders.[26] The ability to predict certain requirements such as prepositioned stocks and the coordination, distribution, and transportation of these resources is of critical importance to the study and is discussed further in the next chapter.

Responsiveness

Responsiveness is the capability to respond with expeditionary and efficient necessities that meet the supporting requirements of a specific operation.[27] Responsiveness provides the old axiom: the right logistical support in the right place at the right time. Responsiveness is how one responds to an altering logistical environment while maintaining world class support. Providing responsiveness during HADR missions is particularly relevant to prepositioned programs and the coordination of resources that these programs deliver when supporting HADR operations.

Continuity

Continuity is the continuous support of sustainment across all levels and ranges of military operations.[28] Continuity is the science behind the sustainment functionality of togetherness. Continuity provides a seamless establishment of humanitarian logistical assets across all levels of the operational environment (Strategic, Operational, and Tactical).[29] When supporting HADR operations, continuity is of critical significance concerning prepositioned programs, coordination and synchronization, and identifying logistical enablers.

Improvisation

Improvisation is the skill to adjust sustainment support to various types of austere conditions and complex environments.[30] Improvisation is specifically important to HADR operations and showcasing the ability to adjust support relating to prepositioned programs. Improvisation is captivating unforeseen circumstances from the logistical enterprise and altering the overall mission accomplishment. The functioning art of improvisation from a sustainment planner's perspective, involves critical and creative thinking within all structures of the operations process.[31] Throughout the analysis, improvisation as well as the other principles of logistics applied are discussed in further detail of the next chapter.

Analyzing problems identified with HADR missions, specific humanitarian logistical enablers, preposition programs, and humanitarian coordination efforts are recognized and discussed in the next chapter. The goal is to determine these areas of interest and look for ways to improve the overall, response and contribution of the United States and other international partners for HADR operations as it relates to the primary question of the thesis. The intent is to establish advantages and improvements for the HADR community along with recognizing and annotating the disadvantages or weaknesses found from past HADR operations concerning prepositioned programs, humanitarian coordination, and logistic enablers.

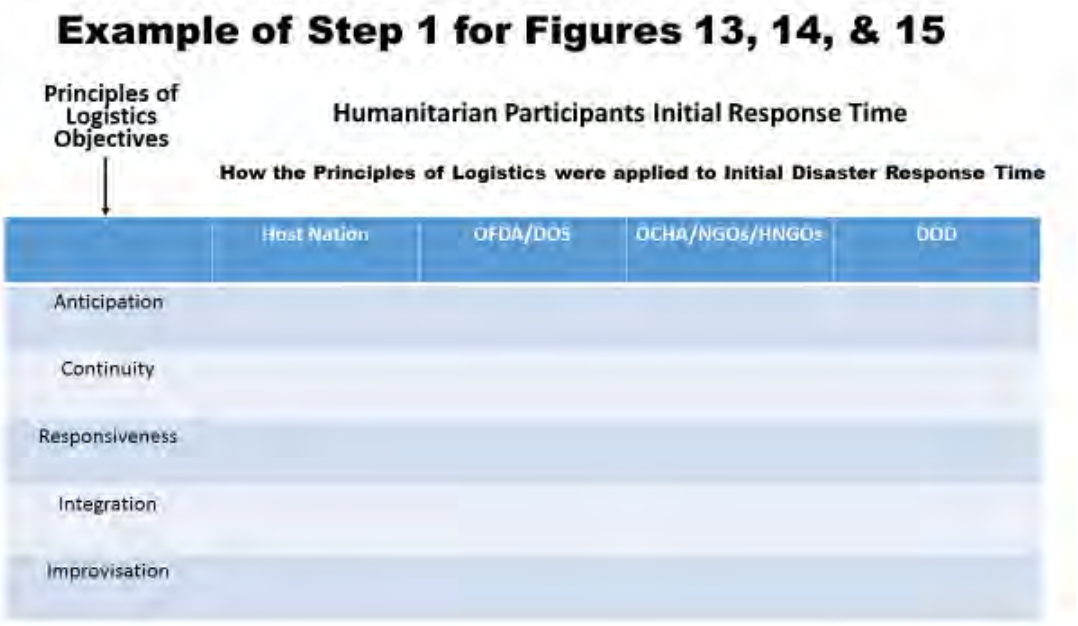

Figure 11. Example of Step 1 of the Research Methodology

Source: Created by author

Applying the Principles of Logistics

The first approach in the principles of logistics methodology analyzes each of the affected countries utilization of prepositioned stocks and programs. Preference was given to past HADR operations in Haiti, Pakistan, and the Philippines regarding the initial first 48 hours response time as seen in the example of figure 11. The utilization of particular USG HADR techniques, practices and procedures were examined.[32] Step 1 of the research methodology directly correlates to the primary research question of: Do prepositioned stocks from the humanitarian community effectively assist the response time for humanitarian assistance and disaster relief (HADR) operations? The processes identified and applied to HADR operations to the investigation of the principles of

logistics were used to develop the analysis and findings in chapter 4.[33] The initial response activities examine the patterns and trends for each of the geographical case studies observed. The patterns and trends for the organization and/or group for which humanitarian response occurred, resulted from each of the five principles of logistics applied. The application acknowledge and explain the relationship of each principle to prepositioned programs examined.[34] These foundational principles are applied to the geographical regions affected by disasters to provide analysis of prepositioning programs and the coordination required to support specific HADR missions. A matrix ranging from 1 thru 4 is assigned to each of the organizations regarding the five principles of sustainment actuality applied from a prepositioned program perspective. The range is consistent with the numbers going from high (being a 1) to low (being a 4) in terms of initial response efforts and usage of prepositioned programs. Each of the values, 1-4 of the data analyzed, is explained in further detail throughout chapter 4. The initial response of humanitarian participants; host nation, USAID/OFDA, OCHA/NGOs/HNGOs, and DOD are valued based off of the data reviewed for the assigned number designation of 4 low initial response time to 1 high initial response time, within each of the geographical case studies regarding the use of prepositioned stocks or programs.[35] The principle of logistics applied to each of the humanitarian participants identify and analyze the specific relationship each of the principles have concerning the prepositioned stocks used to respond within each of the case studies. For example, anticipation is the ability to forecast operational requirements (prepositioned stocks) for a specific operation like HADR that fulfil a response without waiting for an actual command or guidance from an operations order or other relevant processes.[36]

Analysis Approach/Data Collection Instruments

Using the Principles of Logistics Framework with specific objectives to monitor and evaluate each of the case studies, allow for pertinent data to be collected and evaluated regarding HADR operations using prepositioned stocks and programs. The principles of logistics framework captures the essence of the study through the analysis and relevance that each of the principles have toward the primary and secondary research questions. The principles of logistics are applied to multiple data points such as the use of prepositioned stocks, humanitarian coordination cells, and supplemental logistical enablers utilized, as indicated in figure 11 of this chapter, in order to measure and analyze the extent of humanitarian logistics of prepositioned stocks, humanitarian coordination, and disaster relief response efforts for each of the case studies. Step 1 identified in the previous methodology provides the application of the principles of logistics toward each of the case study regions affected. Ensuring validity and complete thoroughness of the research methodologies is the overall intent of the author.

Qualitative Data Analysis

Nvivo is a software package that supports users in the collection, consolidation, and study non-quantitative data.[37] This data analysis program accommodates to users specifically expending qualitative data research methodologies.[38] The Nvivo qualitative analysis tool provides various trends and themes of HADR operations presently observed.[39] The specific themes and trends analyzed were directly correlated to the primary research question: Do prepositioned stocks effectively assist the response time for humanitarian assistance and disaster relief (HADR) operations? Also the themes and pattern analysis examined the secondary questions: Do DOD logistic enablers, such as,

strategic airlift, sealift, and supply chain management expedite multinational/interagency HADR response? Do DOD coordination processes and procedures properly frame the organization and synchronization that needs to occur with other interagency groups during HADR Operations? Included within the pattern analysis are specific nodes, codes, sources, source classification, and node classification capabilities that focused on prepositioned programs and stocks, humanitarian coordination and synchronization, and addition logistical enablers utilized during HADR missions.[40] All of these source classifications will be clarified in detail throughout chapter 4. The qualitative analysis tool, Nvivo, organizes the collective literature reviewed and organized issues or concerns regarding the use of prepositioning stocks for HADR operations.[41] As part of the coding procedure, the examination used a framework identified in the following chapter to ensure consistent analysis and comparison of the principles of logistics.[42] Using the Nvivo qualitative package influences the link and connection to the literature reviewed by systematically sorting through the data files for the trending patterns related to the research questions.[43] The data identified through the Nvivo tool is discussed and analyzed throughout chapter 4 based off of the step by step approach to the case study analysis and breakdown.[44] Moreover, the primary and secondary questions examined in depth, ensures academic rigor of the investigation is established. Moreover, the step by step process identified provides an in-depth portrait of the case study analysis.

