

AD-A282 393



RAND

Operation Sea Angel

A Case Study

Paul A. McCarthy

DTIC
ELECTE
JUL 25 1994
S G D

Arroyo Center

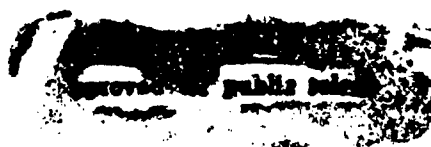
94-22989



4687

94 7 21 127

DTIC QUALITY INSPECTED 1



The research described in this report was sponsored by the United States Army, Contract MDA903-91-C-0006.

Library of Congress Cataloging in Publication Data

McCarthy, Paul A.

Operation sea angel : a case study / Paul A. McCarthy.

p. cm.

"Prepared for the U.S. Army."

"MR-374-A."

Includes bibliographical references.

ISBN 0-8330-1492-7

1. Disaster relief—Bangladesh. 2. Cyclones—Bangladesh.

3. United States. Army—Civic action. I. RAND. II. United States. Army. III. Title.

HV636 1991d.B3 1994

363.3'492—dc20

93-42926

CIP

RAND is a nonprofit institution that seeks to improve public policy through research and analysis. RAND's publications do not necessarily reflect the opinions or policies of its research sponsors.

Published 1994 by RAND

1706 Main Street, P.O. Box 2138, Santa Monica, CA 90407-2138

To obtain information about RAND studies or to order documents,
call Distribution Services, (310) 451-7002

RAND

Operation Sea Angel
A Case Study

Paul A. McCarthy

*Prepared for the
United States Army*

Arroyo Center

Accession For	
NTIS	CRA&I ☒
DTIC	TAB ☐
Unannounced ☐	
Justification _____	
By _____	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

Preface

This report was prepared as part of a larger project entitled "Military Operations Other Than War" (MOOTW). The purpose of this project is to understand how worldwide demographic changes will affect future conflict (limited conventional fighting and nonconventional fighting) and U.S. Army combat (conventional and counterinsurgency), as well as noncombat missions (e.g., peacekeeping, civil affairs, humanitarian assistance, psychological operations,¹ disaster relief). In addition, the MOOTW project examines a range of potential new Army deployments in the less-developed world. This report should be of interest to Army planners concerned with doctrine, training, and force issues pertaining to MOOTW.

The first part of the project was completed in March 1993. Work in Task 1 included a study of the implications for the U.S. Army of changing demographic patterns in the less-developed world and a study of the demographic pressures and political instability in the Middle East. The first study reviews worldwide demographic trends, focusing mainly on worldwide population growth, increasing urbanization, and displaced people, and discusses some preliminary implications for the U.S. Army. The latter study examines the implications of projected demographic changes on the stability of the Middle East, as well as the potential role of U.S. policy in the region.

This report is one of several case studies that encompass Task 2 of the project. For this Task, researchers will catalog and assess the range of missions and requirements the U.S. Army is likely to face in the future. The project's final Task will utilize the general lessons learned from the case studies to identify changing U.S. Army requirements for training, force structure, and doctrine.

The research presented here was sponsored by the Office of the Deputy Chief of Staff for Operations and Plans, U.S. Army. It was carried out within the Strategy and Doctrine program of RAND's Arroyo Center.

¹Psychological operations fall into the gray area between combat and noncombat missions. They are usually indirect and nonlethal and can be used in support of both combat and noncombat operations.

The Arroyo Center

The Arroyo Center is the U.S. Army's federally funded research and development center (FFRDC) for studies and analysis operated by RAND. The Arroyo Center provides the Army with objective, independent analytic research on major policy and organizational concerns, emphasizing mid- and long-term problems. Its research is carried out in four programs: Strategy and Doctrine; Force Development and Technology; Military Logistics; and Manpower and Training.

Army Regulation 5-21 contains basic policy for the conduct of the Arroyo Center. The Army provides continuing guidance and oversight through the Arroyo Center Policy Committee (ACPC), which is co-chaired by the Vice Chief of Staff and by the Assistant Secretary for Research, Development, and Acquisition. Arroyo Center work is performed under contract MDA903-91-C-0006.

The Arroyo Center is housed in RAND's Army Research Division. RAND is a private, nonprofit institution that conducts analytic research on a wide range of public policy matters affecting the nation's security and welfare.

James T. Quinlivan is Vice President for the Army Research Division and the Director of the Arroyo Center. Those interested in further information about the Arroyo Center should contact his office directly:

James T. Quinlivan
RAND
1700 Main Street
P.O. Box 2138
Santa Monica, CA 90407-2138

Contents

Preface	iii
Figures and Table	vii
Summary	ix
Acknowledgments	xiii
Abbreviations and Acronyms	xv
1. INTRODUCTION	1
Description of the Cyclone	2
The Bangladesh Government	4
2. OPERATION SEA ANGEL	6
Sequence of Events	6
Army Forces Involved	8
3. DIMENSIONS OF COMPARISON	11
Command and Control (C ²)	11
Deployment Packages	16
Population and Infrastructure	18
Communications	20
Medical Assistance	21
4. ASSESSMENT, IMPLICATIONS, AND CONCLUSIONS	23
Assessment and Implications	23
Conclusions	27
Appendix	
A. JTF SEA ANGEL TROOP LIST	29
B. SUMMARY OF HUMANITARIAN ASSISTANCE PROVIDED BY U.S. FORCES	31
Bibliography	33

Figures

1. Map of Bangladesh	3
2. Chittagong Model	14

Table

1. Summary of Evaluation	ix
--------------------------------	----

Preceding pg. Blank

Summary

Cyclone Marian struck 110 miles off the southeast coast of Bangladesh on the evening of 29 April 1991, resulting in widespread death and destruction. The United States provided immediate practical assistance in emergency and short-term recovery operations by establishing a Contingency Joint Task Force (CJTF) and launching Operation Sea Angel (OSA). The bulk of CJTF forces were from Amphibious Group 3 and the 5th Marine Expeditionary Brigade (5th MEB), enroute home from the Persian Gulf, supplemented by Army and Air Force elements.

This case study examines a variety of lessons learned from the operation and specifically analyzes their relationship to demographic trends in the less-developed world. Table 1 summarizes the results of this analysis.

Table 1
Summary of Evaluation

Trend	Doctrine	Training	Force Structure
Urbanization			
Limits on urban combat	NE	NE	NE
Loss of comparative advantage	NE	NE	NE
Lack of infrastructure			I
Displaced people			
Effects and limits on combat	Y	NE	I
Humanitarian aid	Y	Y	Y
Lack of infrastructure	Y	Y	I

NOTES: NE = Not evaluated, Y = Major changes recommended, I = Inconclusive. Displaced people refers to refugees, refugee-like persons, and internally displaced persons.

The official United Nations (UN) definition of the term "refugee" is "any person who, owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group, or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country" (emphasis added). "Refugee-like persons" are people with ambiguous status, who have not been recognized by host governments or the UN High Commissioner for Refugees (UNHCR). Such persons may be allowed to remain in a host nation on humanitarian grounds; they may have been granted temporary asylum; or they may be undocumented. The Palestinians in Jordan are considered refugee-like people. Internally displaced persons (IDP) are those people displaced *within their own country*. They do not cross any international borders and are not classified as refugees.

Preceding pg. BLANK

Training

There is debate in military circles regarding the impact on training of participation in MOOTW (Military Operations Other Than War). OSA indicated that many combat skills are transferable to and exercised by humanitarian situations. The wartime requirements of reconnaissance, assessment, transport, logistics, aviation tasks, and several engineer skills, to name a few, were used extensively in OSA. Areas that illustrated a training deficiency included joint training (especially staff operations), Command and Control, and deployment training (for 4-25 Aviation). OSA permitted Army DARTs (Damage Assistance Relief Teams) to train and to evaluate aspects of their primary combat missions and Army aviators to gain valuable flying hours in adverse conditions. Further, Army engineers exercised wartime skills in repairing airfields, locating tube wells, and constructing relief supply storage buildings.

OSA also emphasized the importance of having personnel trained to deal with NGOs (Non-Governmental Organizations), which play a significant role, particularly in a sea-based operation. Although extensive training of Army engineer and medical personnel was not considered to be necessary, selected training activities could be coordinated with NGOs.

Finally, to account for differences in staff operations, more joint training is needed, particularly in the areas of Command and Control and deployment training (for 4-25 Aviation). Its focus should be on humanitarian/disaster relief exercises and should employ the Two-Tiered concept, described in detail in Section 3.

Doctrine

OSA clearly demonstrated some doctrinal deficiencies. Units that had a humanitarian relief Standard Operating Procedure (SOP), such as Army Special Operations Forces (SOF), "hit the ground running"; others that lacked doctrinal preparation, such as the Army aviation unit, experienced problems and delay. For example, deployment and logistical resupply problems could have been alleviated if 4-25 Aviation had had an effective SOP. Doctrine at the joint level needs revision and development; unique elements of humanitarian operations, including particular aspects of the joint staff planning process, are lacking. While the Army's capstone Field Manual, *Operations*, (FM 100-5) makes a fair start at addressing doctrinal deficiencies, its guidance for MOOTW is too general, even by FM 100-5 standards. A more detailed procedural system must be developed

that includes a system for dealing with civilian authority restrictions. In short, MOOTW doctrine needs to be an integral part of training.

Force Structure

Early project work suggested that MOOTW would often be manpower intensive. Army involvement in OSA was much too limited to evaluate this statement fully, since it was conducted in a largely rural environment, had little displaced persons movement, and was nonconflictual. Despite these limitations, several lessons can be inferred.

First, a close relationship with the host government, and, more importantly, with NGOs, can dramatically decrease manpower requirements. Additionally, if an indigenous police force or strong governmental representation exists, manpower needed can be significantly reduced. Second, army forces will be required to provide medical care both to joint forces and to the indigenous population. In this particular operation the health of Army forces was unaffected by rendering medical aid to the local populace. Further, problems and shortfalls also were identified in logistics and communications. The concept of "Sea Basing" provides challenges to the Army, as well.

