

AD-A272 689



2

PORTABLE SURGICAL HOSPITALS IN THE NORTH BURMA CAMPAIGN:
LESSONS FOR PROVIDING FORWARD SURGICAL SUPPORT TO
NONLINEAR OPERATIONS IN AIRLAND 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

by

DAVID A. PATTILLO, MAJ, USA
B.S., The Citadel, Charleston, South Carolina, 1978
M.H.A., Baylor University, Waco, Texas, 1988

S DTIC
ELECTE
NOV 17 1993
A

Fort Leavenworth, Kansas
1993

Approved for public release; distribution is unlimited.

93-28072

93 11 16 011

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE 4 June 1993	3. REPORT TYPE AND DATES COVERED Master's Thesis, 1 Aug 92 - 4 Jun 93		
4. TITLE AND SUBTITLE Portable Surgical Hospitals in the North Burma Campaign: Lessons for Providing Forward Surgical Support to Nonlinear Operations in AirLand Operations		5. FUNDING NUMBERS		
6. AUTHOR(S) MAJ David A. Pattillo, USA				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Army Command and General Staff College ATTN: ATZL-SWD-GD Ft. Leavenworth, KS 66027-6900		8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES) Approved for Public Release; distribution is unlimited.		10. SPONSORING / MONITORING AGENCY REPORT NUMBER		
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION AVAILABILITY STATEMENT		12b. DISTRIBUTION CODE		
13. ABSTRACT (Maximum 200 words) The purpose of this study is to critically examine the 30-bed MASH developed by the US Army Medical Department (AMEDD) and to examine its ability during nonlinear operations to provide forward surgical support to AirLand Operations. The methodology chosen is a historical comparison of the 30-bed MASH to the World War II portable surgical hospital (PSH) deployed during the North Burma Campaign in the China-Burma-India Theater. This study will show that forces employed during the North Burma Campaign engaged in nonlinear operations similar to that proposed by AirLand Operations. To lay the groundwork for this historical comparison between the 30-bed MASH and the portable surgical hospital, this study examines the history of mobile surgical units in the AMEDD since World War I. Additionally, this study carefully explores the combat experiences of the PSH hospital during the North Burma Campaign. This analysis provides important information for a careful examination of the capabilities of mobile surgical units developed since WW II that lead directly to the development of the 30-bed MASH. This study shows through historical appraisal and recent operational testing that the 30-bed MASH is unsuitable to provide forward surgical support to nonlinear operations in AirLand Operations. Based on the results of the historical analysis, this study concludes by identifying five concepts that provides medical planners a coherent framework for evaluating the future capabilities of mobile surgical units developed to provide forward surgical support.				
14. SUBJECT TERMS Medical, Surgical, Army, Hospital, Mobile, China, Burma, India, AirLand Operations		15. NUMBER OF PAGES 168		
		16. PRICE CODE		
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT	

PORTABLE SURGICAL HOSPITALS IN THE NORTH BURMA CAMPAIGN:
LESSONS FOR PROVIDING FORWARD SURGICAL SUPPORT TO
NONLINEAR OPERATIONS IN AIRLAND 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

by

DAVID A. PATTILLO, MAJ, USA
B.S., The Citadel, Charleston, South Carolina, 1978
M.H.A., Baylor University, Waco, Texas, 1988

DTIC QUALITY INSPECTED 8

Fort Leavenworth, Kansas
1993

Accession For	
NTIS CRAXI	
DTIC TAB	
Unannounced	
Justification	
By	
Distribution	
Availability Code	
Dist	Avail and/or Statement
A-1	

Approved for public release; distribution is unlimited.

Our line officers know even less about military medicine than our medical officers know about what the Army does.

Colonel Ronald Bellamy, MC

Logistical commanders, with their broad material-related functions, should not be made responsible for a task so critical and so uniquely professional as the provision of health services. The well-being and care of the individual soldier must not be submerged in, or subordinated to, the system responsible for the supply and maintenance of his equipment. The issues involved are too great to risk failure or marginal accomplishment.

Spurgeon Neel, Vietnam Studies. Medical Support. 1965-1970

MASTER OF MILITARY ART AND SCIENCE

THESIS APPROVAL PAGE

Name of Candidate: MAJ David A. Pattillo

Thesis Title: Portable Surgical Hospitals in the North Burma
Campaign: Lessons for Providing Forward
Surgical Support to Nonlinear Operations in
Airland Operations

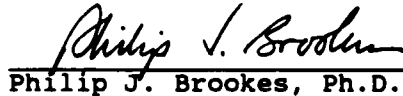
Approved by:

 Thesis Committee Chairman
LTC Philip W. Wyssling, M.B.A.

 Member
LTC James B. Martin, M.A.

 Member, Consulting Faculty
COL Catherine H.T. Foster, Ph.D.

Accepted this 4th day of June 1993 by:

 Director, Graduate Degree
Philip J. Brookes, Ph.D. Programs

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 forgoing statement.)

ABSTRACT

PORTABLE SURGICAL HOSPITALS IN THE NORTH BURMA CAMPAIGN:
LESSONS FOR PROVIDING FORWARD SURGICAL SUPPORT TO NONLINEAR
OPERATIONS IN AIRLAND OPERATIONS by Major David A. Pattillo,
USA, 170 pages.

The purpose of this study is to critically examine the 30-bed MASH developed by the United States Army Medical Department and to examine its ability during nonlinear operations to provide forward surgical support to AirLand Operations. The methodology chosen is a historical comparison of the 30-bed MASH to the World War II portable surgical hospital deployed during the North Burma Campaign in the China-Burma-India Theater. This study will show that forces employed during the North Burma Campaign in the China-Burma-India Theater engaged in nonlinear operations similar to that proposed by AirLand Operations doctrine.

To lay the groundwork for this historical comparison between the 30-bed MASH and the portable surgical hospital, this study examines the history and evolution of mobile surgical units in the United States Army Medical Department since World War I. Additionally, this study carefully explores the combat experiences of the portable surgical hospital during the North Burma Campaign in the China-Burma-India Theater. This analysis provides important information for a careful examination of the capabilities of mobile surgical units developed since World War II that lead directly to the development of the 30-bed MASH.

This study shows through historical appraisal and recent operational testing that the 30-bed MASH is unsuitable to provide forward surgical support to nonlinear operations in Airland Operations. Based primarily on the results of the historical analysis, this study concludes by identifying five concepts that provides medical planners a coherent framework for evaluating the future capabilities of mobile surgical units developed to provide forward surgical support.

ACKNOWLEDGEMENTS

Much has been made by today's Army leadership of avoiding a "hollow army" or the repeat of another "Task Force Smith" from the Korean War. These two current concepts being synonymous with avoiding an untrained, ill-prepared, and poorly equipped Army in the future. In light of this focus, I dedicate this study to a little known and forgotten Medical Service Corps officer, Lieutenant Raymond F. Adams. Lieutenant Adams, an Assistant Battalion Surgeon, earned the Silver Star for his heroic actions on 5 July 1950 in the first American battle of the Korean War near Osan, Korea, while assigned to Task Force Smith. Let us never again require our soldiers to overcome our ignorance of the nature and history of warfare.

I want to thank the members of my MMAS Committee, LTC Wyssling, LTC Martin, and COL Foster, Ph.D., who carefully guided my efforts during this research. I appreciate their concern and the expertise each provided to me in preparing this study. Additionally, I want to acknowledge the contributions of COL Nuttall, who serving as my initial committee chair, provided firm and supporting direction to my initial endeavors. His sudden and unexpected PCS served to remind me of the transitory nature of our profession.

I would be remiss if I did not thank my family for their unwavering support to me. My father-in-law, Eugene P. Griffin, provided insightful editorial assistance and unbiased comments that strengthened this study. I greatly acknowledge the personal time and efforts he spent on my thesis. Finally, to my wife, Deb, and my son, Chase, their unquestioned strength during almost two years of family separation due to the needs of the military service has been truly inspirational. First, during 15 months in Korea, and then during eleven months at Fort Leavenworth, they have supported my chosen career profession at great personal expense and deprivation. I can never truly acknowledge their sacrifice or overstate their importance to me. Thank you!

TABLE OF CONTENTS

	Page
APPROVAL PAGE.....	ii
ABSTRACT.....	iii
ACKNOWLEDGEMENTS.....	iv
LIST OF ILLUSTRATIONS.....	viii
LIST OF TABLES.....	ix
LIST OF ABBREVIATIONS.....	x
CHAPTER	
1. INTRODUCTION.....	1
Objective of the Study.....	2
Primary Research Question.....	3
Secondary Research Questions.....	3
Research Methodology.....	4
Assumptions.....	4
Limitations.....	5
Definitions.....	6
Background.....	8
2. NORTH BURMA CAMPAIGN.....	10
Background.....	11
Chain of Command.....	12
Chinese Army in India.....	16
Northern Hukawng Valley.....	18
Advance to Walawbum.....	20
Walawbum.....	21
Shaduzup.....	22
Mogaung Valley.....	23
Mogaung.....	28
Advance to Myitkyina.....	29
Myitkyina.....	31
Summary.....	33

CHAPTER	Page
3. SURGICAL SUPPORT TO THE NORTH BURMA CAMPAIGN.....	35
The Beginning of Mobile Surgical Units.....	35
Mobile Surgical Hospitals in WWII.....	38
Mobile Surgical Hospitals in the China-Burma-India Theater.....	39
Concept of Medical Support to the Chinese Army in India.....	41
Employment of Portable Surgical Hospitals in Support of Combat Operations.....	43
Operations Around Walawbum.....	45
Operations in the Mogaung Valley.....	48
Forward Surgical Support of the 22nd Chinese Division.....	49
Forward Surgical Support of the 38th Chinese Division.....	52
Operations Around Myitkyina.....	55
Analysis of Portable Surgical Hospital Employment.....	58
4. 30-BED MOBILE ARMY SURGICAL HOSPITAL (MASH).....	63
Evolution of the Mobile Army Surgical Hospital....	63
60-Bed Mobile Army Surgical Hospital in Korea....	65
The Surgical Hospital in Vietnam.....	70
Mobile Army Surgical Hospitals in Operation "Desert Storm".....	73
Forward Surgical Teams.....	77
The 30-Bed MASH.....	81
Summary.....	84
5. ANALYSIS AND CONCLUSION.....	89
Analysis	89
Analysis of the 60-bed MASH.....	89
Flexibility.....	91
Mobility.....	92
Adequacy.....	96
Summary.....	98
Analysis of the Forward Surgical Team.....	99
Flexibility.....	99
Mobility.....	100
Adequacy.....	101
Summary.....	101
Analysis of the 30-bed MASH.....	102
Flexibility.....	103
Mobility.....	103
Adequacy.....	104
Summary.....	105