Key terms established and recognized from the Nvivo qualitative data package program are sources, coding, nodes, source classification, and node classification. Sources are the research materials utilized for study that includes: documents, PDF's, datasets, audio and pictures.[45] The sources allow for a number of multiple components

from the data to be generated and stored throughout the Nvivo project.[46] The data gathered from the source automatically makes instant comparisons to the data regardless of the source of information, to package the data compared into relevant folders regarding the primary and secondary questions of the study.[47] Coding is the process of gathering material by topic, theme, or case study.[48] Coding the content of the data entered ensures the themes and patterns identified continue to turn up regarding the primary and secondary research questions.[49] Nodes are storage spaces for your coding that establish trends and patterns of the analysis.[50] Each node is a storage area from the references entered based off of a concept or category specified, particularly relevant, when comparing the primary and secondary questions of the study.[51] Source classifications store the information about your sources in a bibliographical fashion.[52] Source classifications examine the particular attribute value entered. [53] For example, a source classification with the attribute values anticipation, continuity, improvisation, responsiveness, and integration show the relationship of the principles of logistics as applied to the primary and secondary research questions. Node classifications supports the recorded information about people, places, or your data.[54] The node classification would store the data analyzed from the principles of logistics and is related to the nodes and codes entered regarding prepositioned stocks, coordination, and logistic enablers.

Conclusion

The investigative process led to many aspects of humanitarian logistics, humanitarian coordination, HADR policy, and environmental security issues developing into an illustrative approach to best facilitate HADR operations. The following chapter provides those details described throughout the process in order to allow the

synchronization of HADR missions to occur. In addition, the subsequent chapter on conclusions and recommendations summarizes the entirety of the research and analysis.

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CHAPTER 4

ANALYSIS

Introduction

This chapter establishes the investigation current from the literature review and research methodologies used to answer the primary and secondary questions of the investigation. The primary research question of this thesis is: Do prepositioned stocks effectively assist the response time for humanitarian assistance and disaster relief (HADR) operations? The secondary questions of this study are: Do DOD logistic enablers, such as, strategic airlift, sealift, and supply chain management expedite multinational/interagency HADR response? Do DOD coordination processes and procedures properly frame the organization and synchronization that needs to occur with other interagency groups during HADR Operations?

Chapter 4 is organized into four separate sections identifying the introduction of the case studies analyzed, the examination of the of primary and secondary questions assessed from the principles of logistics, the analysis of the principles of logistics, and the Nvivo qualitative analysis findings. Each section is broken down for organization and relationship into the primary and secondary questions previously stated. Additionally, each unit provides the relevance behind prepositioning stocks, humanitarian coordination, and the utilization of logistic enablers.

The thesis utilizes a distinct instructional matrix that showcases the detailed analysis established in the previous chapter. The matrix analyzes each of the three affected countries as seen in figure 12. The countries of Haiti, Pakistan and the Philippines, are analyzed throughout the initial 48 hour response time. Each of the figures

13, 14, and 15 assessed how the principles of logistics[1] were applied to initial disaster response using prepositioned stocks. A defined range of response was identified to correlate to each of the principles applied. A value of 1, which is the highest achievable, was assigned to the specific organization that achieved response within the first 24 hours of the operation. A value of 2 was assigned to the organization that received initial response between 24 and 48 hours. A value of 3 was assigned to the organization that responded within 48 to 96 hours. A value of 4, which is the lowest value, was assigned to the organization that responded after 96 hours. The first matrix is directly related to the primary research question: Do prepositioned stocks effectively assist the response time for humanitarian assistance and disaster relief (HADR) operations? In addition, the cross-case analysis was applied to safeguard the reliability of the data and provide consistency of themes and patterns that emerged. For instance, the investigation continuously focused on prepositioning stocks and resources in support of HADR operations. Utilizing the 5 elements of the cross-case analysis methodology below provides the analysis and findings of the application of the principles of logistics regarding the case studies examined.[2]

Case Context: The case context of each geographical region of the HADR operations was analyzed and set the conditions to determine the significance of patterns and trends when compared and contrasted against the primary and secondary questions. Common themes regarding response time and logistical resources due to the location of the operations continued to reoccur.[3] Additional information pertaining to policy and coordination processes were challenging due to the lack of coordination during this phase of the analysis.

Case Description: The case description facts for Haiti, the Philippines, and Pakistan were entered and analyzed distinctly with each case study based off of the ability to separately examine prepositioning stocks, humanitarian coordination, and additional logistic enablers. The case description set the stage for determining proper response and efforts required for HADR missions. Gathering and interpreting all the facts required for the three case studies was vital to the next step in the analysis.[4]

Within-Case Theme Analysis: The within-case theme analysis inspected patterns and trends established exclusively within the case studies,[5] i.e. Haiti, Philippines, and Pakistan. Comparing the themes within each provided much insight regarding the necessary requirements for HADR operations. The majority of the results viewed logistical enablers as a must for future HADR events.

Cross-Case Theme Analysis: Cross-case theme analysis described each individual case in its own setting and natural disaster environment to determine emerging configurations from the analysis.[6] Reviewing and reflecting the themes, trends, and patterns from Haiti, the Philippines, and Pakistan, showed common comparisons as well as fluctuating contrasts the majority of the similarities focused on humanitarian policy, host nation needs, and humanitarian collaboration.[7]

Standards of Rigor: Rigor is required in qualitative analysis, in order to ensure the findings and outcomes of the study is accurate.[8] Understanding that qualitative analysis is significant to capturing the tasks associated with specific phenomenon and applying those associated tasks to the analysis being conducted is vital to the validity and reliability trepidations.[9] The standards of rigor are the assertions and generalizations of the author to interpret and mitigate personal bias. The two standards of rigor used for this examination

are reliability and validity. Based off of figure 12, the reliability of the study generated outcomes that have been on track with the primary and secondary research questions. Particularly, after analyzing the results from the Nvivo outputs, one could be sure that similar findings would regenerate if the data were recorded for a second or third time. When observing all three of the case studies, Haiti, The Philippines, and Pakistan, there seems to be a strong validation within the generalizations made and applied separately to each of the case studies.

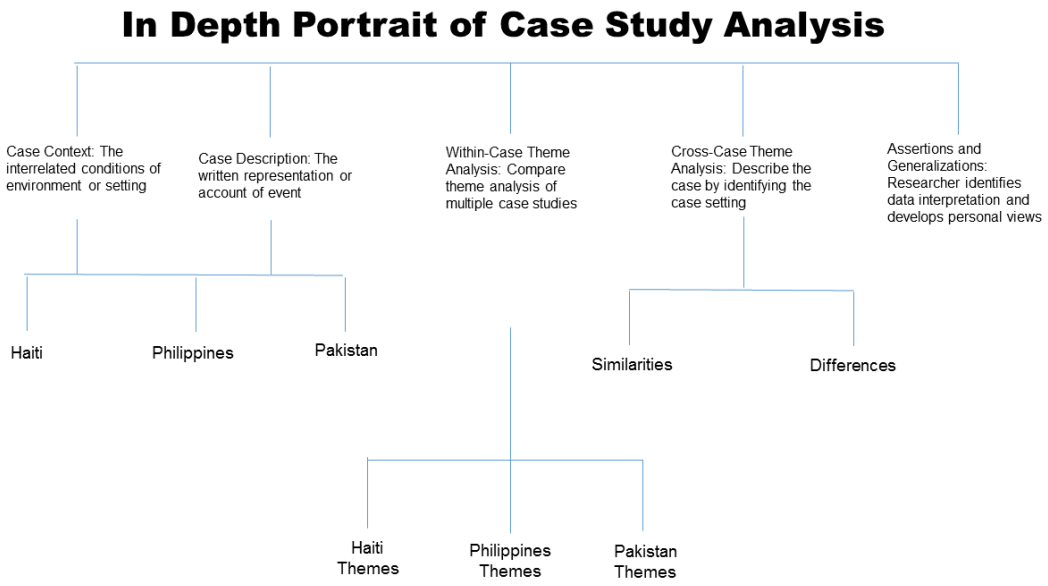

Figure 12. Multiple Case Study Analysis

Source: John W. Creswell, *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*, 2nd ed. (Thousand Oaks, CA: SAGE, 2007), 172.