The lack of/destruction of infrastructure prompted U.S. involvement in the first place. In a nonconflictual environment, the U.S. military easily overcame these obstacles. However, in a conflictual environment, or if massive U.S. forces were involved, the result could have been different.

In summary, OSA was a small-scale operation that took place in a (mainly) rural, nonconflictual environment. Thus, conclusions on the validity of implications suggested by rapid urbanization and population growth are limited. Nonetheless, OSA serves as a useful example of the kinds of joint and combined operations short of war in which the U.S. Army can be expected to participate in the future, and lessons from this operation are relevant to other kinds of MOOTW in the less-developed world.

Acknowledgments

The author gratefully acknowledges the assistance received in the research and preparation of this document. Colonel John J. Sullivan, USMC, Naval War College, provided a valuable report. MAJ Mark Haselton, Executive Officer of the 1st Special Forces Battalion, 1st Special Forces group (Airborne), provided firsthand knowledge of SOF operations in Bangladesh. Special thanks go to Jennifer Taw for her insights, encouragement, and guidance. The author alone is responsible for any errors.

Abbreviations and Acronyms

AAR	After Action Report
AID	Agency for International Development
ATF	Amphibious Task Force
C ²	Command and Control
CARE	Cooperative American Relief Everywhere
CAS3	Combined Arms and Services Staff School (Army)
CGSC	Command and General Staff College
CINCPAC	Commander in Chief, United States Pacific Command
CJTF	Contingency Joint Task Force
CONUS	Continental United States
DART	Damage Assistance Relief Team
DP	Displaced Persons
FM	Field Manual
GOB	Government of Bangladesh
GPS	Global Positioning System
HQ	Headquarters
IDP	Internally Displaced Persons
JTF	Joint Task Force
JOG	Joint Operations Graphic
LCAC	Landing Craft Air Cushioned
MAGTF	Marine Air Ground Task Force
MCLLS	Marine Corps Lessons Learned System
MEB	Marine Expeditionary Brigade
MEDCAP	Medical/Dental Civic Action Projects
MEF	Marine Expeditionary Force
MIL	Military
MOOTW	Military Operations Other Than War
MOUT	Military Operations in Urban Terrain
NEPMU	Navy Environmental and Preventive Medicine Unit
NGO	Non-Governmental Organization
OIC	Officer in Charge
OPCON	Operational Control
OSA	Operation Sea Angel
ROE	Rules of Engagement
ROWPU	Reverse Osmosis Water Purification Unit

SF	Special Forces
SFG	Special Forces Group
SOF	Special Operations Forces
SOP	Standard Operating Procedure
UHF	Ultra-High Frequency
USARPAC	United States Army, Pacific
USMC	United States Marine Corps
USN	United States Navy
VHF	Very High Frequency
XO	Executive Officer

1. Introduction

What is now changing, in northern Iraq and Bangladesh, is sending the military to provide some relief directly. When the military gets a mission, it's awesome. They have orders, command, resources, planes. Others wouldn't do it as fast.

—Al Panico,
Director of International Relief
and Development, American Red Cross¹

On 29–30 April 1991, Bangladesh was struck by Cyclone Marian. The resulting devastation was beyond what the new Bangladesh government could handle alone in the short term, prompting several countries, including the United States, to respond with financial support. However, the United States also provided immediate practical assistance in emergency and short-term recovery operations by establishing a Contingency Joint Task Force (CJTF) and launching Operation Sea Angel (OSA). The bulk of CJTF forces were from Amphibious Group 3 and the 5th Marine Expeditionary Brigade (5th MEB), enroute home from the Persian Gulf, supplemented by Army and Air Force elements.

Operation Sea Angel (11 May–13 June 1991) proved to be unique in several respects. It was almost entirely sea-based, with no more than 500 service members on shore at night. It was conducted in a benign environment; no weapons were carried by U.S. forces, except for some sidearms carried by guards of cryptographic materials. It was also the first time that a Marine Air Ground Task Force (MAGTF) was used as a joint task force nucleus.² Finally, a unique, effective command and control (C²) structure was used to synchronize the efforts of U.S., British, Bangladeshi, and Japanese non-governmental organizations (NGOs), and other organizations such as the U.S. Agency for International Development (AID) and a Chinese assistance element.

¹David Binder, "First U.S. Troops Arrive In Bangladesh to Begin Large-Scale Relief Effort," *The New York Times International*, 13 May 1991, p. A3.

²From LtCol. Gary W. Anderson, USMC, "Operation Sea Angel: A Retrospective On The 1991 Humanitarian Relief Operation In Bangladesh," Strategy and Campaign Department Report 1-92, Center for Naval Warfare Studies, Naval War College, 15 January 1992, p. 1. LtCol. Anderson also asserts that the operation was sea-based primarily because "there was no adequate local infrastructure available capable of accepting and sustaining a technologically sophisticated U.S. presence." This is a questionable conclusion; as discussed later in the paper, the sea basing appears to have had political motivations rather than practical ones.

This case study will examine various aspects of the operation, identify and discuss lessons learned, and present possible implications for future U.S. Army military operations other than war.

Description of the Cyclone

Bangladesh has traditionally been one of nature's favorite targets: tornadoes, cyclones, and monsoons occur with alarming regularity. Bangladesh contains the world's second largest deltaic region (exceeded only by the Amazon Basin). The confluence of the Ganges, Brahmaputra, and Magma rivers, coupled with runoff from the Himalayas, deposits nearly 45 million tons of silt annually. This tremendously fertile region supports over 120 million people.³ Damage from natural disasters is often severe, mainly due to the low terrain, the high density of the population, shoddy housing, and a poorly developed infrastructure (especially substandard or nonexistent roads, a lack of cyclone shelters, and limited communication assets). Environmental devastation, especially deforestation in the Himalayas, exacerbates the problem. Simultaneous processes of soil erosion and accretion result in the rise of the sea bed in the Ganges estuary (see Figure 1) and the emergence of new islands; channels constantly change. These factors all impact tidal surge intensity, greatly increasing the danger of flooding.⁴

Cyclone Marian (also called Tropical Cyclone 02B) struck 110 miles off the southeast coast of Bangladesh on the evening of 29 April and the morning of 30 April, 1991. Winds were in excess of 235 KM/HR and tidal surges were between 15 and 20 feet. As illustrated on the map (Figure 1), the area between Chittagong and Cox's Bazar was particularly hard hit. Several islands, many only a few feet above sea level, were inundated. Especially devastated were the islands of Sandwip, Hatia, Bhola, and Manpura. The Bangladesh government estimates that 139,000 people died and millions were left homeless. Over 1 million cattle (essential for pulling plows and providing transportation) died.⁵ Crops on 74,000 acres of land were destroyed, another 300,000 acres of cropland were

³Lieutenant General H. C. Stackpole, III, USMC, "Angels From the Sea," *Proceedings/Naval Review* 1992, Volume 118/5/1,071, May 1992, p. 110. Note that Lieutenant General Stackpole was a Major General at the time of OSA; throughout this report his current rank is used.

⁴Captain Shafiq-ur-Rahman, Bangladesh Navy, "Disaster in Bangladesh: A Multinational Relief Effort," *Naval War College Review*, Vol. XLV, Winter 1993, pp. 59-60. The author also points out that from 1891 to 1988, more than 175 severe cyclonic storms originated in the Bay of Bengal (although not all affected Bangladesh).

⁵Stackpole, p. 110.

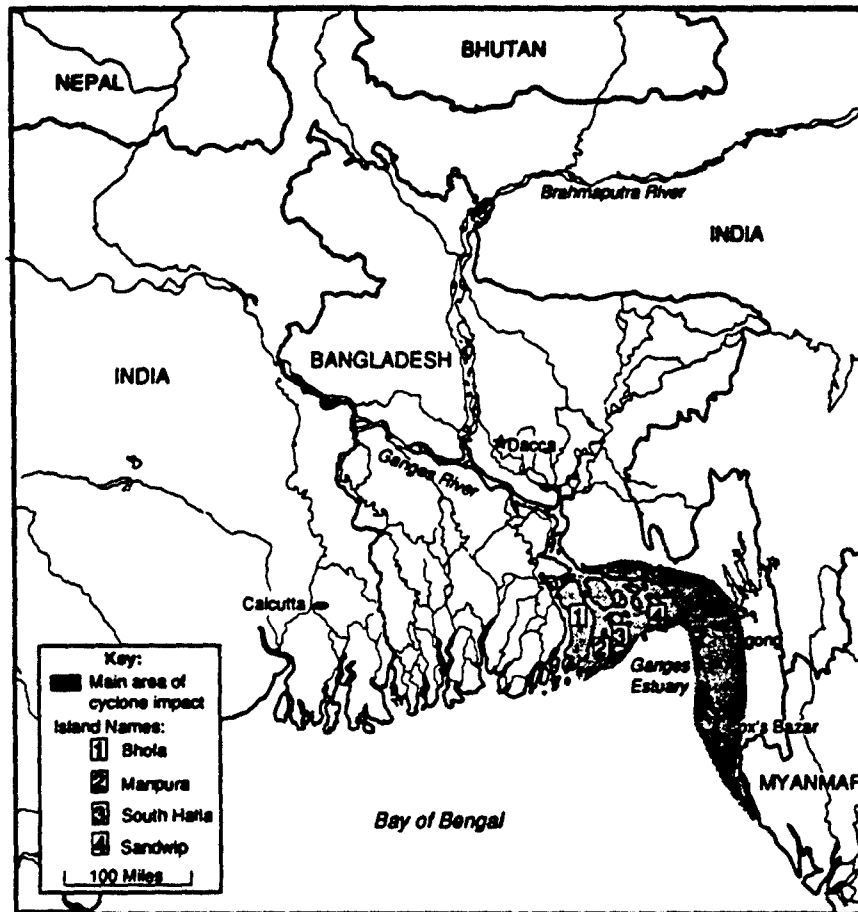


Figure 1—Map of Bangladesh

damaged,⁶ and fields were covered with salt water. Drinking water (consisting primarily of well water) was corrupted.