CHAPTER	Page
Operational Evaluation of the 30-bed MASH.....	105
Flexibility.....	106
Mobility.....	106
Adequacy.....	107
Summary.....	107
Conclusion.....	108
ENDNOTES.....	114
ILLUSTRATIONS.....	132
TABLES.....	149
BIBLIOGRAPHY.....	161
INITIAL DISTRIBUTION LIST.....	167

LIST OF ILLUSTRATIONS

Figure	Page
1. Chain of Command South-East Asia Command.....	132
2. Actual Chain of Command for South-East Asia Command.....	133
3. Chain of Command Northern Combat Area Command.....	134
4. Chain of Command Chinese Army in India.....	135
5. China-Burma-India Theater Map.....	136
6. North Burma Campaign Map.....	137
7. North Burma Area of Operations Map.....	138
8. Hukawng Valley Operations Map.....	139
9. Mogaung Valley Operations Map.....	140
10. Section of Mobile Operating Unit No. 1.....	141
11. Operating Group of Mobile Hospital No. 39.....	142
12. Organization of the Portable Surgical Hospital.....	143
13. 42nd PSH Floor Plan for Surgical Suite.....	144
14. Organization of the 43rd Surgical Hospital (Mobile Army) Forward Surgical Team (FST)...	145
15. 43rd Surgical Hospital (Mobile Army) Floor Plan for the Forward Surgical Team (FST).....	146
16. Organization of the 30-Bed Mobile Army Surgical Hospital (MASH), TOE 08765L0000.....	147
17. Organization of the Hospital Surgical Unit, Forward (HUSF).....	148

LIST OF TABLES

Table	Page
1. Listing of Mobile Surgical Hospitals/ Units in World War I.....	149
2. Listing of Portable Surgical Hospitals (PSH) (T/O 8-572) Serving in WWII (CBI Theater).....	150
3. Listing of Portable Surgical Hospitals (PSH) (T/O 8-572) Serving in WWII (Pacific Theater)...	151
4. Listing of Portable Surgical Hospitals (PSH) (T/O 8-572) Serving in WWII (ETO Theater).....	153
5. Portable Surgical Hospitals (PSH) (T/O 8-572), Not Credited in DA PAM 672-1 dated July 1961, w/changes 1-4, with Campaign Participation as Conformed by Official and Unit Histories.....	154
6. Portable Surgical Hospitals (PSH) (T/O 8-572), Not Credited in DA PAM 672-1 dated July 1961, w/changes 1-4, with Campaign Authorized by Department of the Army General Orders.....	155
7. Listing of Surgical Hospitals (T/O 8-231) Serving in WWII.....	156
8. Listing of Mobile Army Surgical Hospitals (MASH) /Surgical Hospitals (Mobile Army) Serving in Korean War.....	157
9. Listing of Surgical Hospitals Serving in Vietnam..	158
10. Listing of Mobile Army Surgical Hospitals (MASHs) Serving in Operations "Urgent Fury," "Just Cause'" and "Desert Storm".....	159
11. Comparison of the Portable Surgical Hospital (PSH), 60-bed Mobile Army Surgical Hospital (MASH), 30-bed MASH, and the Forward Surgical Team (FST).....	160

LIST OF ABBREVIATIONS

AEF - American Expeditionary Forces
AMEDD - Army Medical Department
ANC - Army Nurse Corps
ASD-HA - Assistant Secretary of Defense - Health Affairs
BDE - Brigade
BG - Brigadier General
BN - Battalion
CAI - Chinese Army in India
CBI - China-Burma-India
CH - Chinese
COL - Colonel
CSH - Combat Support Hospital
CTA - Common Table of Allowances
CTZ - Corps Tactical Zone
DIV - Division
EAC - Echelon Above Corps
EMT - Emergency Medical Treatment
ETO - European Theater of Operations
ETOUSA - European Theater of Operations, United States Army
EVAC - Evacuation Hospital
FAST - Forward Area Surgical Team
FLD - Field Hospital

FPSU - French Parachutist Surgical Unit
 FST - Forward Surgical Team
 GP - General Purpose
 HUSF - Hospital Unit Surgical, Forward
 HUSM - Hospital Unit Surgical, Main
 HQS - Headquarters
 LTC - Lieutenant Colonel
 MA - Mobile Army
 MAC - Medical Administration Corps
 MAJ - Major
 MASH - Mobile Army Surgical Hospital
 MC - Medical Corps
 MF2K - Medical Force 2000
 MFSS - Medical Field Service School
 MSC - Medical Service Corps
 MTO - Mediterranean Theater of Operation
 MUST - Medical Unit, Self-Contained, Transportable
 NCAC - Northern Combat Area Command
 OIC - Officer-In-Charge
 OP - Operative
 OR - Operating Room
 PSH - Portable Surgical Hospital
 RAMC - Royal Army Medical Corps
 RGT - Regiment
 SEAC - South-East Asia Command
 US - United States

USAFFE - United States Army Forces in the Far East
USARV - United States Army, Vietnam
SWPA - Southwest Pacific Area
TD - Table of Distribution
T/O - Table of Organization
T/O&E - Table of Organization and Equipment
TO&E - Table of Organization and Equipment
TOE - Table of Organization and Equipment
WWI - World War I
WWII - World War II
XO - Executive Officer
1SG - First Sergeant

CHAPTER 1
INTRODUCTION

The United States Army Medical Department (AMEDD) is currently proposing to field a new 30-bed mobile army surgical hospital (MASH) to replace its current 60-bed MASH. Simultaneous with the fielding of the new 30-bed MASH is a concurrent revision of its employment doctrine. Employment doctrine proposed for the new 30-bed MASH is supposed to incorporate lessons of AirLand Battle and of Operation "Desert Storm." These lessons provide the genesis for the new 30-bed MASH employment doctrine designed to support AirLand Operations. The question is whether the AMEDD has applied appropriate lessons in the development of the MASH designed to provide forward surgical support to AirLand Operations.

AirLand Battle was set in the context of a US-Soviet conflict. It focused on combat operations in central Europe against a massive, echeloned Warsaw Pact threat, as well as large mechanized forces in the Middle East and the North Korean threat. The Warsaw Pact threat as of now has largely ceased to exist and the US Army no longer focuses primarily on fighting large mechanized forces in the Middle East or the North Korean threat. The US Army must now be prepared

to deploy on short notice and operate successfully on many battlefields and in many environments. AirLand Operations represent how the US Army proposes to conduct future operations during war and operations short of war on these varied battlefields and environments.¹

AirLand Operations represents the sequential evolution of the US Army's current AirLand Battle doctrine and is designed for the 1990s and beyond. It also represents a distinct shift from the high-density, mutual-attrition, linear battlefield environment that was characterized by Central Europe. It focuses on seeking opportunities to dictate how the US Army will fight in the future by seeking nonlinear conditions through the use of maneuver. While AirLand Operations seeks nonlinear conditions, it is a universal concept with utility across the operational continuum for offensive and defensive operations on both linear and nonlinear battlefields.²

Objective of the Study

This thesis will examine the World War II (WWII) combat experiences of the Portable Surgical Hospitals (PSH) employed in the China-Burma-India (CBI) Theater. These PSHs provided outstanding forward surgical support to combat forces employed in nonlinear operations not unlike those forecast for the future battlefield in AirLand Operations. Examining the employment methodology of the PSHs in the CBI Theater provides a methodology for

evaluating the 30-bed MASH developed to provide forward surgical support to nonlinear operations defined in AirLand Operations. This thesis will seek to determine if the 30-bed MASH is up to the task of providing forward surgical support during nonlinear operations based on the historical experiences of the PSHs found in the CBI Theater.

Primary Research Question

The primary research question is whether the the 30-bed MASH is capable of providing forward surgical support to nonlinear operations of AirLand Operations.

Secondary Research Questions

This thesis will address three secondary questions.

Does the CBI Theater provide an example of the type of nonlinear operations proposed by Airland Operations?

Does the combat experiences of the PSHs employed in the CBI Theater provide a satisfactory methodology for evaluating the 30-bed MASH in its ability to provide forward surgical support to nonlinear operations in AirLand Operations?

How should the new 30-bed MASH be employed doctrinally to support nonlinear operations in Airland Operations?

Research Methodology

Three major phases of historical research characterize this thesis. The first phase involves researching the WWII combat history of major combat forces participating in the North Burma Campaign of the CBI Theater. The second phase focuses on analyzing the historical development and employment methodology of the PSHs utilized during the North Burma Campaign. The third phase concentrates on the historical development and employment doctrine of mobile surgical units leading up to the 30-bed MASH that will provide forward surgical support to nonlinear operations in AirLand Operations.

Assumptions

Two assumptions are necessary for this thesis. The first assumption is that the MASH will remain a hospital-level organization in the forward surgical support doctrine of AirLand Operations. The second assumption is that forward surgical support of division-level medical support operations remains an important element of the surgical support doctrine.

There is sufficient, while not extensive, literature available to support this research. This research will rely mainly on primary sources. Secondary sources will be used when primary sources are not available. A review of the literature shows that most documents center on the health service support doctrine concerning corps-level surgical

hospitals from WWII and current AMEDD field manuals and documents. An analysis of the combat experience of the PSHs will come primarily from the historical reports of these units and from the office of the CBI Theater surgeon.