Throughout this chapter, the investigation of the matrix, provided confirmation to support answering the primary and secondary questions of this thesis through the

application of the principles of logistics.[10] Additionally, the five principles of logistics provided analysis to answer the following question: Do prepositioned stocks effectively assist the response time for humanitarian assistance and disaster relief (HADR) operations? Moreover, the secondary research questions are in direct connection and support of the primary research question.

Applying the Principles of Sustainment Analysis to the Case Study Assessments

Haiti

On January 12, 2010 a magnitude 7.0 earthquake rocked the Port of Prince region of Haiti. An estimated 225, 000 people lost their lives due to the poor infrastructure and quality of facilities.[11] Haiti is considered the poorest country in the Western Hemisphere and due to the impact on the damaged infrastructure, the USG immediately responded by creating a Joint Task Force for the HADR mission. The DOD sent as many as 15,000 personnel to support the humanitarian assistance.[12] USAID's Office of Foreign Disaster Assistance (OFDA) sent a Disaster Assistance Response Team (DART) and provided emergency food assistance, water and sanitation efforts, and shelter and settlements as part of their early recovery detection capability.[13] The immediate response from USAID and the USG was due to the strategic prepositioned warehouse of USAID in Miami, Fl. The ability of OFDA's DART to project requirements early was facilitated by USAID also establishing a Washington, D.C. Response Management Team (RMT) to synchronize efforts with the forward DART.[14] The immediate coordination process that took place proved to a valuable asset to the overall humanitarian synchronization of the response. The DOD coordinated: the movement of relief supplies and material;

established seaport opening operations and port management; conducted airport opening and coordination of aircraft inbound/outbound; provided harbormaster support to incoming supply vessels; and distributed cargo transfer support throughout the key cargo nodes of reception.[15] All of the critical modes and nodes that took place during the initial response was generated from the prepositioning capacity of resources and the synchronization/transportation logistical enablers provided by the USG. The initial response that United States Southern Command (SOUTHCOM) provided search and rescue capabilities, damage assessments, and transitional outreach to humanitarian assistance and disaster relief operations.[16] The joint logistics sea based established by the US Navy was located at Naval Station Guantanamo Bay for the sole purpose of supporting JTF Haiti.[17] Overall, without the support and expeditious capabilities of the USG, the HADR response would have been much more devastating to the international community particularly, that of the Haitian nation. The examination inside the Haiti relief operation on figure 13, show trending arguments toward the primary and secondary questions examined throughout the study. Of particular significance, are the interactions of responsiveness and integration when supporting and responding to HADR missions?

Pakistan

During the summer monsoon in late July of 2010, Pakistan received a numerous storms that inundated the river basins and flood zones of the North-West regions of the country.[18] By the end of August and beginning of September in 2010, the Pakistani government estimated 20 million displaced citizens due to the effects the flood had on the region.[19] The estimated death toll was approximately 2000 people and although small in numbers when compared to Haiti's approximately 225,000 lives lost, the extent of the

disaster regarding human influence categorized the event as the largest humanitarian disaster in recent history.[20] The situation in Pakistan was one of many over the past five years regarding humanitarian response and disaster assistance. The international community provided one of the largest HADR operations in history alleviating the problems of food, sanitation, water, and disease through early response detection systems in place.[21] Many of the immediate reactions to the Pakistani flood were due to prepositioning resources from within the humanitarian community, the ability to move and distribute these prepositioned resources, and the coordination efforts required to conduct a successful HADR operation. Due to the security issues of the region, international humanitarian responders had a difficult time supporting areas other than the large towns and concentrated access zones.[22] The USG provided immediate financial support and distributed much needed supplies and resources through the initial response of the DOD and NGO's.[23] The ability of the USG to turn this devastating event into an opportunity of peacebuilding and partnership was an overarching goal attained through the USG's humanitarian response and assistance delivered.[24] The investigation regarding the Pakistan floods of 2010 provided detailed information supporting the act of humanitarian logistics prepositioned as well as the synchronization of humanitarian responders and support enablers throughout the examination. The examination inside the Pakistan flood HADR operation on figure 14 show trending arguments toward the primary and secondary questions examined throughout the study. Many of the themes examined continued to compare the significance of humanitarian coordination and prepositioning resources in support of HADR operations.

Philippines

On November 8, 2013 a super typhoon hit the Philippines with winds comparable to a category 5 Hurricane. The natural disaster affected nearly 10 percent of the approximately 105 million residents.[25] Immediately the storm created a humanitarian response and required assistance throughout the region. The damage concentrated on areas of energy infrastructure, telecommunications, water, and sanitation affecting nearly13.7 million people.[26] The Philippines government led the HADR response and operation with support from the UN, USG, NGO's, NGHO's and other international contributors.[27] Throughout the response, approximately 50 U.S. military ships and aircraft responded with personnel, resources, and humanitarian supplies solidifying security cooperation and partnerships with the host nation.[28] Despite prepositioned supplies and resources within the region, the response was difficult due to the damaged infrastructure and the number of people displaced.[29] Also, the damaged infrastructure limited transportation routes and distribution nodes from establishing within the affected area. Despite the challenges endured, it was the prepositioning of resources, the ability to distribute and transport those resources, and the initial coordination and synchronization needed to complete the HADR operation. The requirement for the USG's military expertise in expeditionary logistics were established, with the construction of seaports, airports, and supply points for distribution.[30] The examination of the Philippines Operation Damayan focused on figured 15 show trending arguments toward the primary and secondary questions examined throughout the study. The trends help correlate the secondary questions of humanitarian coordination processes and the use of logistic enablers to prepositioned stocks.

Data Points Recognized

Emerging trends and patterns were identified through the assessment of the five principles of logistics. Throughout each of the tables measured, a distinct configuration of outcomes were determined and appraised in relationship to the literature reviewed and research methodology established regarding the categories ability to apply the principles of logistics to prepositioned stocks, humanitarian coordination, and logistical enabler's availability. A value of 1-4 was specified for each of the principles applied, with 1 being a very high application and 4 being the lowest significant application, based off of the four categories observed in each of the nine tables. Each table is systematically discussed below for evolving trends or patterns that were documented.

Prepositioning Programs and Stocks

The theme throughout the investigation continuously focused on prepositioning stocks and resources for HADR operations. In each of the figures 13, 14, and 15, the principles of logistics were applied to the humanitarian coordination cells, rank ordered from 1-4 for each of the principles evaluated prepositioning stocks and resources required for HADR missions as an immediate impact for building partnership capacity (BPC) with our allies. During Operation Unified Response in Haiti, USTRANSCOM's Military Sealift Command (MSC) responded swiftly with control and support elements of personnel for approximately twenty-one different ships.[31] In addition, a maritime prepositioning ship United States Naval Ship (USNS) 1st LT Jack Lummus modified a package of U.S. Marine Corps Class IV (construction) equipment and supplies needed for the USAID and other IGO/NGO's response capabilities to the HADR operation.[32]

On November 11, 2013, President Benigno Aquino declared presidential proclamation number 682, declaring a state of emergency for the Philippines. Even though prepositioned humanitarian resources and stocks were available,[33] humanitarian organizations and militaries began to support the disaster response to Typhon Haiyan by providing integration of supply systems and prepositioned services. The U.S. military in support of USAID's OFDA DART engaged in a serious portion of clearing airport obstructions to expedite relief supplies.[34] The 2010 Pakistan floods were the worst in Pakistan's history. Although only 2,000 people perished, approximately 20 million were affected throughout Pakistan making this one of the largest international response to HADR operations.[35] The Pakistan military were amongst the first to responds providing lifesaving assistance and emergency supplies from their own support systems.[36] Additionally, the USG, Australia, Japan, and the UAE all mobilized military personnel to facilitate the logistical capabilities of humanitarian supplies. The ability of the USG military assets to transport and distribute emergency food items from the World Food Programme (WFP) increased the overall food security within the region.[37]

Haiti Earthquake 2010

Humanitarian Participants Initial Response Time

How the Principles of Logistics were applied to Initial Disaster Response Time

Principles of Logistics Objectives	Host Nation	OFDA/DOS	OCHA/NGOs/HNGOs	DOD
Anticipation	4	1	2	3
Continuity	4	3	1	2
Responsiveness	4	1	3	2
Integration	4	1	2	3
Improvisation	4	1	3	2

Figure 13. Haiti Case Study Humanitarian Participants Initial Response Time

Source: Created by author.