Infrastructure destruction was widespread. Over 1 million homes were destroyed or damaged. Bangladesh's major port, Chittagong, was severely damaged and was nonoperational for several days. Damaged/sunken ships, many of them belonging to the Bangladeshi Navy, blocked the port. An embankment around Chittagong stretching 17 KM in length failed in the area of

⁶A. Bilski and Shamsul Alam Belal, "Waves of Destruction: Bangladesh Copes With Disaster," *McClean's*, 104:42, May 20, 1991, p. 42.

the airport and the water supply was disrupted.⁷ Several key bridges, including the main bridge over the Karnaphuli River north of Chittagong, were washed out or otherwise damaged.⁸ Throughout the storm-affected area, sea walls collapsed, jetties disappeared, dirt roads were flooded, buildings were ravaged, and the transportation infrastructure was virtually destroyed.

It should be noted that an effective cyclone *warning* system (but not a cyclone *protection* system) was in place and functioned well. Although many Bangladesh citizens were evacuated before the cyclone struck, Bangladesh had only 6 percent of the total number of shelters it needed, and many residents simply had nowhere to go. Others had no way to get to the mainland.

The Bangladesh Government

For the government of Bangladesh (GOB), the cyclone could not have come at a worse time. After years of military rule, Bangladesh had installed its first civilian government, under Prime Minister Zia, less than two months earlier. Besides having a young, inexperienced government, Bangladesh had to deal with the legacies of the military's rule and the limits placed upon one of the poorest countries in the less-developed world.

Several key problems faced the government in reacting to the cyclone. Adequate emergency relief supplies did exist either in government storage houses, called "Go Downs," or in storehouses owned by the non-governmental organizations, especially Cooperative American Relief Everywhere (CARE) and the Red Crescent. The problem, however, was one of distribution.⁹ The combination of a poorly developed infrastructure and the havoc wreaked by the cyclone effectively cut off Chittagong for several days. Then, once relief supplies were brought to Chittagong, the Bangladesh government had virtually no means for distribution to the islands, where the need for assistance was great. The Bangladesh Navy was restricted due to Command and Control (C²) problems and the blockages in the port of Chittagong. Also, the government had only six functioning helicopters available to deliver humanitarian assistance. Much of the target area was still under water.

⁷Civil Affairs Assessment Team Report, "Operation Sea Angel: Bangladesh Disaster Relief," undated, pages not numbered, Tab D. The report also implies that the roads around Chittagong were made passable fairly quickly, although trips often took up to four times as long as normal due to the destruction of the bridges.

⁸Memorandum from LCDR Frederick K. Gerheiser, CEC, USN/JTF J4 to Commanding General, JTF SEA ANGEL, Subject: *Bangladesh Cyclone Engineer Damage Assessment Report*, dated 23 May 1991, pages not numbered, paragraph 3.

⁹LtCol. Anderson, p. 10.

In addition, the government was hindered by the lack of cooperation from NGOs and between the various departments within the government. Because of memories of martial law, NGOs were wary of the Bangladesh military; further, the government bureaucrats that controlled the grain in the Go Downs "were reluctant to hand over control to other agencies."¹⁰

Finally, although the Bangladesh government was desperate for foreign assistance, it had to avoid the appearance of undue weakness or incompetence. As discussed later, this issue was arguably the single most important determinant of how the CJTF conducted OSA.

¹⁰*Ibid.*, pp. 10-11.

2. Operation Sea Angel

Sequence of Events

On 10 May 1991, the U.S. President directed that the U.S. military provide humanitarian assistance to Bangladesh. A Contingency Joint Task Force (CJTF) was immediately formed under the command of Lieutenant General Henry C. Stackpole, commander of the III Marine Expeditionary Force (MEF) based in Okinawa. A U.S. Navy Amphibious Task Force (ATF) that contained the 5th MEB returning from the Persian Gulf War was redirected to Bangladesh; Operation Sea Angel had begun.¹

On 12 May, LtGen. Stackpole arrived in Dhaka (often written as "Dacca") with a small forward element. LtGen. Stackpole immediately began an assessment of the situation, resulting in identification of three critical concerns. First, the intelligence needed to adequately assess the situation was unavailable. Second, the problem of distribution quickly became apparent, and was considered the most pressing by the Joint Task Force (JTF) staff. Finally, the issue of Bangladeshi sovereignty required that the Bangladesh government be clearly viewed by the populace as being "in charge."² LtGen. Stackpole requested additional forces, especially aviation support, from the various U.S. military branches. Special Operations Forces (SOF) from Okinawa were also requested; they responded by quickly dispatching a Damage Assistance Relief Team (DART) from Okinawa, which arrived on 12 May.

The distribution problem clearly was the most critical task. There were two aspects: first, supplies had to be moved from Dhaka to Chittagong; second, these supplies then had to be moved to the devastated islands. The decision was made to fly supplies by fixed wing to Chittagong, then via helicopter to the islands.³ The MC-130 aircraft that brought the special operations forces provided the fixed

¹Operation Sea Angel was originally named Operation PRODUCTIVE EFFORT. The name was changed, however, when a Bangladesh citizen, upon spotting arriving U.S. relief forces approaching from the water, allegedly called them "Angels from the sea." Regardless of whether this incident ever occurred, news of it spread, resulting in the name change.

²As described earlier in the section on the GOB, the newly elected GOB believed that it had to be perceived as competent by the populace. According to LtCol. Anderson (p. 36), "humanitarian relief operations require that the host nation take the lead in setting priorities and overall policy. The General and Ambassador Milam [the United States Ambassador to Bangladesh] made this the guiding principle throughout the operation."

³LtCol. Anderson, p. 12.

wing capability until Air Force C-130s arrived. A JTF augmentation cell (including five Blackhawk helicopters) was dispatched from Hawaii. The 5th MEB and its 28 helicopters were due to arrive on 15 May.⁴

LtGen. Stackpole proceeded to develop a Campaign Plan consisting of three phases. After initial survey, liaison, and reconnaissance, *Phase I* (one week) entailed initial stabilization of the situation (delivery of food, water, and medicine to reduce loss of life). *Phase II* (two weeks) entailed restoring the situation to the point where the Bangladesh government could take control of relief efforts. *Phase III* (two weeks) was the consolidation phase in which the Task Force would depart and the Bangladesh government would take complete control of all relief efforts.⁵

Finally, LtGen. Stackpole decided to split the CJTF staff between Dhaka and Chittagong. The CJTF Main would remain in Dhaka and coordinate movement of relief supplies via fixed wing aircraft to Chittagong. Additionally, members of the CJTF Main would meet daily with members of the GOB crisis action cell, NGOs, and the National Committee (a GOB-led ad hoc organization that set priorities).⁶ The CJTF Forward would be established in Chittagong, and would be responsible for direct delivery of humanitarian aid, mostly via rotary wing and water craft. The C² system is described in detail later in this report. Relief efforts began in earnest on 16 May.

The relief effort truly was an international operation. Besides the indigenous GOB forces and the international and local NGOs, several countries participated. The United Kingdom sent a supply ship with four helicopters. The Japanese government sent two helicopters. India, Pakistan, and China also provided assistance.

LtGen. Stackpole arrived on 12 May with his small CJTF element. Army SOF DARTs arrived later that day. (A complete listing of U.S. forces can be found in Appendix A.) On 13 May, five UH-60 Blackhawk helicopters arrived from Hawaii, along with a Navy Environmental and Preventive Medicine Unit. Other joint assets continued to flow into the area, as required by LtGen. Stackpole.⁷ Fifteen soldiers of B Company, 84th Engineer Battalion, already deployed to Bangladesh to construct schools, were diverted and arrived at Chittagong on 9

⁴Ibid., p. 12.

⁵LtGen. Stackpole, p. 114.

⁶LtCol. Anderson, p. 17. He also notes that the National Committee attendees included U.S. representatives from the CJTF and the Agency for International Development (AID), GOB military, GOB civil agencies, CARE Red Crescent, and other smaller NGOs.

⁷Civil Affairs Assessment Team Report.

May (before the arrival of the CJTF). The bulk of U.S. forces were from an Amphibious Task Force (ATF) consisting of the 4,600 Marines of the 5th MEB, 3,000 sailors of Amphibious Group 3, and 28 helicopters. The MEB also brought with them four Landing Craft Air Cushioned (LCAC) vehicles, which proved invaluable in delivering aid to the islands.

Army Forces Involved

The three major Army elements involved were the SOF from the 1st Battalion, 1st Special Forces Group A based in Okinawa, the five UH-60 helicopters and support personnel from the 4-25 Aviation Regiment in Hawaii, and the 15 soldiers from B Company, 84th Engineer Battalion (C) (H), Hawaii, who were in Bangladesh on EXERCISE BAKER CARRIAGE II.

DARTs from 1/1 SFG (A) proved invaluable. Their deployment was rapid and flawless, mainly due to a habitual relationship established with Air Force counterparts on Okinawa. Their mission statement from LtGen. Stackpole was to "conduct an area assessment of the affected area, establish secure communications between the outlying areas, the relief center in Chittagong and Task Force HQ in Dhaka. Make contact with the local military on site, establish landing zones for helicopter relief shipments, assist in the security of the landing zone, render immediate medical assistance commensurate with our capabilities and provide area intelligence to gauge the effectiveness of the relief effort."⁸

The SOF were very successful. They established communications that were used by the CJTF to maintain contact with subordinate elements, rapidly assessed specific needs of the areas they were operating in, and later evaluated when the various phases of the campaign plan were completed, since the phases terminated at different times in different areas.⁹ Their role in securing the landing zones was limited, however; hired security and Bengali military, not SOF, secured the landing zones. The DARTs operated mainly in semirural areas

⁸From written response of MAJ Mark Haselton to MAJ Paul McCarthy, March 16, 1993. MAJ Haselton, presently the Executive Officer (XO) of 1/1 SFG (A), led the Army SOF team that deployed to Bangladesh. This mission statement was verbally issued to him by LtGen. Stackpole. According to MAJ Haselton, this mission statement was modified several times "to take into account the realities of the situation and to support follow-on operations." He listed his duties as force commander as the following: develop a reconnaissance plan, establish priority of effort, coordinate with NGOs for additional relief supplies, conduct resupply operations for deployed detachments, conduct daily spot report briefings with the J2/J3, report locations of population concentrations, monitor distribution of relief supplies, and establish new landing zones.