Limitations

Several limitations are applied to this research. This research will not evaluate the employment doctrine of the new 30-bed MASH in providing surgical support on the linear battlefield. Additionally, this research will not evaluate the employment doctrine of the new 30-bed MASH in providing forward surgical support to what AirLand Operations calls "operations short of war" (i.e., support for insurgency and counterinsurgency, combatting terrorism, peacekeeping operations, and contingency operations).³

Finally, this thesis continues to use the current doctrinal concept of AirLand Operations developed by the United States Army Training and Doctrine Command (TRADOC) in 1991. When the latest version of FM 100-5, Operations, is distributed during the summer of 1993 it will then be determined to what extent the doctrinal concept of AirLand Operations will be retained, modified, or dropped by the US Army.

Definitions

This thesis will use operational terms peculiar to the US Army and the AMEDD. All terms will be defined in accordance with respective US Army doctrinal publications.

To serve as a framework for conducting the comparative analysis which is the focus of this thesis, certain principles, doctrines, and operational concepts will be identified and discussed. In the context of this research the words or terms *adequate*, *flexibility*, *mobility*, and *nonlinear operations* are defined in the following manner:

Adequate. The ability of a medical unit to provide support based on its doctrinal mobility and flexibility.

Flexibility. The ability to rapidly shift standardized, like medical units, to areas of greatest need within the theater of operations.⁴

Mobility. The speed of medical units should equal that of the force being supported. Lacking this speed it is the ability to echelon standardized, like medical units and rapidly move these medical units to best support combat operations.⁵

Nonlinear operations. Mid to high intensity combat characterized by campaigns of rapid maneuver in order to gain a positional advantage over the enemy. The fluidity

of movement will make the mingling of opposing forces nearly inevitable and will blur the distinction between front and rear operations.⁶

In this thesis, medical support will only be discussed at two levels: Level II (division) and Level III (corps). While Level I (unit) and Level IV (echelon above corps [EAC]) medical support levels are available within the CBI Theater, these levels of medical support will only be discussed if necessary to clarify Level II and Level III medical support. Levels II and III are defined in the following manner:

Level II. Medical care provided by a company-sized medical unit organic to divisions and separate brigades. At this level, patients are evaluated to determine their priority for continued medical evacuation or returned to duty if they can be held, treated and returned to duty in one to three days.

Level III. Characterizes the medical care provided by the MASH and the combat support hospital (CSH). Patients whose wounds at Level II make them nontransportable to Level III may receive surgical care from a MASH close to the division-level medical company.⁷

Background

Mobile surgical hospitals have been a part of the AMEDD structure since World War I. During WWII, especially in the CBI and Pacific Theaters, the employment of portable surgical hospitals was in concert with many of the proposed health service support principles for AirLand Operations. In the European and other combat theaters, the 400-bed surgical hospital existing at the beginning of WWII made no significant contribution to providing forward surgical support. Lacking the mobility of the smaller portable surgical hospitals, the few that were activated for WWII were all converted to either station or evacuation hospitals by late 1943. Following WWII, the 60-bed mobile surgical hospital has been the predominate operational model for providing forward surgical support on the battlefield. As the AMEDD prepares for future medical operations, the historical development of the mobile surgical hospital and the combat experiences of the portable surgical hospitals in the CBI Theater provides important lessons worth studying.

The CBI Theater provides an example of a theater of operations that utilized nonlinear operations to successfully achieve theater objectives. The type of nonlinear operations practiced by the forces under General Stilwell in the North Burma Campaign is typical of the type proposed under AirLand Operations. The PSH was successful when employed by the US Army to provide forward surgical

support to nonlinear operations. The experiences of the PSHs during the North Burma Campaign in providing forward surgical support to combat forces in the CBI Theater provides a methodology for evaluating the 30-bed MASH designed to provide forward surgical support to nonlinear operations of AirLand Operations.

CHAPTER 2
NORTH BURMA CAMPAIGN
DECEMBER 1943 - AUGUST 1944

General Chennault's "Flying Tigers," "Merrill's Marauders," and the United States Army Air Corps' C-47s "flying the Hump" are identified by most Americans with the CBI Theater.¹ The contributions of most other US forces in the CBI Theater have largely been forgotten. A significant number of the US forces in the CBI Theater were medical units. These units included the 43rd Portable Surgical Hospital (PSH) and other PSHs assigned to the CBI Theater.²

Why have the contributions of most US forces in the CBI Theater been forgotten? This is due largely to the fact that the CBI Theater ultimately served a secondary role to the Pacific Theater in the war against Japan. The advance of America's main forces in the Pacific eventually relegated the CBI Theater to this secondary role. Few Americans realize "the longest continuous campaign against by far the largest body of enemy in the war against Japan" ensued in the CBI Theater. In fact, "more Japanese troops died in Burma than in the whole Pacific campaign."³

Background

The Quadrant Conference in Quebec, Canada, during August 1943, reaffirmed the conditions for continued participation of US military forces in the CBI Theater. At this conference President Roosevelt, with his Joint Chiefs, and Prime Minister Churchill, with his chiefs of staff, continued their compromise on decisions about the strategic goals for the CBI Theater. The significance of these compromise decisions was that they served to reaffirm the previous US position from the Trident Conference. The US position was that it was paramount to seize Burma to open the ground line of communications and keep China in the war.⁴

US troops assigned in the CBI Theater were there for purely political reasons. They were there to show US support to Generalissimo Chiang Kai-shek and Nationalist China. Without US troops and support the US Joint Chiefs of Staff felt that China might withdraw from the war with Japan. Besides keeping China in the war against Japan, the US felt the seizure of Burma would set the conditions to meet other goals decided at the Quadrant conference.⁵

With the defeat of Japanese forces in Burma, Allied Forces could then set up bases in North China. This would place Japan within range of bombers and landing craft from North China. Combined with operations in the Pacific, this would place pressure on Japan from both the east and west.

The Quadrant Conference ended with plans that emphasized establishing Allied power in North China as the principal direction for the defeat of Japan. President Roosevelt's strategy saw the shortest route to establishing Allied power in North China lay through Burma. This was the strategy affirmed by the Quadrant Conference.⁶

Chain of Command

Understanding the contribution of US forces in the CBI Theater begins with an appreciation for the chain of command that controlled these forces. The CBI Theater had the typical command problems forecast for combined warfare in the future. AirLand Operations doctrine projects that coalition warfare will be a dominate characteristic on the future battlefield. The CBI Theater provides an insight into solving the problem of coalition command. The Quadrant Conference sought to delineate and clarify the command structure that would guide US forces in the North Burma Campaign. Admiral Lord Louis Mountbatten was designated Supreme Allied Commander, South-East Asia Command (SEAC). General Stilwell was named the Deputy Commander, SEAC.⁷ Figure 1 illustrates the command structure for the SEAC.⁸

The chain of command at first appears to be simple and streamlined. In fact, the command relationships in the SEAC were extremely complex. General Stilwell, as Deputy Commander, SEAC, was also the senior US officer in the SEAC.

Despite being named Deputy Commander, SEAC, General Stilwell's principle role was command of American and Chinese forces in the American CBI Theater. In fulfilling his role of commanding Chinese forces in the American CBI Theater General Stilwell also served as one of Generalissimo Chiang Kai-shek's chief of staffs. It was his role as Generalissimo Chiang Kai-shek's chief of staff and Commanding General, Chinese Army in India, that served to create problems in designing a clean command structure for the SEAC.⁹

General Stilwell's position as Deputy Commander, SEAC, was designed as a political compromise to bring Chinese forces under the operational direction of Admiral Lord Mountbatten, Supreme Allied Commander, SEAC. In reality, General Stilwell, while officially the Deputy Commander, SEAC, actually fell under the operational control of Field Marshall Viscount Slim, Commander, XIV Army. Admiral Lord Mountbatten directed Field Marshall Slim not to make it public that General Stilwell was under his operational control. Field Marshall Slim speculated that "this was face-saving for Stilwell, on the lines of our Chinese allies, or to avoid the criticism that such an illogical set-up was bound to provoke."¹⁰

The actual operational chain of command that affected US forces in the SEAC appears in Figure 2.¹¹ The difference between the published and unpublished command

structures identified in Figures 1 and 2 reflects the confusion by US forces, especially medical, of the concealed role of Field Marshall Slim's XIV Army in their chain of command. LT James H. Stone, in writing "United States Army Service in Combat in India and Burma 1942 - 1945," stated:

Not until all these headquarters--and perhaps a few more important ones such as 14th Army (British)...were passed did the semblance of a normal "chain of command" drop all the way down to the troops in the field.¹²

The Northern Combat Area Command (NCAC) identified in Figure 2 reflects the decision in February 1944 to create a command structure to control Chinese, American, and British forces under General Stilwell's command. The Galahad Force (Merrill's Marauders) was the principal American fighting force under the NCAC. Principle Chinese forces in the NCAC were the Chinese Expeditionary Force (Y-Force) (located in the Yunnan Province of southwest China) and the Chinese Army in India (X-Force).¹³ A third Chinese force of 30 divisions (Z-Force) planned for southeastern China never evolved as a Japanese offensive in the summer of 1944 suppressed its development.¹⁴ Figure 3 identifies the NCAC organization and chain of command in February 1944.¹⁵

It is important to understand the command structure in which AMEDD units functioned. Unlike current operations which normally place corps level and higher medical units under a medical command and control headquarters, in the CBI Theater, AMEDD units functioned under this atypical chain of

command. Most AMEDD units in the CBI Theater were assigned to NCAC. Of the 19 units assigned to NCAC in July 1944, 15 were medical.¹⁶ These medical units were:

Medical Units

13th Mountain Medical Battalion
25th Field Hospital
44th Field Hospital
42nd Portable Surgical Hospital
43rd Portable Surgical Hospital
44th Portable Surgical Hospital
45th Portable Surgical Hospital
46th Portable Surgical Hospital
58th Portable Surgical Hospital
60th Portable Surgical Hospital
18th Malaria Survey Unit
45th Malaria Control Unit
46th Malaria Control Unit
49th Malaria Control Unit
73rd Malaria Control Unit

The other four units were:

Other Units

HQs & Hqs Company, Northern Combat Area Command
5307th Composite Unit (Provisional)
96th Signal Battalion
988th Signal Operations Company (SPL)

The majority of the AMEDD units in the CBI Theater operated in support of NCAC combat operations. During the North Burma Campaign, these combat operations were carried out predominately by the Chinese Army in India, especially the Chinese 22nd and 38th Divisions. This is because, except for the Galahad Force, few other US combat forces

were assigned to the CBI Theater. Again, according to LT James H. Stone, in writing "United States Army Service in Combat in India and Burma 1942 - 1945,"

The basic assumption underlying medical planning was that all types of medical services would be furnished American troops; third echelon [Level III] medical service and fixed hospitalization would be given to Chinese troops in India, and assistance with third echelon medical service would be given to Chinese troops in China; but no medical service would be furnished British or Indian troops.¹⁷

Chinese Army in India

The focus of this research concentrates on the medical support provided by the PSHs supporting the Chinese Army in India (CAI). To appreciate contributions of the PSHs to the CAI, basics of the combat operations of the CAI must be covered. In particular, the focus will be on the Chinese 22nd and 38th Divisions. Figure 4 illustrates the organization of the CAI under NCAC at the start of the North Burma Campaign.¹⁸

The North Burma Campaign occurred between December 1943 and August 1944. Figure 5 illustrates the disposition of forces in December 1943 at the start of this campaign.¹⁹ On General Stilwell's left flank were the divisions of NCAC's Chinese Expeditionary Force (the Y-Force). They were to move toward Burma from the Yunnan Province. On General Stilwell's right flank were troops of the British IV and XV Corps from Field Marshall Slim's XIV Army. In General Stilwell's center was NCAC's CAI

(X-Force), which on the central axis was to attack along a single useable road (Kamaing Road) as the main line to Mogaung and Myitkyina.²⁰

The Allies planned to follow three lines of penetration into North Burma - western, central, and eastern. These lines of penetration were designed to converge on the east-west line of Myitkyina - Mogaung. The methodology or tactics employed during the North Burma Campaign mirror the doctrine of AirLand Operation's nonlinear operations espoused for future combat. Lt Stone's 1946 explanation of the mode of combat operations in the North Burma Campaign provides an excellent summary of nonlinear operations.

Units involved in the campaign were often like beads on the threads of attack, joined to one another administratively and sometimes by actual lines of communications on the ground but, as often, virtually intact and separate until nodal points were reached. Units on flank missions were on their own until they swung back, further south, to the main line of advance. They had to be virtually complete task force units except that they had no viable "tails"-lines of communication. The cord which connected them to the base was an invisible airline between supply points in the rear and dropping fields or hastily constructed airfields in the forward zone. Even units on the main axis were frequently somewhat separated, particularly the small American sections which were embedded in regimental or divisional Chinese organizations.²¹

Northern Hukawng Valley

Figure 6 illustrates the combat operations of the CAI in the North Burma Campaign from December 1943 through August 1944.²² Figure 7 shows the topography of North Burma and helps explain why the campaign evolved as it did. Terrain had a major influence on the tactics employed in North Burma.²³ Combat operations for NCAC and CAI can be divided into nine major periods during the North Burma Campaign. The CAI began its combat operations in the Northern Hukawng Valley. The major Japanese force opposing General Stilwell and NCAC's CAI would be Lieutenant General Shinichi Tanaka and the three regiments of his 18th Division.²⁴

The 112th Regiment (RGT) of the 38th Chinese (CH) Division (DIV) carried out the opening action. The 1st Battalion (BN) of the 112th CH RGT made the central thrust past Shingbuiyang toward Taipha Ga. The 2nd BN on the right flank was given the objective of Sharaw Ga. The 3rd BN followed the West Axis Refugee Trail along the mountainous western flank.²⁵

All three BNs of the 112th CH RGT operated separately from each other. The 22nd CH DIV and the remainder of the 38th CH DIV were kept in reserve at Ledo and Shingbuiyang. The first attack by the 112th CH RGT was a failure. The three Bns of the 112th CH RGT failed to

achieve their objectives, dug in, became isolated, and failed to extract themselves from contact with the Japanese.²⁶

The 113th and 114th CH RGTs of the 38th CH DIV were sent to break the stalemate. The 113th CH RGT attacked Japanese positions around Sharaw Ga and relieved the 2nd BN of the 112th CH RGT. The 114th CH RGT and the 1st Bn of the 112th CH RGT carried out a series of attacks and forced Japanese forces to withdraw. With this series of actions the "sitz-krieg" which characterized the opening of the North Burma Campaign ended and the 38th CH DIV moved forward toward its first major objective, Taipha Ga.²⁷

The Chinese 22nd and 38th CH DIVs moved toward Taipha Ga from the east, north, and west. Figure 8 illustrates operations in the Hukawng Valley.²⁸ The attack on Taipha Ga was given to the 38th CH DIV. The 113th CH RGT, assisted by the 112th CH RGT attacked Taipha Ga from the left flank. The 114th CH RGT attacked from the right flank. Steady pressure from all three RGTs of the 38th CH DIV pushed the Japanese from their defenses around Taipha Ga. By 1 February 1944, all resistance had ceased and the operations in the Northern Hukawng Valley subsided.²⁹

Advance to Walawbum

The CAI continued to move after a brief pause for reorganization. The CAI advanced down the central axis on the Kamaing Road with the 22nd CH DIV on the right flank and the 38th CH DIV on the left flank. Although the Japanese had suffered a series of losses they were successfully conducting a series of delaying actions to halt the advance of the CAI. The Japanese objective was to hold the CAI in the Hukawng Valley until the monsoon season began.³⁰

The CAI made consistent progress in its advance toward Walawbum. The 22nd CH DIV, on the right flank, sent the 64th CH RGT south along the Kamaing Road. The other two RGTs of the 22nd CH DIV, the 65th and 66th, were in position to the west of the Kamaing Road. The 65th CH RGT chased enemy forces along the Ahawk trail and caught up with the 66th CH RGT at Yawngbang. The 66th CH RGT advanced along the Lakyan Ga - Yawngbang trail. Together, the 65th and 66th CH RGTs attacked Japanese positions at Yawngbang then continued south and emerged on the Kamaing Road between Maingkwan and Walawbum.³¹

The 38th CH DIV, on the left flank of the CAI, advanced south in positions to the east of the Kamaing Road. The 112th CH RGT moved in the area next to the Kamaing Road on the division's right flank. The 113th CH RGT, advanced along trails in the center. The 114th CH RGT moved on the extreme left flank of the 38th CH DIV. In a

series of actions, the 113th CH RGT defeated Japanese forces at Lalawn Ga, Gaehang Ga, Tsumphawng Ga, Tingkrai Ga, Jahntang Ga, and Makaw. When the 112th CH RGT took Taring Ga the 38th CH DIV was positioned to begin its final drive toward Maingkwan and Walawbum.³²

Walawbum

The CAI continued its advance on Walawbum in the closing days of February 1944. On the CAI's right flank, the 22nd CH DIV's 64th CH RGT advanced down the Kamaing Road, closed the trail leading to Maingkwan by securing Ngam Ga, and then attacked Maingkwan. The 65th CH RGT attacked and took Hpunguye, southwest of Maingkwan. The 66th CH RGT bypassed Maingkwan and took up blocking position on the Kamaing Road south of Walawbum. Another position covered a different stretch of the road from a point across the Maitawng River. Following the 22nd CH DIV's successful attack on Maingkwan, the 64th and 65th CH RGTs arrived at Walawbum and secured strong points on the western flank of the town and along the eastern edge of the Kamaing Road.³³

On the CAI's left flank, the 38th CH DIV sent the 113th CH RGT past Maingkwan to establish a blocking position south of Walawbum. This position at Chanol was to prevent the withdrawal of a large ammunition dump by Japanese forces. The 112th and 114th CH RGTs of the 38th CH DIV assisted the 22nd CH DIV in the attack that took Maingkwan on 5 March 1944. Following Maingkwan, the 112th and 114th

CH RGTs arrived at Walawbum and operated to the east in support of operations aimed at destroying Japanese forces. During the first week of March 1944 the CAI concentrated its actions on defeating Japanese forces and ending the battle for Walawbum.³⁴

Shaduzup

The CAI continued to advance south following combat operations at Walawbum. Figure 9 illustrates operations in the Mogaung Valley.³⁵ The 38th CH DIV, minus its 113th CH RGT which was assigned to the GALAHAD force (5307th), was left to consolidate gains at Walawbum. The 22nd CH DIV lead the CAI's advance. The 22nd CH DIV moved down the Kamaing Road with the 64th and 66th CH RGTs. The 65th CH RGT served as the divisional reserve. Attacking south the 22nd CH DIV found Japanese forces in defensive positions across the Kamaing Road. The 66th CH RGT bore the brunt of attacking through the Japanese positions which allowed the 22nd CH DIV to take Jambu Bum on 19 March 1944. Pressing on through Jambu Bum the 66th CH RGT took the heights north of Shaduzup with heavy fighting.³⁶

The 64th CH RGT took over from the 66th CH RGT and pressed on to Hkawnglawnyang. At Hkawnglawnyang the 64th and 66th CH RGTs placed continuous pressure on the Japanese forces in the hills and at the river crossing of the Hkawnglaw Hka (River). At this point the 65th CH RGT was called up from divisional reserve on 26 March 1944. Leading

the attack, the 65th CH RGT fought hard for several days before finally entering Shaduzup on 29 March 1944. Upon entering Shaduzup, the 64th and 66th CH RGTs went into bivouac for a well desired rest.³⁷

What was the cost in terms of manpower to the CAI up to this point in the North Burma Campaign? The following quote best summarizes the cost to the CAI.