Figure 13 identified logistical issues as well as transportation and distribution strengths and weaknesses to the initial reaction during Operation Unified Response.[38] OFDA's DART ultimately set the conditions of the response through their ability to anticipate, respond, integrate, and improvise for the entirety of the HADR mission.[39] The ability of the USG to integrate prepositioned resources along with providing humanitarian coordination for the utilization of logistical enables ensured a successful overall mission.[40] The international community as well as the NGO contributed significantly in connecting the initial response of the region through continuity.[41] The connection of continuity signify that the efforts taken to ensure humanitarian coordination and prepositioned resources were in concert of one another. The DOD responded with precision and persistence while achieving solid continuity,

responsiveness, and improvisation throughout the mission another indication of seamless coordination and synchronization. Regrettably, the host nation of Haiti was so devastated emotionally, physically, and mentally that their ability to apply the principle of logistics was incapacitated.

Pakistan Flood 2010

Principles of Logistics Objectives

Humanitarian Participants Initial Response Time

How the Principles of Logistics were applied to Initial Disaster Response Time

	Host Nation	OFDA/DOS	OCHA/NGOs/HNGOs	DOD
Anticipation	4	2	1	3
Continuity	4	1	2	3
Responsiveness	4	3	1	2
Integration	4	3	1	2
Improvisation	4	2	1	3

Figure 14. Pakistan Case Study Humanitarian Participants Initial Response Time

Source: Created by author.

Figure 14 highlights the initial response for Pakistan's devastating floods of 2010. The international community made the most significant impact regarding response due to their advantageous prepositioning of resources and their ability to transport those resources through the World Food Programme.[42] OCHA, NGO's, and NGHO's clearly understood the situation and environment based off of their ability to anticipate, respond,

integrate, and improvise HADR requirements.[43] Again, a factor contributing to the overall humanitarian coordination process. The strategic interest of the USG justified OFDA/DOS, and the DOD's quick and reliable response due to the ability of the early coordination efforts concerted. The continuity for the USG was captured in USAID's OFDA ability to effortlessly respond and integrate within the devastated flood region of Pakistan.[44] Unfortunately for Pakistan, due to the compounding issues from within, the ability to function internally was insupportable and created a requirement for international humanitarian response. The inability was displayed through their incapacity for all of the principles of sustainment relative to prepositioned stocks and humanitarian logistics.

Philippines Typhoon 2013

Principles of Logistics Objectives

Humanitarian Participants Initial Response Time

How the Principles of Logistics were applied to Initial Disaster Response Time

	Host Nation	OFDA/DOS	OCHA/NGOs/HNGOs	DOD
Anticipation	3	1	4	2
Continuity	1	2	4	3
Responsiveness	4	2	3	1
Integration	4	1	3	2
Improvisation	4	1	2	3

Figure 15. Philippines Case Study Humanitarian Participants Initial Response Time

Source: Created by author.

Figure 15 focused on the initial response time associated with Operation Damayan in the Philippines during 2013. Due to the technological advances and early detection systems of the Philippines, continuity was established throughout the initial operation developing an understanding to the availability and location of prepositioned stocks in the region.[45] OFDA's and DOS's ability to anticipate, integrate, and improvise the initial response with the affected country proved to be vital for the mission. The fundamental display of the principles of logistics made it less stressful when determining the prepositioned stocks to use or draw from.[46] The DOD was able to respond initially and throughout the operation with the strategic and projected placement of it forces and facilities. Again, a key enabler in any prepositioning program is not only humanitarian stocks, but personnel. The international humanitarian community as well as the NGOs provided systematic response across the spectrum of humanitarian logistics.[47] Many of the lessons learned from the international humanitarian community reflect back to the fundamentals and acknowledgement of prepositioned programs in regards to geographical location.[48]

Humanitarian Coordination and Synchronization

The trending concerns and issues for each of the case studies analyzed concentrated on either the lack of synchronization or the awareness of coordination. In each of regions analyzed, the principles of logistics were applied to the humanitarian coordination cells for each of the principles evaluated. Ensuring collaboration throughout a HADR operation was an essential concern among responders.[49] Many of the humanitarian issues associated with Haiti were directly impacted by the damaged transportation infrastructure. The ability to off-load critical supplies and resources

accompanying humanitarian efforts were non-existent. Particularly the seaports were initially inoperable for multiple days until restructuring and facility maintenance was completed. The second and third order of effects of the damaged SPOD lead to an uncontrolled airport/airbase. USTRANSCOM deployed a Joint Task Force Port Opening (JTF-PO) in support of Operation Unified Response for immediate collaboration and synchronization at the Toussaint Louverture International Airport, Haiti.[50] US Southern Command's (USSOUTHCOM) ability to rapidly respond to Operation Unified Response was exemplified through the more than 13,000 personnel, 21 ships, and 120 aircraft actively supporting the HADR mission that affected over 3 million Haitian people.[51] Responding to Typhoon Yolanda in the Philippines was a global relief response coordinated through multiple militaries, including United States Pacific Command (USPACOM), IGOs, and NGOs. UN humanitarian organizations rapidly responded with 3 teams from the United Nations Disaster Assessment Coordination (UNDAC) for prompt analysis of the operational environment.[52] The Armed Forces of the Philippines (AFP) in conjunction with 57 countries and 29 foreign militaries reacted quickly and effectively throughout the operation mainly because of the well-coordinated and integrated humanitarian cells established at the initial onset of the disaster.[53] The USG established an interagency task force through the Washington DC based Response Management Team (RMT) lead by USAID's OFDA. OFDA also deployed a DART which ultimately analyzed the environment focusing on humanitarian needs and distribution. The transportation of emergency supplies, including humanitarian food provisions were collaborated with other USG and international/multi-national partners.[54] The humanitarian coordination within Pakistan was initially very poor due to the

overlapping of food distribution to people in affected regions.[55] Additional collaboration between Pakistani government, UN, and interagency humanitarian groups was identified in initial response and understanding of logistic systems.[56] The addressed synchronization through the humanitarian coordination cells supporting Operation Unified Response. OFDA's DART established the necessary synchronization required to facilitate response through continuity and improvisation.[57] The JIACG and JDDOC was able to capitalize on the proven harmonization by means of integration within the HADR operation.[58] The USG's geographical location to the affected nation, validated anticipatory requirements and capabilities chosen and capitalized on the necessities by responding expeditiously. The international community as well as the NGO and NGHO's did not have the same success as the USG had when coordinating response efforts involved with the Haitian earthquake of 2010.[59] The examined and trending concerns inside Pakistan's humanitarian coordination cells provided necessary response information to the floods of 2010. Reviewing multiple coordination cells identified trending synchronization efforts.[60] The coordination cells of OFDA's DART proved to be reliable and effective across the spectrum of the principles of logistics.[61] Particularly when it came to responsiveness, integration, and improvisation with the other humanitarian players. However, the JIACG/JDDOC lacked anticipation, improvisation, and continuity due to enduring global events. The humanitarian community of OCHA, NGO's and NGHO's proved to be key players based off of their ability to anticipate humanitarian requirements and flawlessly sustain logistical assets through continuity.[62] Again, the USG was not as effective or efficient in the principles of sustainment when compared to significant humanitarian contributors. The analyzed synchronization issues

regarding humanitarian response organizations within Operation Damayan in the Philippines during 2013.[63] OFDA's DART led the synchronization of humanitarian cells through continuity of efforts, responsiveness of requirements, and integration of all the key players and nodes supporting the HADR mission. The JIACG and JDDOC were able to anticipate logistical requests, and resource capabilities to ensure a seamless transaction of support transpired.[64] The NGO and NGHO's responding to the humanitarian mission improvised the coordination and synchronization through lesson's learned and previous mission experience. The USG continued to exploit the technological advances of the affected nation as well as geographical proximity to strategic capabilities, ensuring uninterrupted organization.[65]