⁹Ibid. There appear to have been clear conclusions to Phases I and II. Most documents reviewed expressed problems with identifying the status of Phase III (e.g., organizations were unsure concerning which stage of the operation they were in at any given time and were equally unclear as to when it "ended").

on the coast and islands and worked closely with elements of the Bengali 24th Division, which had been on relief duty since the cyclone struck. They were well received by the local civilian population.¹⁰

Another major Army element comprised the 90 personnel and five helicopters from the 4-25 Aviation Regiment based in Hawaii. The element was alerted on 9 May, arrived in Dhaka on 13 May, and spent two days assembling the aircraft and receiving briefings and country orientations. On 15 May the detachment deployed to Chittagong. During the length of its deployment, the unit flew 89 percent of its 430 flying hours in support of the relief effort and distributed 891.5 tons of humanitarian supplies and 107.5 tons of military equipment.¹¹ Their mission can be characterized as highly successful. To illustrate, 4-25 Aviation Regiment aircraft moved over 50 percent of the total tonnage flown by *all* helicopters in OSA.

The last major Army element comprised the engineers from the 84th Engineer Battalion (Combat)(Heavy). At the time of the cyclone, soldiers from 2d Platoon, B Company were deployed to Mymensingh, Bangladesh, constructing schools on EXERCISE BAKER CARRIAGE II. Since Mymensingh was not hit by the cyclone, 15 soldiers were sent to Chittagong to assist in relief efforts. On 3 May, the Officer In Charge (OIC) of EXERCISE BAKER CARRIAGE II (1LT Silverman) traveled with the U.S. Defense Attaché (LTC Dunn) on a tour to evaluate damage caused by the cyclone. The enlisted soldiers arrived in Chittagong on 9 May, with the initial mission of helping rebuild the airport. However, due to unavailability of material, they sat idle until 12 May. On 15 May, two engineer officers from the parent unit (the Battalion Commander and B Company Commander) arrived as part of a routine inspection relating to EXERCISE BAKER CARRIAGE II and were assigned to the CJTF.¹² The engineers remained in Bangladesh until 28 May.

Unfortunately, the Army engineer assets appear to have been underutilized, mostly due to a lack of construction materials (note also that the unit did not

¹⁰MAJ Haselton recounts that where hostility existed, it often occurred when it became apparent that the local Bengali military commander was hoarding food for his personnel. He stated that this problem was alleviated when civil authorities were notified and took charge of the relief effort. He believes that these cases, few and far between, had one positive aspect: when the civilian government fixed the problem, they enhanced their own credibility with the local populace.

¹¹From Commander, Army Forces Bangladesh, *Operation Sea Angel After Action Report*, 4 June 1991, Chittagong, Bangladesh, EXECUTIVE SUMMARY.

¹²84th Engineer Battalion's Participation in Combined Joint Task Force "Sea Angel" (Cyclone Relief in Chittagong, Bangladesh), 84th Engineer Battalion (Combat)(Heavy), Schofield Barracks, Hawaii, 5 June 1991, paragraph 4.

have any of its heavy engineer equipment).¹³ Upon arrival of the task force, the engineers were, according to their After Action Report (AAR), "viewed as glorified janitors . . . were asked to replace windows, demolish and move wooden crates. Initially very little was done to help the relief effort."¹⁴ Eventually, they contributed by building/cleaning tube wells and conducting reconnaissance. The tone of their AAR certainly does not suggest satisfaction with the way they were employed.

¹³By 23 May, the problem of construction material was still significant. Most project material had to be purchased from other countries. Corrugated metal culverts, timber, cement, and gravel were in very short supply. Read-Mix concrete was not readily available, and heavy equipment was extremely limited. From memorandum from LCDR Frederick K. Gerheiser, CEC, USN/JTF J4 to Commanding General, JTF SEA ANGEL, Subject: *Bangladesh Cyclone Engineer Damage Assessment Report*, dated 23 May 1991, pages not numbered, paragraph 5.

¹⁴84th Engineer Battalion's Participation in Combined Joint Task Force "Sea Angel" (Cyclone Relief in Chittagong, Bangladesh), 84th Engineer Battalion (Combat)(Heavy), Schofield Barracks, Hawaii, 5 June 1991, paragraph 4.

3. Dimensions of Comparison

Activate and deploy a JTF command element by MAC airlift to Dhaka, Bangladesh. Upon arrival, support the U.S. ambassador and USCINCPAC by providing Command, Control, and Coordination of the U.S. military forces supporting humanitarian assistance to the Government of Bangladesh.

Mission Statement of CJTF¹

The CJTF was successful in completion of its assigned mission. The unique aspects of OSA, the methods the CJTF used to conduct operations, and the problem areas encountered are described and analyzed in this section.

Command and Control (C²)

A C² relationship existed internally within the CJTF; among the CJTF, the GOB, and the NGOs; and between Dhaka and Chittagong.

The C² relationship established for the CJTF was based on the philosophy of Admiral Charles Larson, Commander-in-Chief, United States Pacific Command (CINCPAC).² Admiral Larson believed that most of Pacific Command's contingencies would occur outside subunified command areas of responsibility, and would therefore be handled by a Contingency Joint Task Force. He also believed that the CJTF should be built around existing commanders and their staffs (a "Two-Tiered" C² system), with members of his staff to augment them (a "joint augmentation cell"). Although the concept was not fully developed when the cyclone struck, it was implemented for OSA.³ LtGen. Stackpole was appointed Commander, CJTF, and a small initial package was deployed. Anderson points out that this type of small, self-sufficient package is especially

¹Civil Affairs Assessment Team Report, *Executive Summary*. This is a slight paraphrase of the actual quote.

²Comments in this section relating to the C² mechanisms within the CJTF are taken from LtCol. Anderson, Chapter 2.

³LtCol. Anderson points out (pages 22-23) that the III MEF was highly experienced, and had a large percentage of former commanders. LtGen. Stackpole was experienced in the command and in joint operations. Finally, the joint augmentation cell had been working and training together for some time.

suitable where local conditions are uncertain and a poor infrastructure exists; both of these pertained to Bangladesh.⁴

LtGen. Stackpole was able to add or delete units fairly rapidly, time and effort were not wasted bringing in unnecessary troops and equipment, and the chain of command (at least at the higher levels) was clearly defined. The Two-Tiered system is a CINCPAC initiative, and is not universally accepted. Army training should plan, however, for a likely use of this system in contingency environments. Given the low density of Army forces in Bangladesh, it is difficult to develop conclusions relating to the ability of Army forces to function in the Two-Tiered system. Although the aviation and SOF units functioned well, the engineer unit appeared to have some difficulty. The commander of the 84th Engineer Battalion (C)(H) stated that "The JTF staff came unprepared both in organization and field experience to deal with the disaster. The JTF staff did not have a plan, schedule, nor organization. It was too rank heavy and lacked troops."⁵ However, these are isolated concerns and likely reflect the frustrations that occur with any crisis, coupled with the engineer's perception of misutilization. The Two-Tiered system appears to have worked well for all joint forces (once the initial "bugs" of the new system were resolved) and the command and control aspect of the system worked exceptionally well.

The issue of the importance of prior training became very clear. LtCol. Anderson rightly points out that "the nature of contingency environments is such that a minimum amount of time can be devoted to staff orientation and shake down. The CJTF must be prepared to hit the ground running immediately."⁶ The crisis action system used in contingency operations is very similar to the planning process used by Army and Marine staffs, but Navy/Air Force staffs are not necessarily trained in these techniques. Since Army staff officers are taught these techniques in most Army schools⁷ and exercise them regularly, Army proficiency in technique is likely sufficient; Army involvement in joint training is clearly a higher priority.

⁴Ibid., p. 27.

⁵After Action Report for Bangladesh Cyclone Relief, Headquarters, 84th Engineer Battalion (Combat)(Heavy), Schofield Barracks, Hawaii, 6 June 1991, cover memorandum.

⁶LtCol. Anderson, p. 29. He believes that the smooth integration of OSA staff elements was due to a combination of fortunate circumstances, and should not be viewed as an indicator that all staffs are prepared to function as well. He relates that virtually all staff members he interviewed stated that they would have benefited greatly from joint training between the nucleus staff and the augmentees.

⁷The planning system is taught at the Army's Combined Arms and Services Staff School (CAS3) in great detail. It is exercised regularly in Line Units and also is taught at the Army's Command and General Staff College (CGSC).

The C² system developed among the CJTF, the GOB, and the NGOs was primarily the result of the intense desire of the U.S. government (1) to ensure that the GOB was seen clearly as being both effective and totally "in charge"; (2) to avoid any lengthy commitments that would necessitate long-term deployment of American military forces (e.g., to repair infrastructure); and (3) to maximize the disaster relief process. The Bangladesh Prime Minister formed a relief coordinating committee that met at the Presidential Secretariat on 15 May to "facilitate, coordinate, and prioritize relief supply deliveries."⁸ Members included U.S. representatives (Embassy, CJTF, AID), GOB representatives, and NGOs. Although the GOB consulted with all of these agencies, they made the final decisions on priorities and resolved any conflicting requirements. The CJTF provided transportation for distributing aid, provided advice and technical expertise, and supplied a limited amount of equipment. The GOB provided the supplies (along with the NGOs), delivered them to U.S. forces, and determined where and when the CJTF would deliver the supplies to the populace. The committees at the national and local levels met daily. This process appears to have worked fairly well, although communications problems and the entrenched GOB bureaucracy did cause some difficulties. It did fulfill the three purposes outlined earlier, especially by clearly identifying the young Bangladesh government as being the decisionmaker.