By 15 April 1944 the cost to the Chinese of the North Burma Campaign was: 22nd Division, 800 men killed, 2,000 wounded; 38th Division, 650 men killed, 1,450 men wounded.³⁸

At this point in the North Burma campaign the use of nonlinear operations was emerging as the key to operational success. Flanking maneuvers that sent Chinese regiments on isolated operations around Japanese defenses were becoming a favored tactic. Pinning down Japanese forces while rapidly maneuvering to obtain the tactical advantage became tantamount to victory. Additionally, the terrain in North Burma supported maneuver warfare while placing a premium on a unit's ability to conduct independent operations. The type of warfare waged in the North Burma Campaign mirrors the concept of nonlinear operations outlined in AirLand Operations.

Mogaung Valley

Having taken Shaduzup the CAI continued its advance down the Kamaing Road meeting sharp resistance from the Japanese. The 22nd CH DIV, minus the 64th and 66th CH RGTs,

lead the movement south. The 64th and 66th CH RGTs were left back at Shaduzup, but each RGT gave the 65th CH RGT a BN for reinforcement. The 22nd CH DIV's 65th RGT, plus the 113th CH RGT of the 38th CH DIV, which was now detached from the GALAHAD Force (5307th Composite Unit), pressed on to Laban. At Laban, the 113th CH RGT slipped behind Japanese defenses and established a blocking position. By 12 April 1944, the 65th and 113th CH RGTs cleared the area of Japanese forces and the front continued to advance south.³⁹

The front had proceeded far enough south of Shaduzup by this time that NCAC headquarters were relocated to Shaduzup. At this point, NCAC developed the following concept of operations for the remainder of this segment of the North Burma Campaign:

Plans were outlined for a drive which would take Kamaing, advance to Mogaung and Myitkyina, secure the Mogaung-Myitkyina line, and destroy not only the Japanese on the road between Shaduzup and Mogaung, but cut off the strong Japanese force which had gone up the eastern flank and was being engaged by the Marauders [GALAHAD Force] at Nphum Ga.⁴⁰

The 38th CH DIV began the next drive by recalling the 2nd and 3rd Bns of the 112th CH RGT from Walawbum. The 2nd and 3rd Bns of the 112th CH RGT were ordered down the Mogaung Valley to block Japanese forces moving north from Warang to Npum Ga. The 1st Bn of the 112th CH RGT, located at Hsamshingyang, was ordered to move south until it rejoined the 112th CH RGT at Warang.⁴¹

As the 38th CH DIV sent the 112th CH RGT to block Japanese forces, its 113th CH RGT moved forward, with the 114th CH RGT in divisional reserve. Movement was slow due to both heavy Japanese resistance and difficult terrain. Trails were so arduous that pack animals had to be sent to the rear after two days of labor. The 113th CH RGT advanced to the east of the Kamaing Road and after hard fighting took Npadyuang on 20 April 1944.⁴²

After securing Npadyuang, the 113th CH RGT split into three columns in order to cover the area between the Kamaing Road and the 112th CH RGT on the left flank. To speed up the advance of the 113th CH RGT, the 114th CH RGT was brought into action. The 113th and 114th CH RGTs pressed their attack against determined Japanese defenses. The two RGTs succeeded in securing the area down to Manpin, where they reestablished contact with the 112th CH RGT on the left flank.⁴³

Meanwhile, the 22nd CH DIV attacked through Japanese positions at Wakawng on the Kamaing Road and advanced until stopped at Inkangahtawng. To assist the 22nd CH DIV, the 149th CH RGT from the 50th CH DIV was added to the attack. The 50th CH DIV was added to NCAC upon its arrival from China on 5 April 1944. The 148th CH RGT of the 50th CH DIV was employed as security for NCAC headquarters. The 150th CH RGT was moved east to Naubam.⁴⁴

Using the 50th CH DIV's 149th RGT to launch a holding attack, the 22nd CH DIV began an enveloping maneuver to take Inkangahtawng. The 149th CH RGT's holding attack began to make steady progress while the enveloping maneuver of the 22nd CH DIV's 64th and 66th CH RGTs lost momentum. On 4 May 1944, the 22nd CH DIV finally took Inkangahtawng. Following the capture of Inkangahtawng, the 22nd CH DIV dug in and remained in the area until nearly the end of the month.⁴⁵

On 22 May 1944, General Stilwell issued orders for the 22nd CH DIV to resume its advance toward Kamaing. The 22nd CH DIV sent the 65th CH RGT to circle the Japanese left flank to the west. The 65th CH RGT would make this movement through the mountains and emerged on the Kamaing Road above Kamaing. The 64th CH RGT was to advance along the mountains west of the Kamaing Road to force the Japanese left flank. The 149th CH RGT was to advance south down the Kamaing Road. The 66th CH RGT served as the divisional reserve.⁴⁶

In conjunction with the advance of the 22nd CH DIV, the 38th CH DIV sent its 112th CH RGT on a rapid flanking maneuver that took it past Kamaing to a blocking position at Seton. The 112th CH RGT advanced so rapidly that the Japanese thought they were under airborne attack. The movement by the 112th CH RGT effectively cut off Japanese forces in Kamaing from their base at Mogaung and from the rest of Burma.⁴⁷

Moving with uncharacteristic speed the 113th and 114th CH RGTs of the 38th CH DIV simultaneously advanced down the Japanese right flank and were north and east of Kamaing by 10 June 1944. As the 38th CH DIV moved, the 22nd CH DIV also advanced down the Kamaing Road with its 64th and 66th CH RGTs, and the 149th CH RGT of the 50th CH DIV. As these RGTs went past its blocking position on the Kamaing Road, the 65th CH RGT circled west and took up new positions outside Kamaing.⁴⁸

The 22nd and 38th CH DIVs now occupied all roads and trails leading to Kamaing and completely encircled the city. Frantic counterattacks and massed artillery by the starving Japanese failed to break the encirclement, but did inflict heavy casualties on the Chinese. On 14 June 1944, attacks by the 64th and 65th CH RGTs of the 22nd CH DIV cracked Japanese defenses around Kamaing and the 64th CH RGT entered Kamaing. The 149th CH RGT of the 50th CH DIV was left by the 22nd CH DIV to mop up remaining Japanese forces and Kamaing was secured on 16 June 1944.⁴⁹

Pursing retreating Japanese forces, the 22nd CH DIV pressed them against the blocking position established by the 112th CH RGT of the 38th CH DIV at Seton. As the 22nd CH DIV pushed on, the 113th and 114th CH RGTs of the 38th CH DIV reduced isolated pockets of Japanese on trails leading to Kamaing. The 22nd CH DIV kept the Japanese retreat disorganized. On 2 July 1944, the 65th CH RGT of the 22nd

CH DIV reached Seton and the 112th CH RGT of the 38th Division. Together, these RGTs mopped up the remnants of Japanese Lieutenant General Tanaka's 18th Division, which had opposed the CAI in the North Burma Campaign.⁵⁰

The cost to the Japanese to hold North Burma was high. A Japanese division could vary in strength from 12,000 to 22,000 soldiers.⁵¹ The Japanese 18th Division was estimated to have lost over 50% of its strength by the time it succumbed to the CAI.⁵² The key to the defeat of the Japanese forces in this phase of the North Burma Campaign was the use of maneuver warfare. Wide flanking movements continuously placed the Japanese defenders at a tactical disadvantage and led to their defeat.

Mogaung

With the fall of Kamaing, attention turned to Mogaung. The 38th CH DIV was ordered to send the 113th and 114th CH RGTs to support the British 77th Brigade (BDE) (Chindits) which was ordered by General Stilwell to attack Mogaung. The 77th BDE was a long range penetration unit which was flown into western Burma in March 1944 and had come under the control of NCAC. The 113th CH RGT secured roads and trails to the north and west of Mogaung. The 114th CH RGT took up positions east of Mogaung. A coordinated attack began on 22 June 1944 and a foothold into

the city was gained by 25 June 1944. By 26 June 1944, Mogaung was occupied with all units claiming credit for the victory.⁵³

Advance to Myitkyina

The battle for Myitkyina represents the last major combat operation for NCAC in this part of the North Burma Campaign. Elements of the CAI played no significant role in the capture of Myitkyina. The battle for Myitkyina was largely fought by the GALAHAD Force, or 5307th Composite Unit (Provisional) (Merrill's Marauders), with Chinese augmentation.

The Myitkyina assault force was composed of the following NCAC forces:⁵⁴

GALAHAD Force

- 5307th Composite Unit (Provisional)
 - 1st Battalion (H-Force)
 - 150th Regiment, 50th Chinese Division
 - 2nd Battalion (M-Force)
 - 3rd Battalion (K-Force)
 - 88th Regiment, 30th Chinese Division

Chinese

- 14th Chinese Division
 - 42nd Regiment
- 30th Chinese Division
 - 89th Regiment
- 50th Chinese Division
 - 149th Regiment

The GALAHAD Force started toward Myitkyina on 27 April 1944. Making excellent progress by using K-Force as a blocking element, H-Force arrived on the outskirts of the airfield at Myitkyina on 16 May 1944. The 1st BN, 5307th Composite Unit (Provisional) took the ferry terminal on the

Irrawaddy while the 150th CH RGT attacked the airport. By the end of 17 May 1944 a stream of air traffic began to flow in. The first unit to arrive was the 2nd BN, 88th CH RGT from the 30th CH DIV. This unit was flown in from Ledo when the airport was declared open.⁵⁵

Attempting to capitalize on the element of surprise the 150th CH RGT made an immediate attack on Myitkyina late on 17 May 1944. An attack that night and the next morning by the 150th CH RGT were beaten back by Japanese forces. On 18 May 1944, the 89th CH RGT from the 30th CH DIV arrived at the airfield at Myitkyina. Reacting quickly, the Japanese reinforced Myitkyina and before another attack could be launched, their defense had been significantly strengthened.⁵⁶

K-Force and M-Force reached the airfield at Myitkyina on 18 and 19 May 1944. Additional forces poured into the airfield to include the 42nd CH RGT of the 14th CH DIV. Like the 30th CH DIV, the 14th CH DIV was another new unit to NCAC that arrived from CHINA in April 1944. Attacks against Myitkyina were made on the 20th and 21st. A counterattack by Japanese forces was repelled on the 22nd. By 23 May 1944, the Japanese had denied NCAC the opportunity for a swift victory at Myitkyina. An embittered battle for the airfield and Myitkyina would now take place for many weeks.⁵⁷