Humanitarian Logistics and Enablers

Understanding the significance and role that logistical enablers produce in response to HADR missions is ultimately a humanitarian response fundamental. Each of the principles of logistics were applied to the humanitarian coordination cells identified from the literature. Within each of the regions examined, the ability of the U.S. military to rapidly respond and provide essential logistical services proved vital to the success of the mission. For instance in Haiti, aircraft were arriving at the airport/airbase from all over the world carrying emergency humanitarian supplies. Unfortunately, those much needed resources were not able to be distributed properly until the request of the Haitian government was approved to have USG support. The 23rd Special Tactics Squadron from Hurlburt Field, FL began their response to the disaster within 24 hours of the initial earthquake.[66] Within two months of operations over 3,940 fixed wing and international humanitarian flights were received delivering and distributing essential relief supplies to

those most in need.[67] The regional Air Movement Control Center (RAMCC) from US Northern Command (USNORTHCOM) along with a Canadian mobility personnel unit were designated the Haiti Flight Operations Coordination Center (HFOCC). The HFOCC was considered a global multi-national airlift coordination cluster.[68] The Philippine government delivered a request for humanitarian assistance on 10 November, 2013 to assist in the devastation created from Typhoon Haiyan.[69] The U.S. military's ability to restore key transportation infrastructure enabled the humanitarian response the access to transportation routes were displaced citizens were located.[70] During the 2010 floods in Pakistan, key transportation infrastructure became one of the main concerns for transporting and distributing essential humanitarian supplies throughout the affected region.[71] The additional support enablers provided for the HADR response inside Haiti. Of the four logistical enablers measured, the strategic airlift capability demonstrated the achievability through anticipatory and responsiveness measures of logistics.[72] The supply chain management procedure confirmed continuity and integration success within the humanitarian responders.[73] Due to the location and quick onslaught of the disaster, prepositioned supplies and resources were improvised appropriately. The capability of strategic sealift verified the need for understanding theater opening requirements due to the transportation infrastructure destruction.[74] This analysis provided a solid review of the logistical enablers available for use specific to humanitarian distribution and transportation processes. The dichotomized logistical functions of airlift, sealift, prepositioned stocks, and supply chain effectiveness of sustainment providers responding to the Pakistan floods of 2010.[75] The strategic airlifts capacity to provide continuity, integration, and responsiveness capabilities to the humanitarian responders made the

difference in improving the situation on ground.[76] The supply chain management process in relationship to the humanitarian response, provided continuity and improvisation among the coordination cells and initial responders. Prepositioned stocks in or near the affected region did play a role the humanitarian response through responsiveness and improvisation.[77] Strategic airlift provided the continuity required based off of the type of disaster occurring in Pakistan.[78] The supplementary logistical enablers reacting to the HADR mission in the Philippines Typhoon Haiyan.[79] The proximity of the prepositioned capabilities confirmed the anticipatory and continuity humanitarian assets required to facilitate the mission. The strategic airlift ability to respond and improvise the humanitarian theater of support created desired and timely assistance. The geographical positioning of the Philippines shaped the integration of the strategic sealift.[80] The strategic mobility triad of air, sea, and prepositioning stocks substantiated the capability and capacity for humanitarian operations unlike supply chain engineering and management.

Principles of Logistics Analysis

Analysis and application for the principles of logistics[81] from the research focused on the issues and concerns of the HADR response effort for each of the three case studies. The analysis from the application of the principles of logistics was the groundwork to answer the primary research question, “Do prepositioned stocks effectively assist the response time for humanitarian assistance and disaster relief (HADR) operations?” Also, the principles of logistics contributed in the explanation of the secondary questions of the research, “Do DOD logistic enablers, such as, strategic airlift, sealift, and supply chain management expedite multinational/interagency HADR

response?" "Do DOD coordination processes and procedures properly frame the organization and synchronization that needs to occur with other interagency groups during HADR Operations?" For the purpose of this study, the author only used five of the eight principles applying to HADR operations. These five principles have been examined and nominated, based off of the direct correlation and relationship to the case studies identified from humanitarian logistics and expeditionary response relevant to the primary and secondary questions previously stated.[82]

The analysis of the case studies reviewed in reference to the application of the principles of logistics,[83] used the Nvivo software tool to organize literature of past HADR operations. The data presented, provided a collective account of matters concerning potential shortages of the principles of logistics. As part of the coding procedure, the study used the principles of logistics[84] structure in table 1 to confirm dependable analysis and assessment to the framework established.

Table 1. Coding the Principles of Sustainment

Element	Description	Application to Thesis
Anticipation	Ability to foresee operational requirements	Identifying the humanitarian resources required from a prepositioned program
Continuity	The uninterrupted provision of logistics in support of an operation	Applying the humanitarian resources to the affected region of an HADR operation
Integration	Providing unity of effort and maximize effect with resources	Connecting the resources for an HADR operation through cooperation and synchronization
Improvisation	The ability to adapt and overcome a sustainment situation ensuring resources meet requirements	Arranging the prepositioned resources or strategic airlift/sealift to distribute and transport that resource
Responsiveness	Ability to react to changing requirements and respond to meet the needs of the support	Ensuring that the required resources are distributed and transported to the right folks at the right time.

Source: Created by author.

Integration: The dynamism created throughout an organization for HADR logistical supplies and services depends on multiple players within an area of operation (AO). For example, coalition forces, interagency, inter-service, and host national groups are all measurements of the overall effects integrated into HADR logistical operations support. In terms of the study, integration was analyzed as a method to provide unity of effort while responding and planning for HADR operations. The analysis of each of the case studies continued to show either positive or negative effects when applying integration to prepositioned programs and stocks, humanitarian coordination processes, and supplemental logistical enablers available. Particular issues of integration occurred throughout the analysis in Haiti, due to the significance of the disaster and the human impact from within the region. Understanding how to fully integrate multiple players and partners in the humanitarian community can be an art form. Whereas OFDA and the DOS had a positive integration into the country during the initial response, unlike the host nation of Haiti. Specifically in terms of the prepositioning stocks used from USAID's warehouse in Miami, Florida as well as the prepositioning resources utilized from contracting NGO's around the affected region. In the Philippines, OFDA's DART and DOS were exceptional when examined due to their ability to understand the environment and assimilate to the situation regarding prepositioning stocks. Traditionally, the international community along with the NGO's are integrated into the humanitarian response efforts. In the Philippines, UN's OCHA had some problems established and integrating into the response effort. Throughout Pakistan during the 2010 floods, the host nation had tremendous issues integrating relief efforts and humanitarian support. Issues were due to the overwhelming human impact, the disaster had on the country.

Anticipation: Utilizing the operational variables delivers situational awareness and understanding to a complex environment. The Army Prepositioned Stocks (APS) program contributes to the logistical planning/preparation for a combatant commander's projection of power. DOD's strategic mobility and rapid deployment depends on the allocation of resources prepositioned advantageously to enhance our movement and distribution capabilities of forces and equipment. The advantage anticipatory logistics provides for the humanitarian community is significantly relevant to overall HADR operations. Analysis throughout each of the case studies revealed problematic issues with certain humanitarian communities and logistical enabler's ability to forecast requirements and the connection to these requirements. For instance, in Haiti and Pakistan the countries were unable to predict the initial response requirements desired to ensure proper control over a catastrophic situation. Having a more robust understanding and awareness of prepositioned programs available in and around the region could have remedied these particular situations. On the other hand, the Philippines was able to calculate capabilities, specifically, prepositioned resources and stocks required for the HADR mission due to the technological advance of early detection systems and the assistance of the USG. The majority of the success achieved in the Philippines was due to the coordination and synchronization processes applied.