The two important cities were Dhaka, the capital, and Chittagong, the country's major port. As the center of government, Dhaka had the administrative structure and bureaucracy needed to organize and direct relief efforts. Also, it was unaffected by the cyclone. Chittagong was directly impacted by the cyclone, but had infrastructure important to the relief effort (the port, airfield) that, while damaged, could be made partially usable in a short time. It was also, obviously, much closer to the disaster areas, an important factor given the limited transportation assets available and the poor or nonexistent communications between Dhaka and the devastated areas. Thus, as mentioned earlier, the CJTF split operations between the capital of Dhaka (the CJTF Main) and the major port of Chittagong (the CJTF Forward). LtGen. Stackpole rotated between the two. The Dhaka cell was primarily responsible for coordinating with the national committee and ensuring that aid and supplies were moved via MC-130 or C-130 aircraft to Chittagong. At Chittagong, the supplies were delivered to the populace primarily via helicopter, Landing Craft Air Cushioned (LCAC), or rubber boats. In Chittagong, the GOB coordination committee set specific priorities for delivery of aid, again in coordination with the agencies mentioned

⁸From the 84th Airlift Division History, 1 Jan 91-1 Apr 92, extract provided by Headquarters, Air Mobility Command, Department of the Air Force, p. 95.

earlier. Figure 2 illustrates this process. The Japanese, Pakistani, and British governments subordinated forces to the CJTF (Operational Control or OPCON). India and China, while not officially OPCON to the CJTF, worked closely with the CJTF Forward in Chittagong to deliver aid.

Generally, this method of operation worked well. However, several problem areas were noted. The staffs of the CJTF Main and Forward cells often had conflicting priorities. The CJTF, the GOB, the NGOs, and the embassy had (often competing) agendas; this problem was exacerbated by frequent (technical) communications failures, competition between the GOB and the NGOs, and a lack of intelligence that resulted in staffs sometimes working at cross purposes.⁹ Also, there were deviations from the doctrinal Main-Forward relationships of the CJTF staff. Doctrinally, the Forward should be an extension of the Main. However, the CJTF Forward became more of a subordinate unit (and hence a *subordinate* staff) of the Main, rather "than an extension to increase the JTF

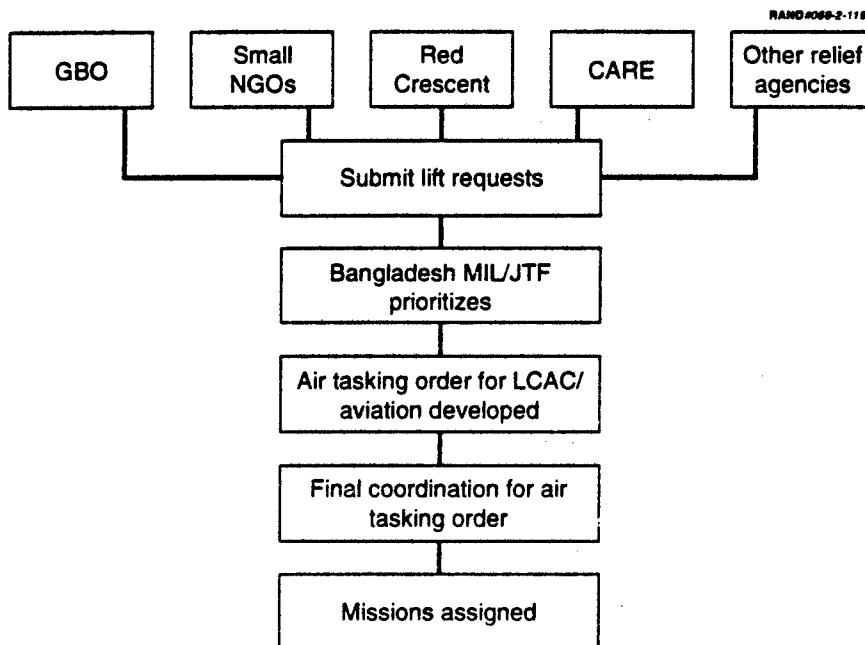


Figure 2—Chittagong Model¹⁰

⁹From written response of MAJ Mark Haselton to MAJ Paul McCarthy, 19 March 1993.

¹⁰LtCol. Anderson, Figure 11, p. 81. Slightly modified for clarity.

Commander's span of control."¹¹ This led to the Main attempting to "direct specific missions for the Forward to accomplish without on-the-ground-assessments and coordination."¹²

A novel element of OSA that has potentially significant implications for the Army was the use of sea basing. The primary reasons for sea basing included the intense desire of the U.S. government to maintain a minimum "footprint" ashore and the ready availability of the Amphibious Task Force. As stated earlier, it was considered very important that the U.S. not violate the sovereignty of Bangladesh and that it should ensure that the GOB was viewed by the populace as being in control of relief efforts. A disinformation campaign was begun early by dissidents stating that the primary purpose for the U.S. sending forces was to establish a permanent base in Bangladesh. The CJTF was careful not to allow this type of rumor to spread.¹³ LtGen. Stackpole recounts how a Bangladesh minister told him that the GOB was initially not sure whether the arrival of several thousand U.S. forces would be an asset or liability; because of their sea basing, however, they were viewed as an asset.¹⁴ Other reasons for sea basing included the lack of infrastructure; a desire to avoid cultural conflicts; minimization of health risks to U.S. personnel; and minimization of the threat of terrorist attack.¹⁵ Each night, troops were sent back to ships. No night operations were conducted, and no more than 500 troops were left on shore at night. Sea basing worked very well, and was entirely suited to this operation. A discussion of its implications for future Army operations can be found in Section 4.

A key element in the success of OSA was the ability of the CJTF to work well with the NGOs. The NGOs proved to be highly efficient organizations, adept at identifying needs and procuring needed supplies. What they lacked was an ability to transport supplies: they also were wary of the GOB. In Bangladesh, CARE "ran a very extensive program of infrastructure construction, job training for women, agriculture assistance and a host of other programs . . . if the road and ferry infrastructure had not been destroyed, CARE and the Red Crescent would have been largely capable of handling relief efforts with organic and

¹¹From written response of MAJ Mark Haselton to MAJ Paul McCarthy, 22 March 1993.

¹²From Commander, Army Forces Bangladesh, *Operation Sea Angel After Action Report*, 4 June 1991, Chittagong, Bangladesh, pages not numbered. The same section also states that "The JTF staff rotated in and out of Chittagong much like a drill [Sergeant] at Reserve Summer Camp."

¹³LtGen. Stackpole, p. 112.

¹⁴*Ibid.*, p. 114.

¹⁵LtCol. Anderson, pp. 45-46. In a statement echoed by many regarding OPERATION RESTORE HOPE, Anderson also suggests that sea basing was an "excellent opportunity for [the] Navy/Marine Corps team to practice amphibious techniques in a peacetime environment."

contract assets as they had built up adequate supplies . . . for just such an eventuality."¹⁶ In Bangladesh, they relied heavily on U.S. transportation and communication assets, along with the role of the CJTF as the "honest broker" or "mediator" between them and the GOB. Rapport and cooperation with the CJTF appear to have been excellent.

One final word on command, control, and cooperation. Although the relationship between the U.S. Ambassador and the CJTF was excellent, the relationship between the U.S. Agency for International Development (AID) and the CJTF was strained. The Army engineer AAR expressed dissatisfaction with the assistance rendered by AID in obtaining construction material. LtGen. Stackpole states that the CJTF had "one hell of a time" selling itself to AID, "which thought we would come in ham-fisted and destroy everything they had set up."¹⁷ The U.S. Defense Attaché at the embassy can go a long way to alleviate these fears. AID must be integrated into the military planning process early, and the insights and "on the ground" experience of its staff must be considered.

Deployment Packages

The two Army elements that were specifically deployed to support OSA were the SOF and the Aviation element. The habitual relationship between the SOF and the Air Force on Okinawa enabled a rapid, efficient deployment. Luckily, LTC(P) Mark Boyatt, then commander of 1-1 SFG(A), had anticipated this type of mission and had directed the development of a Standard Operating Procedure (SOP) that was in place when OSA began.¹⁸ The SOF deployed with a complete package, including communications. Although authorized for the Battalion, motorcycles were not assigned yet; the unit borrowed several from another unit.

The element from the 4-25 Aviation Regiment arrived in two phases. The five aircraft and 60 personnel departed first, followed two days later by 13 additional personnel and the remaining equipment needed. A review of the 4-25 Aviation Regiment's AAR indicates three major problem areas. First, resupply lines were not established prior to deployment, resulting in excessive delays for spare parts. In fact, 25 percent of the parts requested never arrived. Part of the problem was with delays caused by the CJTF, but the AAR recommends that "Component commands must establish, monitor and quality control the resupply system for

¹⁶Ibid., pp. 39-40.

¹⁷LtGen. Stackpole, p. 116.

¹⁸From written response of MAJ Mark Haselton to MAJ Paul McCarthy, 16 March 1993.

deployed units."¹⁹ This deficiency may have significant implications for Army forces participating in a low density (e.g., small amount of troops and equipment), short duration MOOTW (Military Operations Other Than War). A detailed description of the Army/Joint supply system is beyond the scope of this report; suffice it to say that the solution recommended by the AAR is incomplete. In a low density operation such as OSA, the best that the parent component command could likely do is locate the part and prepare it for shipment; it is unlikely that they could deliver it to the using unit. This problem is symptomatic of a larger problem: The "supply pipeline" for joint operations is not tailored toward MOOTW. This problem was likely exacerbated by the "Two-Tiered C² system," since there appears to have been no pre-existing logistics plan for integrating Army forces. The sea basing of most troops also hindered delivery of supplies.