Myitkyina

By 4 June 1944, all the original members of Merrill's Marauders (GALAHAD Force) had been evacuated due primarily to health reasons. The tragedy of the personnel of Merrill's Marauders and their medical problems are a story unto itself.⁵⁸ A decision was made to keep 5307th Composite Unit (Provisional) (GALAHAD Force) in existence through the exchange of new replacements. In addition to replacing GALAHAD Force, new Chinese elements continued to arrive. On 1 June 1944, the Myitkyina Task Force was established for the assault on Myitkyina. It consisted of the following major fighting forces:⁵⁹

GALAHAD Force

- 5307th Composite Unit (Provisional)
 - 1st Battalion
 - 2nd Battalion
 - 3rd Battalion

Chinese

- 14th Chinese Division
 - 42nd Regiment
 - 2 Battalion, 41st Regiment
- 30th Chinese Division
 - 88th Regiment
 - 89th Regiment
 - 90th Regiment
- 50th Chinese Division
 - 149th Regiment
 - 150th Regiment

American

- 209th Engineer Battalion
- 236th Engineer Battalion

British

- 77th Brigade (elements)

Attacks and counterattacks characterized the fighting around Myitkyina during June and July 1944. With the fall of Mogaung on 26 June 1944, momentum swung to the

Myitkyina Task Force. Cut off from their main source of supplies at Mogaung the Japanese garrison began to show the effects by the middle of July 1944. Like Kamaing, starving Japanese attempted to infiltrate through Allied forces surrounding Myitkyina. On 3 August 1944, the 50th CH DIV launched the final assault on Myitkyina. By 1545 hours, Myitkyina was declared secure.⁶⁰

The attack on Myitkyina had been costly in terms of human losses and suffering. Losses to NCAC from Myitkyina operations are as follows:

	<u>Killed</u>	<u>Wounded</u>	<u>Sick</u>
Chinese	972	3,184	188
American	272	955	980

Of the 980 Americans classified as sick, 570 alone were from the GALAHAD Force.⁶¹

With the fall of Myitkyina, all major combat operations for NCAC and CAI in the North Burma Campaign came to an end. The following quote best sums up this period of time before combat operations again resumed in Burma.

With the fall of Myitkyina, a period of relative quiescence descended on the American and Chinese in Burma. Troops in the vicinity of both Mogaung and Myitkyina went into bivouac or into training, with routine patrolling activity as the only tactical operation. Supply functions were continually increased to build up the Myitkyina base and restore communications in the area occupied by Allied forces. Reorganization of the Northern Combat Area Command was carried out, and a new American-Chinese penetration unit, the 5332nd Brigade (Provisional) was formed and trained. Plans were laid for reopening the campaign when the summer monsoon rains ceased, and although actual operations were curtailed to await the dry season, no one had much time to rest on his laurels.⁶²

Summary

Already the amount of supplies reaching China via the "Hump" had been slowly increasing as NCAC and the CAI moved south through the Hukawng and Mogaung Valleys. With the fall of Myitkyina, supplies delivered by air rose from 13,686 tons in May to 25,454 tons in July. The major objective of opening the line of communications through North Burma had been met. The growing rate of supplies delivered by air "meant a great change for the better in the American position in China."⁶³

Tactical success against Japanese forces in North Burma resulted primarily from the type of combat tactics employed by General Stilwell. General Stilwell successfully maneuvered his forces against the Japanese 18th Division by continuously using flanking maneuvers to bypass defensive positions. Flanking maneuvers by NCAC forces lasted from weeks to months depending on the terrain and combat situation. This type of maneuver necessitated the formation of self-contained task forces by NCAC that often fought isolated from other supporting combat units. Fluidity of this type on the battlefield required the creation of new techniques in support and coordination of forces. This type of combat, referred to as nonlinear operations by AirLand Operations, is expected to be the norm on the future battlefield.

The North Burma Campaign was a triumph for General Stilwell. The securing of North Burma opened the ground line of communications to China. Unfortunately, the effects of the delay in opening North Burma were beginning to emerge. At the Quadrant Conference, China had been viewed as the point from which to launch bombers and landing craft in the main effort to defeat Japan. The Pacific was to be a converging line from the east. With the delay in opening northern Burma, coupled with future successes to be enjoyed in the Pacific, the CBI Theater would be relegated to a secondary role in the final defeat of Japan.⁶⁴

In summary, the North Burma Campaign in the CBI Theater was an example of tactical and operational success through the use of classic nonlinear operations. Flanking maneuvers and deep penetrations by independent combat forces at the regimental (brigade) level continuously keep the Japanese defenders on the tactical disadvantage. Momentum through fluid mobility was gained and maintained by Chinese combat forces throughout the North Burma Campaign. The CBI Theater provides an excellent example of the conduct of nonlinear operations as proposed by AirLand Operations through its North Burma Campaign.

CHAPTER 3

SURGICAL SUPPORT TO THE NORTH BURMA CAMPAIGN

The Beginning of Mobile Surgical Hospitals

The concept to rapidly apply far forward life saving surgical support to soldiers came into its own in World War I (WWI). This need resulted in the development of the first true field surgical units in the AMEDD. Surgical hospitals and units trace their lineage to several different types of units developed in WWI to meet this requirement.

In August 1917, the US Army Surgeon General received a proposal for

a mobile operating unit mounted on trucks and provided with a well-lighted and heated operating room, electrical lighting, steam and sterilizing plants, these to be fully equipped in such a manner as to insure the best hospital conditions and at the same time capable of being erected and in action in less than an hour.¹

An American businessman's offer to donate a surgical unit resulted in the quick approval by the War Department of the concept for a "mobile operating unit."² This unit did not see service in WWI because the armistice was signed shortly after it arrived in France. Mobile Operating Unit No. 1 consisted of five complete sections. 64 officers, 50 nurses, and 218 enlisted men composed this unit. Equipment consisted of five touring cars, five motorcycles with side

cars, 20 three ton trucks, 50 Ford trucks, and 20 one-half ton trailers.³ Each of the five sections was a complete surgical hospital capable of independent operation and for providing care for 40 patients. Figure 10 illustrates the mobile nature of this unit by highlighting one complete section of this organization.⁴

Another idea for mobile "surgical" hospitals and mobile surgical units borrowed concepts developed by the French.⁵ In February 1918, the Chief Surgeon of the American Expeditionary Forces (AEF) contracted for 20 of these type mobile surgical hospitals and units.⁶ These units were designated "Mobile Hospitals" and "Mobile Surgical Units" by the AEF. General Orders, Number 70, AEF, stated, "[T]hese units have been designed in order that facilities for immediate surgical aid to the seriously injured may be brought to the man...."⁷

One mobile operating unit, 21 mobile hospitals, and 16 mobile surgical units were activated for service in WWI.⁸ Of these 38 units, twelve mobile hospitals and twelve mobile surgical units participated in actual combat campaigns. Table 1 identifies these units.⁹ The mobile hospital consisted of eleven Medical Corps (MC) officers, one Sanitary Corps officer, 22 Army Nurse Corps (ANC) officers, and 80 enlisted personnel. A goal of the mobile hospital was to receive patient within six to eight hours of wounding. Mobile hospitals were planned on the basis of one

per division.¹⁰ In the event of offensive operations the use of a second unit to allow mobile hospitals to leapfrog each other was suggested.¹¹ A mobile surgical hospital had equipment for a light frame operating room, x-ray, electric-lighting plants, and tentage to establish a 120-bed surgical hospital.¹² Figure 11 shows the organizational layout of the operating group of Mobile Hospital No. 39.¹³

The mobile surgical unit consisted of one MC officer (roentgenologist) and twelve enlisted personnel.¹⁴ Its equipment consisted of surgical material, portable sterilizing and x-ray equipment, a light frame operating room and two trucks or one truck and one trailer.¹⁵ The mobile surgical unit was intended to be allocated on the basis of one unit per division.¹⁶ When assigned to the division it operated in conjunction with the field hospital.¹⁷ The mobile surgical unit was intended to supplement the medical capabilities of the divisional field hospital by providing another small operating room and ancillary staff to allow the staff of the field hospital to carry on additional surgical operations.¹⁸ The mobile surgical unit was not capable of independent operations. It was a predecessor of the current forward surgical team.

Mobile Surgical Hospitals in World War II

Military Medical Manual, 4th Edition, a WWII military manual used to instruct AMEDD officers at the Medical Field Service School (MFSS) at Carlisle Barracks, Pennsylvania, identified only one type of surgical hospital, the 400-bed surgical hospital, in the force structure at the beginning of WWII.¹⁹ Mobile Units of the Medical Department, another instructional WWII MFSS manual, also identifies only this 400-bed surgical hospital in the AMEDD force structure.²⁰ By 1944, the Military Medical Manual recognized a new type of surgical unit, the portable surgical hospital.²¹

Besides these two types of surgical units, another hospital unit provided forward surgical support. This unit, the FLD hospital, sent forward a platoon reinforced by surgical teams to provide forward surgical support.²² The majority of forward surgical support in the European Theater of Operations (ETO) was provided by these platoons from FLD hospitals. These "[F]ield hospital platoons [were] attached to division clearing stations [and] worked on the most urgent emergency surgical cases."²³ As with the mobile surgical unit of WWI, the FLD hospital platoon is also a predecessor of the present forward surgical team.