Responsiveness: The operational environment (OE) is ever fluctuating. The additional intelligence and data we have on particular regions, capabilities and limitations, the more successful and less expensive DOD's response to that area of responsibility (AOR). This is the relationship that logistical responsiveness has to our advancement of the HADR community, particularly, when identifying prepositioned

capabilities as well as the distribution and transportation management of these resources. Through additional military training and tasks specifically designed for HADR operations of a region, GCCMDs receive units and Soldiers well versed in specific disaster relief and response efforts of humanitarian capabilities and shortfalls. This type of preparedness fosters a larger amount of mission certainty, while increasing expeditionary competencies. The analysis of the investigation provided trends and patterns relating to prepositioning stocks and programs as well as the coordination and transportation of these humanitarian resources. Responsiveness was showcased in the strategic airlift capabilities to provide humanitarian support in Pakistan and the Philippines. However, in Haiti, OFDA and DOS provided quick determination ensuring the requirements equaled the capabilities.

Continuity: The UN in Haiti provided the synchronization and ensured logistical understanding of the affected area was synthesized which is extremely relevant when it comes to the secondary question of humanitarian coordination. The analysis also identified areas of stability within humanitarian partnerships and response utilizing the prepositioning programs of multiple partners in and around the region. For example, in the Philippines the host nation took control of the response and provided all humanitarian contributors with situational awareness and understanding, ensuring a successful response. This command and control was particularly important when examining and identifying the incoming prepositioned resources.

Improvisation: Combatant commanders need talented logistical planners to fulfill the requirements, capabilities, gaps, and limitations of a complex OE. This statement has relevance when investigating the use and assistance of prepositioning stocks to a HADR

operation. Therefore, leaders with exceptional situational understanding and awareness of a specific geographical region, can make timely decisions communicating the CCMDs intent.[85] For example, climate change has an enormous effect on sustainment planners as they formulate their analysis through the sustainment preparation of the operational environment (SPOE).[86] Understanding the limitations of water, food, fuel, and other critical service and supplies, ultimately help logisticians shape the way we support the global force. This analysis allows logistical planners to cooperate with other humanitarian partners regarding the location and use of prepositioned stocks, humanitarian coordination, and additional logistical enablers available. The analysis recognized some of the critical and creative thinking required to successfully plan, sustain, and coordinate a HADR operation. Case in point, in the Philippines, their ability to alert and preposition resources, stocks, and personnel ready to respond, diminished the severity of the disaster, typhoon Haiyan.

Qualitative Analysis

Utilizing the Nvivo software package to conduct qualitative analysis on the individual HADR case studies of Haiti, Pakistan, and the Philippines ensured the information found was detailed in a manner appropriate to academic rigor and standard.[87] Each step of the qualitative analysis process was applied and inputted into the Nvivo data query three separate intervals to provide preliminary, evaluation, and confirmation for the data sources.[88] The three intervals of response permitted the software package to govern the codes, nodes, and sources from that of the information provided. The format assigned focused on the primary question of the effectiveness of preposition stocks as well as the secondary questions of humanitarian coordination and logistical enablers.[89]

As part of the coding process and systematic approach, the research utilized the framework from the table below to ensure academic rigor and consistency when comparing the principles of logistics.[90] To analyze the principles of logistics, the principles of anticipation, continuity, integration, improvisation, and responsiveness were selected and applied to the Nvivo qualitative data package for trends and patterns from the literature reviewed. Of the principles of logistics measured, responsiveness and integration repeatedly were identified during the node and source classification.[91] In addition, the elements of prepositioning stocks, humanitarian coordination, and logistic enablers were also coded for similar patterns regarding the references selected from the literature review. Of those three key and critical codes selected, prepositioning stocks, and humanitarian coordination had the most consistency across the sources referenced.[92]

The Nvivo data package identified sources, codes, nodes, and source classifications based off of the variables selected for analysis and correlated to the primary and secondary questions of the examination. The analysis can be viewed and assessed from table 2. Three specific reviews were conducted as part of the coding/sourcing methodology of Nvivo. A preliminary, evaluation, and confirmation review determined the coding results employed to complete table 2.

Table 2. Coding Results

Element	Sources	References
Anticipation	5	12
Continuity	8	18
Integration	4	8
Improvisation	1	10
Responsiveness	12	21
Element	**Source**	**References**
Prepositioned Stocks	12	32
Humanitarian Coordination	11	21
Logistics Enablers	9	25

Source: Created by author.

Each of the elements for the principles of logistics and the primary and secondary research questions were qualitatively examined for relevance based off of source and event. Chapter 5 provides an understanding and clarification of the outcomes as they correspond to the primary and secondary research questions identified within the thesis. The analysis from the cross-case study of Haiti, Pakistan, and The Philippines exhibited results on elements of the principles of logistics and the primary/secondary research questions reviewed. Table 2 includes the results of the coding procedure, emphasizing the amount of times a particular element was mentioned during the Nvivo analysis. The sources column comprises the quantity of distinct observations regarding the individual element, and the references column classifies how many intervals each individual element was coded during the Nvivo analysis.

Regardless, some elements had limited observations on particular elements, this study still addresses the assessments required to safeguard academic rigor and reliability. Case in point, the improvisation element of principles of logistics had only one observation and ten references. Nevertheless, improvisation is crucial to the understanding of preposition stocks, humanitarian coordination, and understanding the usefulness of logistic enablers.

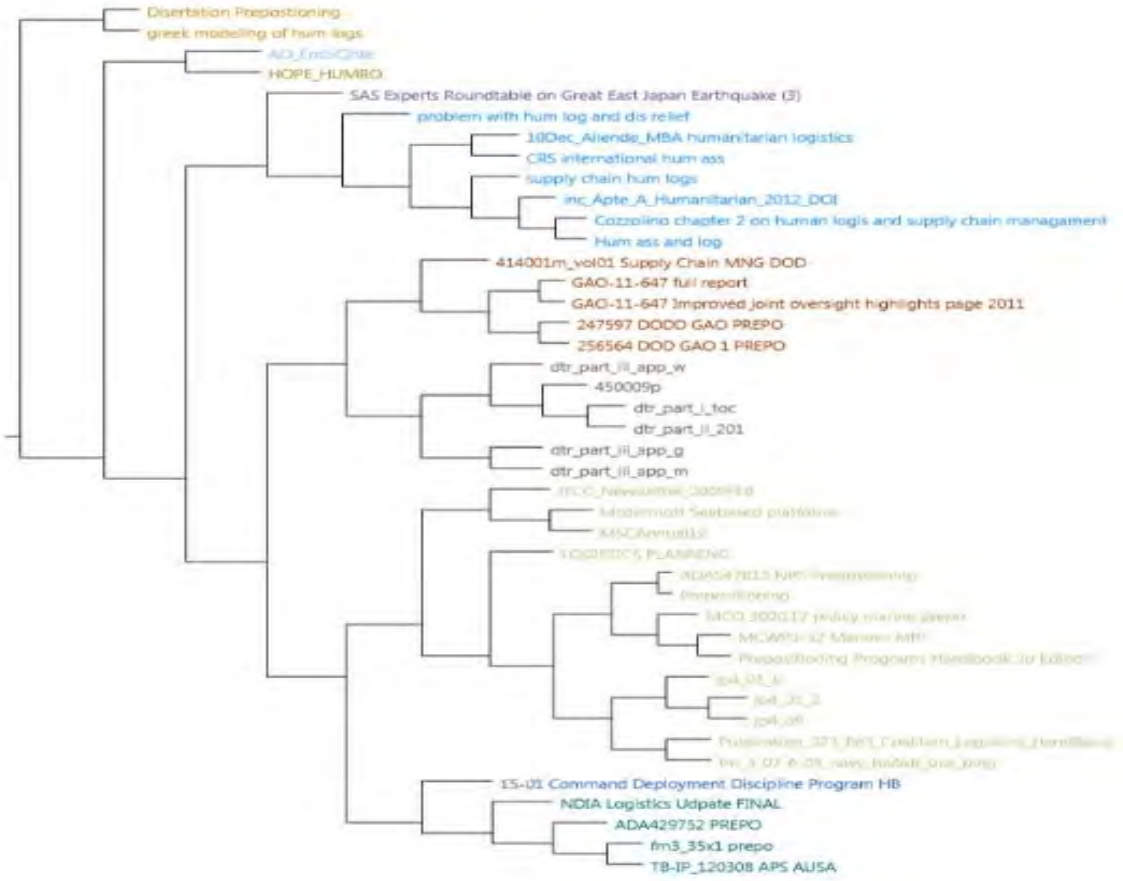

Figure 16. Example of Nvivo Source Cluster

Source: Created by author.