The second problem that 4-25 Aviation experienced was due to the lack of a specific SOP developed for disaster/humanitarian relief operations. Problems that arose in logistics and communications were not anticipated. The AAR indicates that it was not until the day the unit received its alert notification that it developed load plans and lists of equipment and personnel. "At risk" units must maintain a contingency plan (i.e., SOP) for disaster/humanitarian relief. Note that in the case of 4-25 Aviation, the AAR packet contained a memorandum on a "Generic Disaster Relief Force Package" developed after OSA.²⁰

The final major deployment-related problem experienced by 4-25 Aviation was a lack of information. Much of the problem was due to the almost complete absence of communication in Bangladesh immediately following the cyclone. One document reviewed contained over 53 requests for information concerning intelligence, operations, and logistics.²¹ According to the AAR, only one point of information was answered before the unit departed (and that response was incorrect). The AAR also indicates that airfield conditions, fuel availability, power availability, and maintenance facility information was inaccurate. There is no easy solution to this problem, especially given the amount of infrastructure destroyed and the lack of communications. This situation may not be atypical of future MOOTW. As suggested in Part 1 of the project, Army forces will likely be involved in poor countries with limited infrastructure and poor communications systems (such as Bangladesh). In a conflictual or natural disaster environment, these problems will clearly be exacerbated. Contingency plans developed by

¹⁹Operation Sea Angel After Action Report, Headquarters, 4th Battalion, 25th Aviation Regiment, Schofield Barracks, Hawaii, 10 July 1991, pages not numbered.

²⁰Memorandum from APVG-YZB-PT, *Aviation Disaster Relief Force Package*, 1 August 1991.

²¹Memorandum from APVG-YZB-PT, *Request For Information*, undated.

units (e.g., deployment packages) can mitigate problems. Major headquarters, such as Division, must endeavor to obtain needed information in a timely manner for deploying units. Priority intelligence requirements often can be anticipated, and the information can be obtained in advance for likely deployment areas; at minimum, a standard list of information requirements can be developed and submitted through intelligence channels immediately upon receipt of a deployment Warning Order. Finally, this staff process should be evaluated and exercised in collective training events.

A related problem experienced by the CJTF was a lack of maps. A Marine Corps Lessons Learned System (MCLLS) report states that "the most detailed maps available for use during Sea Angel were 1:250,000 Joint Operations Graphic (JOG) maps. The minimum requirement for helicopter navigation was 1:50,000 or 1:100,000. Maps requested by the ATF did not arrive until just prior to the end of the ATF's participation in Sea Angel.²² The report also points out that there was no information in the Fleet Imagery Support Terminal Pacific Noncombat Evacuation Operation for Bangladesh on the Cox's Bazar airfield, although the field had been built over 30 years earlier. 4-25 Aviation requested ten sets of 1:50,000 maps; they never received any and flew missions on the 1:250,000 JOG maps.²³ Army SOF, however, did arrive with 1:50,000 maps, although it is unclear whether they had them in a basic load or obtained them from CONUS. The Global Positioning System (GPS) functioned very well, but was difficult to obtain and was subject to satellite availability. Again, this indicates that units did not anticipate and were unprepared for deployment.

Population and Infrastructure

The 1991 population of Bangladesh was almost 120,000,000. The country is slightly smaller than Wisconsin, resulting in a population density of 2,255 people per square mile. Most of the population is rural, the urban population accounting for only 14 percent of the total. Although a fertile country with 67 percent arable land (only 2 percent of which has permanent crops), Bangladesh is vulnerable to droughts. Additionally, a lack of infrastructure and flood control mechanisms allow for heavy flooding during the monsoon season and on the islands. These problems are exacerbated by environmental degradation caused by overpopulation and deforestation (-1.1 net annual percent in 1991). Calorie

²²MCLLS Number 61050-54776 (05627), submitted by RLT-5, COL R. A. Grange.

²³From Commander, Army Forces Bangladesh, *Operation Sea Angel After Action Report*, 4 June 1991, Chittagong, Bangladesh, pages not numbered. The AAR also states that the problem was compounded because the CJTF continued to pass map data in 1:50,000 grid coordinates.

consumption per day is less than 2,000, and only 44 percent of the population has access to safe water (just 24 percent in urban areas). The coastal regions and islands are densely populated due to the fertile deltaic region.

The combination of a lack of infrastructure and overpopulation contributed to high casualty rates during and immediately after the cyclone. However, the large population did not significantly hinder relief operations for several reasons. First, a small but significant portion of the population of the affected areas was evacuated to the mainland before the cyclone. Second, the population of the islands, and indeed of the coastal regions, was prevented from moving after the cyclone due to the lack of (or destruction of) infrastructure and transportation. Thus, there was no real problem of displaced persons (DP). Third, much of the aid was delivered by helicopter, and hence not impeded by population movements on the ground. Fourth, the Bangladesh military, hired security, and local leadership did an admirable job of crowd control, preventing looting/rioting when delivery aircraft appeared. Additionally, many of the DPs were organized into work parties to off-load helicopters and improve or build landing zones. Fifth, the NGOs appear to have played a large role in controlling the populace. Finally, the operation was conducted in a nonconflictual environment.

Indeed, it was not overpopulation but the lack of infrastructure that was most significant. Although both the Chittagong and Cox's Bazar airfields were damaged, they were put back into operation quickly. If the Chittagong airfield had been more severely damaged, the relief effort would have suffered tremendously, since supplies were delivered to Chittagong from Go Downs and NGO storehouses located in other areas of the country. Available U.S. technology is such, however, that if an airfield exists, it can be made operational rather quickly. The infrastructure problem was largely addressed through the use of sea basing and direct delivery of aid via helicopter; it was the ability of the United States to provide these transportation assets that argued for our involvement from the start. With an external load hookup time of about one minute, helicopters proved very efficient.²⁴

Other U.S. transportation assets also were used, but the lack of infrastructure often reduced their effectiveness. In the Cox's Bazar area, for example, LCACs were of limited use in transporting supplies because the supplies could not be transported from the LCAC landing area to local storage or distribution centers—

²⁴Colonel Donald R. Salvage, "Operation SEA ANGEL: Bangladesh Disaster Relief," *Marine Corps Gazette*, Volume 75, Number 11, November 1991, pp. 94-95.

no transportation assets existed, and roads were destroyed or under water.²⁵ Of course, the impact of the cyclone itself would have been significantly reduced had a more mature infrastructure been in place (e.g., all-weather roads, better engineered coastal embankments, stronger bridges, adequate drainage, deeper wells, and most importantly, cyclone shelters). Although AARs abound with tales of infrastructure shortcomings, the CJTF clearly overcame this austere environment in a fairly straightforward manner; they had the assets and the benefit of a nonconflictual environment to do so.

Communications

Tremendous problems developed concerning communications. Not only did this present C² difficulties, it also hindered assessment and intelligence gathering. Communications had to be maintained with CINCPAC, ships, the two major airfields, the Main and Forward, helicopter landing zone teams, NGOs, the DARTs, and so on. Shortly after LtGen. Stackpole arrived, satellite communications were established with CINCPAC (Hawaii) and III MEF (Okinawa) via a PSC-3 portable satellite system.²⁶ Army SOF proved to be absolutely invaluable. They brought long-range communications equipment and established a functioning net early in the operation (it quickly became overburdened, however). Communications significantly improved with the arrival of the 4th Combat Communications Group on 16 May.

Air-to-ground communications proved to be a significant problem throughout the operation. Marine aircraft did not have a Very High Frequency (VHF) (AM) radio, which many foreign countries (including Bangladesh) use for aircraft control. An attempt was made to use Ultra-High Frequency (UHF) communications, but the indigenous tower personnel would not monitor these radios. Since several agencies were involved in coordinating the relief aircrafts' movements, Marine aircraft often had to travel to three different locations to use the appropriate radio. Army personnel had the MRC-144 radio, which has the capability to remote four radios, allowing them to communicate in four different bands from one site.²⁷ Communications problems were further exacerbated because not all USMC and U.S. Navy communications equipment was compatible. Since communications with United States Army, Pacific (USARPAC)

²⁵MCLLS Number 61050-03893 (05625), submitted by RLT-5, COL R. A. Grange.

²⁶LtCol. Anderson, p. 9. Additionally, the U.S. Embassy was able to provide hard copy (non-voice) communications.

²⁷MCLLS Number 52970-11431 (05641) submitted by HMLA-169, LtCol. Rogers and MCLLS Number 60534-50556 (05634) submitted by MAG-50 S-3, MAJ Hendrickson.

were limited, significant delays were experienced by 4-25 Aviation in obtaining aircraft parts; as mentioned previously, the arrival of the Combat Communications Group helped tremendously. Army SOF complained that Marine units attempted to "appropriate" their communications nets.²⁸

LtGen. Stackpole concluded that communications are so vital in this type of operation that "we can't leave home without the ability to get into the worldwide military command and control system and the ability to use satellite communications."²⁹ During OSA, internal Army communications appear to have been sound. Problems mainly centered around communications to higher headquarters. The Army possesses a complex, technologically sophisticated communications system with extensive assets. In contingency plans, units should identify sources for necessary communications equipment not readily available. Agreements (e.g., Memoranda of Understanding) should be made between commanders so the equipment and operators can be obtained rapidly in case of a short notice deployment. New satellite systems are not likely to be fielded below Division level since satellite links are limited. In a low density operation such as OSA though, obtaining a link would not be a problem and satellite communications capabilities would prove invaluable. Army Corps would provide the bulk of satellite assets to Divisional and Non-Divisional units.

Medical Assistance

The potential for medical disaster in Bangladesh was very real. Thousands of bodies lay unburied. Dehydration was widespread since most fresh water sources (mainly tube wells) had been contaminated by sea water, fecal matter, and corpses; many citizens had diarrhea. There was concern over the threat of mass starvation and cholera. Army medical units did not participate in OSA, but USMC and Navy medical personnel did.

The ATF provided Medical/Dental Civic Action Projects (MEDCAPs). The Navy provided a Navy Environmental and Preventive Medicine Unit (NEPMU 6) from Pearl Harbor (arrived on 13 May). These teams worked closely with the NGOs, who had medical personnel of their own, and GOB personnel. On several occasions, joint aid stations were successfully set up, treating thousands. Local medical personnel often were able to assist in obtaining translators—one of the biggest problems U.S. medical forces experienced. The CJTF also provided Reverse Osmosis Water Purification Units (ROWPUs).

²⁸From written response of MAJ Mark Haselton to MAJ Paul McCarthy, 16 March 1993.

²⁹LtGen. Stackpole, p. 114.