The 400-bed surgical hospital addressed in MFSS instructional manuals were few in number, and operated mainly in the Mediterranean Theater of Operations (MTO) and

Southwest Pacific Area (SWPA). They were designed to augment the surgical capability of FLD and EVAC hospitals in the theater. These surgical hospitals, identified by table of organization and equipment (T/O) 8-231, had a capacity of 400 beds. The 400-bed surgical hospital consisted of one mobile surgical unit and two hospitalization units. The two hospitalization units were capable of independent operation and could each support 200 beds. The mobile surgical unit had "...sufficient integral transport for its own movement..." It was designed to "[O]perate with the hospitalization units..." or "...any other medical unit requiring temporary surgical support."²⁴

The 400-bed surgical hospital was too large and nonmobile a unit to function in support of combat operations in the CBI Theater. To fill the requirement for far-forward surgical support in the CBI theater the PSH was deployed. Tactics employed in the North Burma Campaign mandated the use of highly mobile surgical hospitals to support combat operations. Combat operations were characterized by "...flanking maneuvers with fast-moving, relatively self-sufficient jungle task forces."²⁵

Mobile Surgical Hospitals in the CBI Theater

The PSH employed in the CBI Theater operated under T/O 8-572.²⁶ Colonel (later Brigadier General) Percy J. Carroll, MC, Surgeon for U.S. Army Forces in the Far East (USAFFE), SWPA, is credited with designing the PSH to meet

theater needs for a mobile surgical unit to replace the 400 bed surgical hospital.²⁷ The low priority given the CBI Theater by the War Department precluded the assignment of the normal number of medical units to support combat operations. To meet the requirement for surgical units in the CBI Theater, the PSH was employed. Two types of PSH were utilized in the CBI Theater.²⁸ The first unit was the standardized T/O PSH. The other surgical unit was organized provisionally in the field along the T/O of the PSH.²⁹ Medical personnel and equipment drawn temporarily from other medical organizations manned these provisional PSHs.

Eight officially organized PSHs and approximately an equal number of provisional PSHs served in support of NCAC in the North Burma Campaign.³⁰ During the North Burma Campaign seven PSHs supported NCAC's CAI. These PSHs were the 42nd, 43rd, 44th, 45th, 46th, 58th, and 60th PSHs.³¹ PSHs, provisional PSHs, and surgical teams were allocated to combat units on the basis of one per regiment actually in combat.³²

Figure 12 illustrates the organization of the PSH.³³ The PSH was a highly mobile unit designed to meet the demands of the tactics employed by combat forces in the CBI Theater. Due to limited transportation assets, tactics employed by combat forces, and the physical characteristics of the CBI Theater, PSHs was designed to be transported by

their organic transportation assets or human/animal carriers.³⁴ Figure 7 again illustrates the rugged topography that characterized the North Burma area of operations and highlights some of the difficulty in transporting equipment.³⁵ The PSH was organized by T/O with four MC officers and 33 enlisted personnel. Of the four MC officers, three were surgeons and one was an internist-anesthetist. The PSH had a 25 bed capacity and was theoretically capable of major surgery.³⁶

Concept of Medical Support to The Chinese Army in India

US involvement in the CBI Theater was an economy of effort by the War Department. The goal was to have Chinese forces conduct the preponderance of combat operations in Burma with US forces providing a supporting role. US forces were present mainly for the political reason of showing US support and thereby helping to keep China in the war against Japan.³⁷ This decision influenced heavily the concept of medical support for the CBI Theater.

The goal of deployed US forces in the CBI Theater was "...to take all measures possible to improve the combat efficiency of the Chinese Army."³⁸ The objective of US medical forces in the CBI Theater was to develop the Chinese medical system supporting Chinese forces so that it could take care of itself and function satisfactorily in combat. Medical planners recognized from the beginning that a lack

of sufficient numbers of trained Chinese doctors would prevent the Chinese from producing a complete evacuation and hospitalization system in the CBI Theater. To capitalize on Chinese medical system strengths and fulfil the US mission to China, medical units, predominately Level III (corps) hospitalization and evacuation units, would have to be obtained from the US.³⁹

The plan of US medical forces in the CBI Theater was to equip and train Chinese forces to provide their own Level I (unit) and Level II (division) medical support. US medical units would provide Level III (corps) and Level IV (EAC) support and operate to the rear of NCAC Chinese divisions engaged in combat operations. The US medical plan for providing surgical support to Chinese forces in the CBI Theater would center on the use of small, highly mobile, portable surgical hospitals to support combat operations.⁴⁰

What was originally planned by General Stilwell as a six-month campaign turned out to be a year and one-half campaign. Medical planners, to support this campaign, had submitted an initial requisition for twelve PSHs. Subsequent requests increased this initial request to 18 PSHs to support Chinese forces in the CBI Theater. Two factors drove the request for 18 PSHs. First, was the estimates of sick and casualty rates. More importantly, was

the conclusion that every Chinese division would need at least one PSH. Eventually, PSHs would be allocated on the basis of one per regiment engaged in combat.⁴¹

The War Department decided initially to support the CBI Theater medical plan with nine PSHs. This decision was made because the CBI Theater was viewed as an economy of force by the War Department. Eight PSHs served in direct support of NCAC's CAI during the North Burma Campaign in the CBI Theater. The rest of the demand for PSHs in the CBI Theater would be met using provisional units formed from assets in theater.⁴²

Employment of PSHs in Support of Combat Operations

The Portable Surgical Hospitals are the keys to the medical system. If they are lost the medical service is lost.⁴³

The first three PSHs to reach India from the US arrived in the last quarter of 1943. These units were the 40th, 46th, and 48th PSHs. The 40th and 48th PSHs were set aside for the Y-Force Chinese divisions and the 46th PSH was held in India. The 42nd and 43rd PSHs also arrived in India late in 1944. These five PSHs were divided between the X-Force CAI divisions and the Y-Force Chinese divisions in southwest China.⁴⁴ The 42nd, 43rd, and 46th PSHs were assigned to support the CAI. Other PSHs were divided between the Chinese "X" and "Y" Forces based on need as they

arrived in theater. The deployment of the 43rd PSH provides an insight into how many PSHs were shipped to the CBI Theater.

The 43rd PSH, activated 7 June 1943, at Camp White, Oregon, departed Hampton Roads, Virginia, for India on 23 September 1943. The unit arrived 23 days later in Bizerte, Tunisia, after a normal ocean crossing. Moving by train to Oran, Algeria, it set out again by ocean convoy to India on 24 November 1943. The unit history of the 43rd PSH recounts key events in the voyage to India.

Said convoy underwent two serious bombing attacks by enemy aircraft in passing through the Mediterranean, once by radio controlled bombs, the other by 500-pounders dropped from JU-88s. In the first attack the ship next to ours was sunk with the loss of over 1,000 American lives. It was our baptism of fire and had a sobering effect on all....In the second attack, another ship was hit, fortunately by a dud.⁴⁵

The 43rd PSH arrived in Bombay, India, on 19 December 1943, and moved two days later to a staging area near Calcutta. Here the unit received its first notice of its ultimate destination, the CBI Theater and NCAC. By the middle of February 1944, the 43rd PSH arrived in Ledo, India, where it underwent a two week indoctrination to prepare for combat. The 43rd PSH's unit history recalls this movement as important in preparing the unit for the many transportation difficulties that lay ahead.

The officers and men of the unit were shipped in small groups as train guards from Calcutta to Ledo and developed a deep sense of appreciation of the Indian transportation difficulties.⁴⁶

Prior to the arrival of the first PSHs into the CBI Theater far-forward surgical support was provided by adhoc surgical teams and provisional PSHs. These units, the 13th Mountain Medical Battalion, 151st Medical Battalion, 25th Field Hospital, 73rd Evacuation Hospital, and the Seagrave Hospital were the primary manpower and equipment sources for fielding provisional PSHs used during initial stages of the North Burma Campaign. Even after the deployment of PSHs to NCAC during the North Burma Campaign these units would continue to provide provisional PSHs and surgical teams to support combat operations.⁴⁷

Operations Around Walawbum

The 22nd Chinese Division has the significance of being the first Chinese unit to be directly supported by a American PSH in the North Burma Campaign. Three PSHs were deployed in the later stages of the attack on Walawbum and mopping operations between Maingkwan and Walawbum. The 42nd PSH began supporting the 66th CH RGT on 28 March 1944, at Lakyan Ga. The 43rd PSH reached Ngamaw Ga on 11 March 1943, and supported Chinese forces cleaning up Japanese remnants caught between Maingkwan and Walawbum. The 46th PSH supported the 65th CH RGT at Yawngbang Ga beginning 1 March 1944. It received casualties there until 10 March 1944, when it moved to Maingkwan.⁴⁸

The unit history of the 43rd PSH describes the action between Maingkwan and Walawbum as follows:

The first functional set up of the unit was located at Ngamaw Ga in support of the 22nd Division on March 11, 1944. In five days, ninety-three [93] battle casualties were operated [on] by the officers of the unit with the aid of technicians who, with one exception, had never before seen an operation. It was their training period in actuality. As one enlisted man wrote in his diary, "The officers seemed to have the know-how already but it was a few nights before the enlisted men operated with the nonchalance of veterans too." Here as at nearly every point throughout the campaign most of our surgery was done at night with the aid of kerosene lanterns and flashlights.⁴⁹

As the 22nd CH DIV continued combat operations down the Hukawng Valley a pattern for providing surgical support by the three PSHs emerged. From 16 March until 23 March 1944, the 42nd, 43rd, and 46th PSHs all supported the 22nd CH DIV. The PSHs would leapfrog each other so that two PSHs were always operational while the other PSH was relocating.⁵⁰ The 43rd PSH unit history describes this tactic:

...this unit leapfrogged with the 42nd and 46th Portable Surgical Hospitals in such a fashion that there were always two units set up to operate -- the forward unit never more than a few miles behind the front... Several hundred casualties received surgical care at these busy set-ups. To work around the clock was not uncommon.⁵¹

The 42nd, 43rd, and 46th PSHs continued to support the 22nd CH DIV during the rest of the Hukawng Valley operation. As noted by the 42nd PSH's unit history, it was not usual for surgical operations to be performed from 16 to

22 hours daily and on one occasion for as long as 46 hours.⁵² After 23 March 1944, the 43rd PSH moved to a location beyond Tingkaw Sakan for rest. After a few days there it moved to Hkawnglawnyang where it remained for two weeks. To prepare for the start of CAI combat operations in the Mogaung Valley the 43rd PSH received orders reassigning it to support the 38th CH DIV.⁵³