Additionally, the qualitative analysis provided from the Nvivo package tool is viewed within the study, as seen in figure 16. The Nvivo tool was directed and guided by essential facts relevant to answering the primary and secondary questions of the thesis. Intervals for measuring the data of the principles of logistics brought about the common themes. In order to better understand and organize the data, additional tables were established. Tables 1 and 2 of this study were the direct output of data from the Nvivo qualitative analysis tool.

Identifying the analysis from the tables provided direct insights into the following statements. First the relevance and relationship of responsiveness to HADR operations and the second, the significance of integration when conducting a HADR mission. Responsiveness proved to be a significant element of HADR operations and integration was a reoccurring theme regarding the humanitarian coordination efforts. In terms of prepositioned stocks, humanitarian coordination, and logistic enablers, the most mentioned was prepositioned stocks followed by humanitarian coordination. The principal challenge of the data coding was the connection of sources, nodes, and codes to the primary and secondary research questions of the thesis.

Summary

References examined in this chapter delivered confirmation identifying relevance toward the primary and secondary questions of the overall study. This chapter obtained pertinent material for each of the three HADR operations examined within the case study analysis. The literature accessed the applicability of the principles of logistics within the framework of the methodology provided. Analysis of initial response time to the HADR operation, the coordination and collaboration of humanitarian partners, and additional

logistical/sustainment system enablers were also prevalent themes evident throughout the examination.

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CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

Introduction

Purpose of Research

The intent of this examination was to research and analyze the primary and secondary questions and come up with a solution based off of the results established. The primary research question of the study was: Do prepositioned stocks effectively assist the response time for humanitarian assistance and disaster relief (HADR) operations? The secondary questions of the study were: Do DOD logistic enablers, such as, strategic airlift, sealift, and supply chain management expedite multinational/interagency HADR response? Do DOD coordination processes and procedures properly frame the organization and synchronization that needs to occur with other interagency groups during HADR Operations?

Summary of Findings from Chapter 4

In order to conduct this research, a multiple case study analysis and approach was identified through the utilization of qualitative analysis and a cross-case analysis methodology.[1] In addition, the principles of logistics were applied to a matrix representing the application of prepositioned stocks, humanitarian coordination and response, and additional logistical enablers that supported the HADR identified case studies. The matrix assessed the initial HADR response from multiple humanitarian organizations across the range of all three case studies (Haiti, Pakistan, and the Philippines) observed. Throughout the analysis of the set conditions, the humanitarian

coordination and synchronization function performed throughout the same three disaster related case studies from multiple humanitarian organizations. The matrix eventually recognized the supplementary logistical enablers utilized or required to complete the HADR response and mission.

Interpretation of Findings

Through the analysis and application as well as the supplementary documentation of information, the subsequent conclusions support the primary and secondary questions. The queries focused on the effective use of prepositioned socks, the significance of humanitarian coordination and synchronization, and the usefulness of additional logistical enablers, all of which, have been assessed and researched thoroughly within each of the disaster regions (Haiti, Pakistan, and the Philippines) affected.

The primary thesis research question: Do prepositioned stocks effectively assist the response time for humanitarian assistance and disaster relief (HADR) operations? After final review and all of the research analyzed, regarding the effectiveness of prepositioning programs, the answer is affirmative, that prepositions stocks do effectively assist in the response time required for HADR operations. Many of the responses identified in the case studies directly support the necessity for prepositioned stocks to assist in disaster efforts.

For instance, during the response to the Haitian earthquake of 2010, multiple prepositioned programs and resources were utilized among the interagency and international humanitarian partners and responders. The majority of the distribution sites managed in and around the city of Port-au-Prince were supplied from prepositioned

assets and resources. In addition, the USG was able to facilitate multiple prepositioned platforms carrying out the projected response desired regarding HADR support efforts.

During the Pakistani floods of 2010, the humanitarian community did not have similar capabilities available during the Haitian earthquake due to the slow onset of the floods and other crisis's occurring globally. However, the prepositioning of Pakistani military resources did initially help with response but quickly became overwhelming due to the amount of people affected. Eventually, the international humanitarian responders were able to respond and provide much needed prepositioning stocks to the vast amount of people affected from the floods.

The ability of the USG to take advantage of prepositioning programs and resources, in response to the Philippines typhoon of 2013, provided much success toward HADR response efforts. The precautionary reaction that technological advances provided to include early warning equipment, provided humanitarian and military partners, much needed warnings to prepare for the HADR operation. Furthermore, the international humanitarian community were able to benefit from their prepositioned programs to help with the typhoon response.

The secondary research question: Do DOD logistic enablers, such as, strategic airlift, sealift, and supply chain management expedite multinational/interagency HADR response? After reviewing and analyzing additional logistical enablers, particularly strategic airlift and sealift, prepositioned programs, and humanitarian supply chains, the significance and support that logistic enablers provide regarding HADR operations is quite apparent. In response to the secondary thesis question, strategic airlift, strategic sealift, prepositioned resources, and humanitarian supply chains all play a vital role when

expediting HADR response among multinational, interagency, and international humanitarian partners. The goals are to familiarize an agency or organization to the logistical enabler capabilities as a part of the humanitarian community and military response. Then, know how to coordinate and synchronize those goals to ensure their capability become part of the response efforts.

Unanticipated Findings

Throughout the response conducted in 2010 regarding the Haitian earthquake, the ability to incorporate logistical enablers was not the problem. However, the challenge became the coordination of incoming strategic air flights and the lack of on ground resources to properly coordinate and manage the strategic air. In addition, the strategic sealift capabilities were temporarily unavailable due to the massive seaport infrastructure damaged from the earthquake. Once more, having the knowledge/capabilities of other strategic sealift proficiencies similar to Joint Logistics Over The Shore (JLOTS) can make a difference during the initial response to a disaster. Regardless, the problem in Haiti during the response was not the logistical enablers, but the lack of coordination or the challenge to overcome the initial damage to the transportation infrastructure from all military and humanitarian partners that contributed.

Due to the vast number of people affected from the Pakistani floods, the most vulnerable were in remote regions with access made more challenging, because of the inadequate or damaged transportation infrastructure. Therefore, precise coordination and proper planning was key to synchronizing the distribution and transportation of supplies within these vulnerable regions. The humanitarian supply chain was closely monitored to ensure the right service or resources were provided to the right people affected. In

addition, the concept of support was significant considering the limited amount of strategic air assets available to conduct humanitarian resupply to the most austere environments of the harsh Pakistani geography.

From the USG perspective regarding Typhoon Haiyan in the Philippines' of 2013, the whole of government approach seemed to be most fitting. Utilizing multiple capabilities within the DOD and interagency partners, the USG was able to benefit from early warning systems that allowed for proper planning to the logistical enablers expediting response. The strategic sealift capability provide much needed and rapid support to the affected region of the Island. In addition, strategic airlift was able to provide much needed response and the distribution and transportation of vital humanitarian commodities. Overall, the logistical enablers were the key to the successful HADR operation from all humanitarian and military partners that contributed to the HADR mission.

The secondary question: Do DOD coordination processes and procedures properly frame the organization and synchronization that needs to occur with other interagency groups during HADR Operations? After assessing and reviewing all the literature to date regarding proper DOD coordination and synchronization, the one clear challenge of the DOD and the USG, is the lack of coordination and synchronization while conducting and responding to HADR operations. Many of the instances from the literature reviewed reveal similar concerns and frustrations from within the military and humanitarian communities.