The MEDCAPs focused on direct assistance. They experienced problems in obtaining pediatric medication, but appear to have had sufficient quantities of other medications. They did experience a shortage of nurses, causing doctors to "take time away from diagnosis and treatment in order to fill the gap in nursing care."³⁰ Five physicians and 25 corpsmen augmented medical facilities that already existed in the area most severely damaged, and integration with NGO medical personnel was particularly successful.³¹ MEDCAPs also deployed to the local communities, providing needed medical care and helping to ensure good feelings about the presence of the U.S. military. The NEPMU, with teams specializing in epidemiology, environmental health, microbiology, and entomology, focused on mitigation of the effects and spread of communicable diseases, especially diarrhea.³²

³⁰MCCLS Number 61049-92705 (05624), submitted by RLT-5, COL R. A. Grange. COL Grange recommends that nurses also be "sent to conduct relief operations of this type."

³¹MCCLS Number 61049-65088 (05621), submitted by RLT-5, COL R. A. Grange.

³²David R. Klubes, "Bangladesh Relief Effort," *Navy Medicine*, July-August 1991, p. 11.

4. Assessment, Implications, and Conclusions

Humanitarian assistance operations use DOD personnel, equipment, and supplies to promote human welfare, to reduce pain and suffering, to prevent loss of life or destruction of property from the aftermath of natural or man-made disasters. . . . Disaster relief operations fall within the overall context of humanitarian assistance.

FM 100-5
14 June 1993

Assessment and Implications

In OSA no Military Operations in Urban Terrain (MOUT) were conducted; displaced persons were present, but movements were severely limited; reserve forces were not used extensively; there were no concerns over collateral damage or restrictive rules of engagement (ROE) (weapons were not even carried); and the operation took place in a nonconflictual environment. Nonetheless, several implications can be drawn for future operations affected by population growth, urbanization, and displaced persons.¹

Training. There has long been debate in military circles over the impact on training of participation in MOOTW. In the case of OSA, there was little negative impact on the training of Army forces. Indeed, the operation allowed Army forces to exercise and refine wartime skills. A thorough reading of the AARs from various agencies suggests that the Army's contribution was much more significant than its small presence indicated. The SOP on DART operations published by 1/1 SFG(A) lists DART operations as a special forces collateral activity (a secondary mission) that uses the team members' "*inherent capabilities to perform their primary missions*" (emphasis added).² Therefore, participation in OSA served to train and evaluate aspects of their primary combat missions; Army DARTs performed flawlessly. Army aviators also benefited from their participation in the operation. 4-25 Aviation received valuable flying hours,

¹Note that, mainly, this section discusses issues relating to demographic trends and their possible implications for Army training, doctrine, and force structure. It does not attempt to discuss all lessons learned in OSA.

²APSO-SFI-FSC, 1/1 SFG(A) *Disaster Assistance Relief Team (DART) SOP*, 1 June 1991, ANNEX A, p. 1.

along with the opportunity to refine joint operations skills and fly under adverse conditions (e.g., wrong maps, limited communications). The engineers initially suffered a training deficiency, due to a lack of communications capabilities between Dhaka and Chittagong and initial prioritization to direct delivery of humanitarian aid. The problem was exacerbated by the hostility felt by some engineer elements toward the CJTF. They later exercised wartime skills, however, by helping to repair the Chittagong airfield, move tube wells, and build relief supply storage buildings.

Earlier project work suggested that the Army would be faced with tremendous manpower requirements caused by DPs.³ This case study indicates clearly that NGOs can play a major role in many aspects of humanitarian and disaster relief and can significantly reduce the manpower burdens placed on Army forces. Thus, Army forces should have personnel trained to deal with these organizations. Familiarization studies could be offered at the Army Command and General Staff College and Sergeants Major Academy, or a short course could be developed for "high risk" units. Army engineer and medical personnel could also coordinate selected training activities with NGOs. An extensive training program is not necessary. As suggested earlier, U.S. forces will likely have to work with NGOs to deliver aid. In OSA, Army forces delivered humanitarian aid directly, but also worked closely with NGOs to obtain supplies, select delivery areas, obtain local information, and interact with the populace. The ability to interact effectively with NGOs will be critical in future MOOTW.

Finally, more joint training is in order. The Chairman, Joint Chiefs of Staff Exercise Program (the primary program that provides Army forces the opportunity for joint/combined training) should be expanded to include humanitarian/disaster relief exercises and should exercise the Two-Tiered concept. Staff operations are not fungible at the joint level; the Army's way of doing things is not necessarily anyone else's way.

Doctrine. At the unit level, OSA clearly demonstrated the importance of Standard Operating Procedures for disaster relief/humanitarian assistance. The SOF DART SOP, in place before the operation, proved invaluable. After OSA, lessons learned were incorporated into revised versions. 4-25 Aviation suffered operational degradation due to a lack of effective SOP, which would have helped make the deployment much more efficient and could have helped to alleviate some significant logistical resupply problems.

³See Michael T. Childress and Paul A. McCarthy, *The Implications for the U.S. Army of Demographic Patterns in the Less Developed World: A Documented Briefing*, MR-256-A (forthcoming), RAND.

LtCol Anderson stated that "The [Joint] staff quickly ascertained that very little in the way of joint doctrine existed concerning humanitarian relief operations. Consequently, the staff took an extensive file on OPERATION PROVIDE COMFORT."⁴ Doctrine at Army and Joint levels is insufficient and outdated. Although operations "on the ground" often reflected similar tasks trained during peacetime, staff operations, logistics requirements, and intelligence gathering did not. Often this was due to the *ad hoc* nature of the event, exacerbated by the lack of an extensive support base and staff.

The recently published Army capstone Field Manual, *Operations*, FM 100-5, contains a chapter on MOOTW. The manual states that doctrine for war "complements" that for MOOTW, with modifications required to accommodate different situations. OSA supports this statement. The principles listed in the new FM are sound; OSA clearly validated the principles of Objective, Unity of Effort, and Legitimacy. However, the next step—that of anticipating, defining, and preparing for "different situations"—needs to occur. Doctrinal guidance can be found, to an extent, via the Campaign Plan. A more detailed procedural system needs to be developed; simultaneously, a system for dealing with restrictions placed by civilian authorities (the "fog of politics" to paraphrase Clausewitz) must be instituted. FM 100-5 devotes several chapters to describing the fundamentals, planning, and conducting of Offensive and Defensive Operations, yet devotes only eight pages to MOOTW. The FY 94 Army Posture Statement relates that "the current draft" (now the published FM 100-5) "remains centered on the conduct of warfighting while including operations other than war."⁵ MOOTW doctrine should be an integral part of Army training and needs to be placed on a higher step of the hierarchical doctrinal ladder.

Finally, OSA clearly demonstrated that U.S. forces could be called upon for direct delivery of humanitarian aid. Doctrine should be developed to prepare for this contingency.

Force Structure. Early project work suggested that MOOTW would often be manpower intensive. Army involvement in OSA was much too limited to evaluate this statement fully, since it was conducted in a largely rural environment, had little DP movement, and was nonconflictual. Despite these limitations, several lessons can be inferred.

⁴LtCol. Anderson, p. 8.

⁵Acting Secretary of the Army, John W. Shannon, and General Gordon R. Sullivan, Chief of Staff, U.S. Army, *A Statement on the Posture of the United States Army*, FY94, March 1993, p. 76.

Earlier studies suggested that Army forces likely will be required to provide medical care to DPs. OSA clearly validates this conclusion. Although not disproved, concerns about the negative effects this aid will have on soldier health care and on manpower requirements were not supported. U.S. forces remained very healthy due to preventive inoculation, good sanitation techniques, and a benign, nonconflictual environment. Sea basing may also have played a role. In any case, there was no impact on the health of U.S. forces by diverting medical personnel to help the indigenous population. The number of medical personnel involved remained small, and AARs indicate that the only significant manpower requirements lacking were nurses.

The lack/destruction of infrastructure led to U.S. involvement in the first place. The devastation caused by shoddy homes being destroyed, contaminated water, flooded/washed out roads, poorly built sea walls, and insufficient numbers of adequate cyclone shelters was widespread. Fortunately, sufficient U.S. military resources were available to deliver aid. If this operation had been conducted in a hostile situation, or if massive troop movements were required, the problems facing Army forces would have been enormous. Logistics would have been especially difficult, especially providing fuel and spare parts (Classes II, III, and IX). The potential for these problems leads directly to the possibility that sea basing could have important implications for future Army operations. Marine elements that are sea based are virtually self-contained, and certainly do not have the security problem a land force would have. Additionally, they can be moved into place rapidly. Given the recent events in Somalia, it appears increasingly likely that sea basing will often be an option of first choice for future MOOTW. The Army cannot independently sea base. Presently, however, there are four ships in the Equipment Afloat Prepositioning Program, with plans to expand that number to 15 by FY97. These additional ships will allow prepositioning of up to 2,000,000 square feet of unit equipment, including a significant number of Combat Support and Combat Service Support unit sets.⁶ It appears that these ships will prove to be essential for the Army to continue to be a significant "player" in future MOOTW.

Another force structure issue is communications. OSA clearly indicates that the Army cannot depend on joint forces for communications (and so must bring their own), and that establishing a satellite link is essential. SOF brought and used their own communications, providing essential communications for the CJTF early in the operation. The engineer units had limited communications assets, but their original building mission did not require extensive communications.

⁶Shannon and Sullivan, p. 77.

4-25 Aviation did not bring along enough communications equipment because they were promised by the CJTF that it would be provided. Army units must always take all organic communications equipment with them. Also, in contingency plans, units should identify sources for necessary communications equipment not readily available.