During the Haiti earthquake of 2010, multiple humanitarian and military partners responded immediately to the disaster. Unfortunately, not all of the immediate response

was effective nor efficient due to the various problems associated with the coordinating efforts. Part of the challenge remained in the lack of framework or processes integrated among all the humanitarian and military partners involved. Any initial disaster response needs to identify a framework so all participants are clear in terms of coordination and synchronization capabilities.

Humanitarian coordination and synchronization was a significant task throughout the Pakistan flood response in 2010. Due to the overwhelming amount of people affected and the large humanitarian response, coordinating transportation and distribution of supplies was problematic. Many of the affected regions received more than enough humanitarian goods that left other affected regions without. This logistical issue and concern were mainly caused by poor coordinating efforts being monitored and evaluated throughout the HADR operation. A solution would be to closely monitor and evaluate the humanitarian pipeline of goods and services within a humanitarian framework or operations center.

Within the Philippines' during Typhoon Yolanda in 2013, efforts of coordination and synchronization were much improved in relationship to the other case studies examined. Although there were contentious problems of coordination and synchronization, overall the response was properly managed based off of the literature assessments. From the USAID's OFDA view, understanding and having a working relationship with humanitarian partners and responders spearheaded the success achieved. Determining roles and responsibilities and conducting the whole of government training approach, where all involved are well versed in organizational methods were also vital to the response. In addition, ensuring that the results of this response become policy and

standard operating procedures (SOPs) are enforced to capture all the successful momentum from this model HADR mission is critical.

Recommendations

Recommendations for Future Studies

Having the ability to capitalize on the power projection platforms through the use of prepositioning HADR equipment and resources ultimately increases response time. Creating the ability to preposition ships through USTRANSCOM can alleviate potential risks for initial response. One of the ways to minimize this risk is by determining the geographical locations based off of historic HADR operational requirements. In addition, ensuring continuous annual training requirements are conducted among the various humanitarian partners are vital to the coordination and synchronization of HADR operations. Moreover, identifying the transportation infrastructure within specific geographical regions and logistical enablers can prevent shortfalls from occurring within the initial response of HADR missions.

From a perspective focused on prepositioned stocks, the DOD is establishing humanitarian assistance and disaster relief packages as part of the Army prepositioning strategy (APS) activity sets for all of the 6 geographic combatant commands area of responsibility (AOR). These humanitarian activity sets provide rapid response and projection support to any natural or man-made disaster globally. The response from prepositioned platforms in Haiti allowed for timely relief even though other challenges existed regarding the transportation infrastructure and coordination of humanitarian relief efforts. Furthermore, interagency and other international organizations to include NGO’s

and NGHO's have identified multiple prepositioned platforms required for future disaster relief missions.

Endorsements for Action

Additionally, the idea to make disaster preparedness more proactive rather than reactive across the range of response efforts is significant to the future of HADR operations. Better adaptation and preparedness in investments such as, water and flood management, adjustment in crops grown, and technological understanding in early warning systems are all contributing factor's to future success. Furthermore, utilizing capable monitoring and evaluation systems for both early warning as well as logistical enablers can potentially alleviate anticipated humanitarian problems. Much of which, is contributed to the reoccurrence and vulnerability of disaster events due to the climate change occurring globally

Understanding how natural disasters posture imminent danger to life and property will almost always provide an unsettling notion regarding the environment that one resides. The connection that natural disasters have with prepositioned stocks, humanitarian coordination, and availability of logistic enablers is critical to this study. Multiple complexities of why, where, and how natural disasters occur is an important facet to the study objective. This is a direct connection to the primary research question: Do prepositioned stocks effectively assist the response time for humanitarian assistance and disaster relief (HADR) operations? As well as the secondary research questions: Do DOD logistic enablers, such as, strategic airlift, sealift, and supply chain management expedite multinational/interagency HADR response? Do DOD coordination processes and procedures properly frame the organization and synchronization that needs to occur

with other interagency groups during HADR Operations? Merging the causative relationship between climate change and natural disaster occurrences is significant to future HADR studies. Natural Disasters are considered a direct factor of the climate system and have a direct impact on the way governments respond to HADR operations.[2]

Evaluating United States response and preparedness to natural disasters and climate change are an additional challenge that must be managed accordingly. Our capacity as a nation to respond to foreign disaster missions in the future is determined by the available capabilities, requirements, and shortfalls of our USAID's OFDA.[3] Moreover, it is of particular interest to identify the consequences and assess the future progression of climate changes impacts and effects on global disasters.

Summary and Conclusions

The purpose of this examination was to determine the effectiveness of prepositions programs and resources in response to humanitarian assistance and disaster relief operations. A methodological approach applying the principles of sustainment to categories of humanitarian prepositioning programs, humanitarian coordination and synchronization, and supportive logistical enablers were thoroughly investigated. A theoretical structure was designed utilizing the principles of logistics through an application process of specific variables analyzed. Specifically, with regards to the relationship between prepositioning programs, humanitarian coordination, and logistical enabler's relevance to the effective response for HADR operations. In addition, a qualitative statistical analysis was also applied to the framework of variables assessed and delivered similar results pertaining to the effectiveness of prepositioned stocks and the

importance of seamless coordination as well as the significance of logistical enablers regarding HADR operations.

Understanding that the effectiveness of employing prepositioning programs in response to HADR missions significantly assisted in response time was a key finding of this thesis. Additionally, maintaining solid communication of support efforts and capabilities within civil and military humanitarian response partners is also an extremely important result of the examination. Furthermore, providing opportunities to train in conjunction within the humanitarian community on specific capabilities and logistical enablers can reduce the overall impact and potential shortfalls for disaster intensified regions.

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[1] Creswell, *Qualitative Inquiry and Research Design.*

[2] L. D. Danny Harvey *Understanding Global Environmental Change: Climate and Global Environmental Change* (Prentice Hall, 2000), 9.

[3] The CAN Corporation, *National Security and the Threat of Climate Change* (Alexandria, VA: CAN Corporation, 2013), accessed April 4, 2015, http://www.cna.org/reports/climate.

GLOSSARY

Civilian Military is a term defined as a coordination effort between civil and military organizations focused on a specific requirement of synchronization and cooperation for a successful operation.[1] This thesis will conceptualize this term as a working function of response to a natural disaster.

Disaster Assistance Response Teams can assemble in response to a natural disaster through the permissions of the Ambassador and the State or Nation affected.[2] DARTs have specific capabilities from an operational perspective focusing on: technical assistance; developing USAIDs response strategy; analysis of critical infrastructure; identifying non-governmental organizations, multinational coalitions, and USGs relief efforts for synchronization of support

Humanitarian Assistance and Disaster Relief is a recently combined term merging the two concepts of Foreign Humanitarian Assistance (FHA) and Foreign Disaster Relief (FDR).[3] For the rest of this work, we consider HADR an umbrella term for both FHA and FDR.

Natural Disaster a natural disaster is defined as an emergency situation posing significant danger to life and property that results from a natural cause.[4]

The Office of Foreign and Disaster Assistance is a subset of the United States Agency for International Development.[5] OFDA is delegated the responsibility to provide international disaster and humanitarian assistance by synchronizing the response of declared disasters in affected foreign states

Prepositioned stocks is a DOD program that requires a maintained afloat and land based strategic policy for material and equipment to be aligned for expediting the movement of personnel and equipment abroad.[6]

Supply Chain Management or pipeline utilized for distributing and monitoring humanitarian goods/commodities

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[1] Joint Chiefs of Staff, Joint Publication (JP) 3-29, *Foreign Humanitarian Assistance* (Washington, DC: Government Printing Office, 2014), II-28.

[2] Department of Defense, GTA 90-01-030, 1-11.

[3] Joint Chiefs of Staff, JP 3-29, 1-10.

[4] Joint Chiefs of Staff, JP 1-02.

[5] Department of Defense, GTA 90-01-030, 1.4.3.2.

[6] Joint Chiefs of Staff, JP 3-35.

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