Deploying Army units must have satellite communication capabilities. Portable satellite systems are available, and Army Divisions should be prepared to send assets with deploying units. The larger aspect of this problem is obtaining satellite links, which are limited. In OSA, this was not a problem since it was such a small operation. If the Gulf War had dragged on longer, however, satellite links for OSA would have been very difficult to obtain. This type of future multiple contingency cannot be ruled out. The Army should vigorously pursue development of the "Surrogate Satellite" program, especially the RT-460A and RT-460B surrogate satellite payloads. These systems can provide UHF satellite communications to lower priority users, UHF range extension, and mobile satellite communications.⁷ Additionally, systems such as International Maritime Satellite terminals can assist in communications to CONUS, NGOs, and other civilian agencies.⁸

Conclusions

Results of research and analysis conducted during Task 1 of the MOOTW project can be found in the forthcoming RAND publication MR-256-A, *The Implications for the U.S. Army of Demographic Patterns in the Less Developed World: A Documented Briefing*, by Michael T. Childress and Paul A. McCarthy. MR-256-A reviews demographic trends in the less-developed world, focusing on worldwide population growth, increasing urbanization, and the growing numbers of displaced people.

The study concluded that these trends could have serious implications for the Army. Military operations in urban terrain can be expected to increase, as will urban terrorism. Collateral damage will be a major concern, and along with restrictions placed on the rules of engagement, will result in a significant loss of comparative advantage for U.S. Army forces. Future MOOTW will be manpower intensive. Massive Army forces could be required to pacify urban areas and the Army may be required to take over urban government functions,

⁷ From FY93-94 Initiatives, U.S. Army Signal Center, Battle Command Battle Lab Briefing, undated.

⁸ Bernard Adelsberger, "Help From Above: Satellite Links To Assist Troops," *Army Times*, 21 December 1992, p. 31.

including sanitation and police. Specialists and manpower from reserve forces will be in increasing demand. Army forces will be confronted with large, mobile populations, and will be required to control civilian movements so as to minimize casualties (if in a conflictual environment) while maintaining open routes for supply and troop movements. Army forces will likely have to protect NGOs and/or deliver humanitarian aid directly to the populace. These obstacles will be exacerbated by poorly developed or nonexistent infrastructures. Finally, the study concludes that it is not possible to predict where in the less-developed world the Army will be involved. To respond to these problems, the study suggests that changes must be made in Army training, doctrine, and force structure.

OSA was conducted in a nonconflictual, rural environment. As a result, not all of the implications suggested in MR-256-A could be evaluated. Yet, several ideas were supported. The lack of infrastructure in this poor, less-developed country exacerbated the effects of the cyclone while significantly hindering relief efforts. The huge population necessitated a widespread effort to prevent further death, especially from dehydration, starvation, and disease. U.S. forces were required to deliver aid directly to the population, and had to work closely with both the government and NGOs. Training, force structure, and doctrinal deficiencies became evident.

MR-256-A suggested that massive Army forces would be required and that medical requirements would be extensive. These ideas were not validated in this case. In Bangladesh, NGOs played a major role in reducing Army requirements in these areas.

Finally, the "unpredictability" of where Army forces will be involved and the nature of the mission was clearly illustrated.

Appendix

A. JTF Sea Angel Troop List

Command Element: Commanding General III MEF, Maj Gen Stackpole

Detachment (Det) III MEF

Deployable JTF Augmentation Cell

C-12 Det MCAS Iwakuni and MCAS Futenma

4th Combat Communications Group (-)

Combat Contingency Base 3

Combat Contingency Base 5

Public Affairs Office (PAO)

PAO Det MCB Camp S. D. Butler

PAO Det COMNAVFORJAPAN

PAO Det COMUSFOR Subic Bay

Navy Broadcast Service (NBS) Fleet Support Det (Wash. DC)

Det 834th Air Logistics Division

Det 364th Civil Affairs Brigade

Det 322d Civil Affairs Group

Det 358th Civil Affairs Command

Marine Forces

Fifth Marine Expeditionary Brigade

Marine Air Ground task force 2-91

Navy Forces

Amphibious Group 3

USS St. Louis

Environmental Preventative Medicine Unit-6

Air Forces

Det 374th Tactical Airlift Wing

21st Tactical Airlift Squadron (-)

345th Tactical Airlift Squadron (-)

Det 603d Airlift Control Squadron

Det 8 Mobile Aerial Port Squadron (MAPS)

Army Forces

4-25 Aviation Battalion (-)

Det 84th Engineer Battalion (Combat) (Heavy)

Special Operations Forces

Joint Special Operations Task Force

1/1 Special Forces Group (Airborne), U.S. Army

17th Special Operations Squadron (USAF)

Det 2, 1723d Special Tactics Squadron (USAF)

B. Summary of Humanitarian Assistance Provided by U.S. Forces

Air Force missions flown:	194
Tons of cargo delivered by Air Force:	2,430
Army Blackhawk sorties:	805
Tons of relief supplies distributed:	891.5
Navy/Marine aviation sorties:	969
Navy/Marine aviation tons of relief supplies distributed:	700
Gallons of potable water from ROWPUs:	266,000
Patients treated by U.S. forces:	15,000

Note that Army helicopters distributed many more tons of supplies per aircraft than their Navy/Marine counterparts. There appear to be several reasons for the difference. First, Army aircraft arrived earlier and began transporting relief supplies almost immediately. Second, they flew almost 90 percent of their hours, quite a high percentage, in support of the disaster relief effort.¹ Finally, the unit's previous experience in Western Samoa helped 4-25 Aviation to plan and execute well once they were in Bangladesh.²

¹Comparable flying hour percentages were unavailable for Marine/Navy forces.

²Commander, Army Forces Bangladesh, *Operation Sea Angel After Action Report*, 4 June 1991, Chittagong, Bangladesh EXECUTIVE SUMMARY, pages not numbered.

Bibliography

Anderson, Gary W., LtCol, USMC, "Operation Sea Angel; A Retrospective On The 1991 Humanitarian Relief Operation In Bangladesh" Report 1-92, Center For Naval Warfare Studies, Naval War College, 15 January 1992, Newport, RI.

APSO-SFI-FSC, 1/1 SFG(A) *Disaster Assistance Relief Team (DART) SOP*, 1 June 1991.

Bilski, Andrew, and Shamsul Alam Belal, "Waves Of Destruction: Bangladesh Copes With Disaster," *Maclean's*, 104:42, 20 May 1991.

Binder, David, "First U.S. Troops Arrive In Bangladesh to Begin Large-Scale Relief Effort," *The New York Times International*, 13 May 1991.

Civil Affairs Assessment Team Report, "Operation Sea Angel: Bangladesh Disaster Relief," undated.

Civil Affairs Operations, Army Field Manual 41-10, Washington, D.C.: Department of the Army, December 1985.

Commander, Army Forces Bangladesh, *Operation Sea Angel After Action Report*, 4 June 1991, Chittagong, Bangladesh.

Doctrine for Joint Civil Affairs, Joint Publication 3-57, Washington, D.C.: Office of the Joint Chiefs of Staff, October 1991.

Doctrine for Joint Operations, Joint Publication 3-0, Washington, D.C.: Office of the Joint Chiefs of Staff, January 1990.

Domestic Support Operations (Draft), Army Field Manual 100-19, Washington, D.C.: Department of the Army, May 1993.

Headquarters, 4th Battalion, 25th Aviation Regiment, *Operation Sea Angel After Action Report*, Schofield Barracks, Hawaii, 10 July 1991.

Headquarters, 84th Engineer Battalion (Combat) (Heavy), *After Action Report for Bangladesh Cyclone Relief*, Schofield Barracks, Hawaii, 6 June 1991.

Joint Psychological Operations Doctrine, Joint Publication 3-53, Washington, D.C.: Office of the Joint Chiefs of Staff, February 1987.

Klubes, David R., "Bangladesh Relief Effort," *Navy Medicine*, July-August 1991.

MCLLS Number 52970-11431 (05641) submitted by HMLA-169, LtCol Rogers.

MCLLS Number 60534-50556 (05634) submitted by MAG-50 S-3, MAJ Hendrickson.

MCCLS Number 61049-65088 (05621), submitted by RLT-5, COL R. A. Grange.

MCCLS Number 61049-92705 (05624), submitted by RLT-5, COL R. A. Grange.

MCLS Number 61050-03893 (05625), submitted by RLT-5, COL R. A. Grange.

MCLS Number 61050-54776 (05627), submitted by RLT-5, COL R. A. Grange.

MEMORANDUM FOR RECORD, APGP-EFBC, *84th Engineer Battalion's Participation in Combined Joint Task Force "Sea Angel" (Cyclone Relief in Chittagong, Bangladesh)*, 84th Engineer Battalion (Combat) (Heavy), Schofield Barracks, Hawaii, 5 June 1991.

Memorandum from LCDR Frederick K. Gerheiser, CEC, USN/JTF J4 to Commanding General, JTF SEA ANGEL, Subject: *Bangladesh Cyclone Engineer Damage Assessment Report*, dated 23 May 1991.

Memorandum from APVG-YZB-PT, Aviation Brigade, 25th Infantry Division (Light), *Aviation Disaster Relief Force Package*, 1 August 1991.

Memorandum from APVG-YZB-PT, Aviation Brigade, 25th Infantry Division (Light), *Request For Information*, undated.

"Operation Sea Angel," *Leatherneck*, Vol. LXXIV, No. 8, August, 1991.

Operation Sea Angel: Bangladesh Disaster Relief, Civil Affairs Assessment Team Report, undated, no author listed.

Psychological Operations, Army Field Manual 33-1, Washington, D.C.: Department of the Army, July 1987.

Selvage, Donald R., Col., USMC, "Operation Sea Angel: Bangladesh Disaster Relief," *Marine Corps Gazette*, Volume 75, Number 11, November 1991.

Shafiq-ur-Rahman, Captain, Bangladesh Navy, "Disaster in Bangladesh: A Multinational Relief Effort," *Naval War College Review*, Vol XLV, Winter 1993.

Shannon, John W., acting Secretary of the Army, and Sullivan, Gordon R., General, Chief of Staff, U.S. Army, *A Statement on the Posture of the United States Army Fiscal Year 1994*, March 1993.

Stackpole, H. C. III, Lieutenant General, USMC, "Angels From The Sea," *Proceedings*, U.S. Naval Institute, Volume 118/5/1,071, May 1992.

834 Airlift Division History, *Joint Task Force Sea Angel*, 1 January 91-1 April 92, undated, no author, provided by Headquarters, Air Mobility Command, Department of the Air Force.