Besides the technique of leapfrogging PSHs to ensure continuous forward surgical support to the 22nd CH DIV, other aspects of the employment of the PSHs unfolded in this phase of the campaign. The 42nd PSH unit history states that the unit was normally established near the division headquarters. Patients generally arrived at the PSH by Chinese ambulances and were evacuated from the unit by ambulances of the 13th Mountain Medical Battalion, or occasionally by the 151st Medical battalion.⁵⁴

Wounds requiring surgery were only an average of two to four hours old upon arrival at the PSH, although wounds arriving at the PSH could range from as little as 30 minutes to as long as eight hours old. The unit could move forward with its own vehicles (two 3/4 ton trucks and two 1/4 ton trucks), although it required shuttling. Security for the unit came from its proximity to the division headquarters, although "...danger from enemy action in the area did not

necessarily come from [the] forward direction, but from any and all directions, usually (sic) consisted of individual (sic) sniper's or small patrols."⁵⁵

The 42nd PSH's unit history described the operational setup of the unit while supporting combat operations as follows:

The physical installation, although never the same, followed the same general setup. Cover consisted of tarps, usually two, eighteen by twenty four, supported by bamboo or small trees. Sidewalls (for blackout) consisted of blankets, 6X6 tarps, 12X18 tarps, and whatever could be found....Under the cover were arranged four to five operating tables.⁵⁶

Figure 13 illustrates the floor plan for the general setup of the 42nd PSH's surgical suite as diagramed in its 1944 unit history.⁵⁷

Operations in the Mogaung Valley

Following operations around Walawbum, the 42nd, 43rd and 46th PSHs followed Chinese forces down the Kamaing Road to Shaduzup. The 43rd PSH, which operated as the rearmost of the three units during the battle of Walawbum, moved down the Kamaing Road on 16 March 1943. Located five miles below Walawbum it functioned as the most forward PSH until 23 March 1944. The 43rd PSH then went into bivouac until the end of March 1944 when it joined the 42nd PSH and relocated to Hkawnglawnyang to receive casualties from Shaduzup. The 46th PSH, which had remained at Maingkwan to

support Chinese mopping up operations around Walawbum, remained in the rear until 1 April 1944, when it shifted to Tingkaw Sakan.⁵⁸

The 43rd PSH located at Hkawnglawnyang was working around the clock and handling as many as 40 casualties in a single day from the battle for Shaduzup. After two weeks at Hkawnglawnyang the 43rd PSH was assigned to provide forward surgical support to the 38th CH DIV on CAI's east flank. On 14 April 1944, the 43rd PSH moved to Laban in support of the 114th CH RGT. On 21 April 1944, the 43rd moved east toward West Tingring.⁵⁹ Here the 43rd PSH would demonstrate the flexibility inherent in the organization of the PSH. This flexibility was necessary to support a new tactic that evolved to provide forward surgical support to regimental-size units that operated independently or in isolation of other units. This technique was to split the PSH into two sections capable of independent operation.

Forward Surgical Support of the 22nd Chinese Division

Before picking up the operations of the 43rd PSH in support of the 38th CH DIV a quick account of forward surgical support to the 22nd CH DIV is provided. Pending the reassignments of 42nd and 43rd PSHs, the 46th PSH continued to provide forward surgical support to the 22nd CH DIV as it advanced down the Kamaing Road. Initially, the 46th PSH supported the 22nd CH DIV as the only PSH. Later, to replace the loss of the 42nd and 43rd PSHs, the 46th PSH

was reinforced by two new PSHs. These units were the 45th and 60th PSHs. The 45th, 46th, and 60th PSHs would then continue to provide surgical support to the 22nd CH DIV.⁶⁰

On 9 April 1944, the 46th PSH moved from Tingkaw Sakan to Shaduzup. At Shaduzup, the 46th PSH received casualties from Laban. From Shaduzup, the 46th PSH then moved south of Laban to Wakang to treat wounded from Warazup. The unit remained at Wakang until 3 June 1944, then moved down to Warazup. After the fall of Warazup the 46th PSH was joined by the 45th and 60th PSHs in providing forward surgical support to the 22nd CH DIV.⁶¹ The 45th PSH established itself to provide surgical support to the 64th CH RGT. The 45th PSH notes in its unit history that "[T]he number of casualties here were very heavy, and due to the (sic) Monsoons being well under way, evacuation was nearly impossible."⁶²

The 60th PSH arrived at Wakang on 19 May 1944 to provide surgical support to the 22nd CH DIV. The 60th PSH noted in its unit history that "...in the course of the next two weeks [they] operated on one hundred and fourteen casualties."⁶³ The 45th, 46th, and 60th PSHs established positions at Wakang in late May to receive casualties from battles on the approaches to Kamaing. In the second week of

June 1944, the 45th and 60th PSHs moved to Pakhren Sakan, northwest of Kamaing.⁶⁴ The 60th PSH documented the difficulty of moving in the monsoon in its unit history.

In the early part of June the 22nd Division started to push ahead rather rapidly and we made preparations to follow them. While in the process of acquiring motor transportation heavy rains started and by the time the trucks were packed and ready the road below Warazup was impassable. In a few days horse transport was arranged for and at this stage it was found necessary to reduce our equipment. Our supply Sgt. and three truck drivers were left behind at Shaduzup to care for equipment we could not take.⁶⁵

The 45th PSH also noted in its unit history the difficulties the monsoon added to the North Burma Campaign. In its move to Pakhren Sakan, the 45th PSH had to be moved by shuttling its personnel, equipment, and supplies because it lacked sufficient transportation assets. Additionally, the unit noted the effect the monsoon had on the patient evacuation system. According to the 45th PSH unit history "...patients had to be moved with the unit and evacuated [back] up river by boat after the capture of Kamaing."⁶⁶

With the fall of Kamaing the 45th, 46th, and 60th PSHs were given new orders. The 45th PSH moved into Kamaing on 23 June 1944, where it was relieved from support of the 22nd CH DIV. The unit next provided support to British "Chindits" until 15 July 1944. On this date the 45th PSH was reassigned to support the 38th CH DIV at Mogaung.⁶⁷

With the capture of Kamaing the 46th PSH moved into its final position during the North Burma Campaign to await the end of the monsoon. The 46th PSH moved from Warazup to Nanyaseik, northwest of Kamaing. From this location the 46th PSH provided forward surgical support to the 65th CH RGT of the 22nd CH DIV. During its participation in the North Burma Campaign the 46th PSH "...handled nine hundred, sixty six (966) casualties."⁶⁸ Like the 45th PSH, the 60th PSH also moved into Kamaing on 23 June 1944. During the ensuing months the 60th PSH was assigned to provide surgical support to the British "Chindits" and subsequently the British 36th Division.⁶⁹

Forward Surgical Support of the 38th Chinese Division

On 14 April 1944, the 43rd PSH arrived at Laban to provide forward surgical support to the 38th CH DIV. Up until this time the 38th CH DIV operated without a PSH in direct support. While the 43rd PSH was at Laban an

inquiry came as to the feasibility of splitting the unit to send a fast moving surgical team with the 114th [Chinese] Regiment through the mountains while the other half remained behind in support of the 113th [Chinese Regiment].⁷⁰

On 14 May 1944, the 43rd PSH received orders for the unit to split into two units to support the 113th and 114th CH RGTs.⁷¹

The history of the 43rd PSH from 14 May 1944 until 6 June 1944 is the story of two separate surgical units. As it had with the 42nd and 46th PSHs in supporting the 22nd CH DIV, the 43rd PSH found it necessary to leapfrog itself to support the 38th CH DIV. One half of the 43rd PSH, with Major John M. Noecker, MC, unit commander, and Captain Hans E. Heymann, MC, supported the 113th CH RGT and the 38th CH DIV headquarters. The other half, with Captain Sunderland, MC, Captain Fair, MC, and 14 enlisted personnel supported the 114th CH RGT in its flanking movement through the mountains on the left flank.⁷²

The story of the half of the 43rd PSH under MAJ Noecker, MC, is the more sedate story, but it still includes a march of 70 miles in five days while supporting the 113th CH RGT. The half of the 43rd PSH under Captain Sunderland, MC, is the story of men under enemy fire, nearly constant movement of facilities, exhaustion of medical supplies, rations, and personal deprivations. An average of 25 pounds per man was lost by members of this half of the 43rd PSH. For their actions in providing surgical support to the 114th CH RGT, Captain Sunderland, MC, and Captain Fair, MC, were each awarded the Bronze Star.⁷³

Many individuals are unaware of the dangers faced by AMEDD units, especially hospitals, during combat operations. Many feel that corps-level AMEDD units have been historically immune from the rigors and dangers of combat

except during exceptional circumstances. Excerpts taken from the unit histories of the PSHs in the CBI Theater and other mobile surgical units are highlighted throughout this thesis as a reminder to all that AMEDD units are often in the thick of combat. The following excerpts from the unit history of the 43rd PSH during this phase of the North Burma Campaign serves to reinforce this point.

At dusk on 17 May [1944], the hospital area was attacked by an enemy combat patrol. Because of the proximity of the engagement the resultant casualties had to be treated under blackout conditions which were accomplished by hanging personal blankets about the operating room and using flashlights dimmed by handkerchiefs or gauze. Firing continued intermittently throughout the night until the following morning...During the first setup 65 patients were operated upon, with no deaths...⁷⁴

On the morning of 21 May [1944] the unit proceeded ...a distance of about 8 miles. Again, hospital equipment was carried by pack horses. Due to steep grades and deep mud resulting from several days [of] heavy rain, the move was a difficult one. Part of the supplies were (sic) spoilt because of horses rolling down hills into streams.⁷⁵

[30 May 1944] Here the unit's rations, which had been consumed sparingly during the past 3 1/2 days, were exhausted.⁷⁶

On 1 June [1944]...Regimental C.P. and the hospital were established on the tip of a finger-like spur, bracketed by enemy artillery positions a few hundreds yards to each side. Although harassment was expected and prepared for, only a few shells were fired...A small amount of rice was obtained from the Chinese and from that time until the evening of 4 June, when Chinese rations were air-dropped, hospital personnel subsisted on one cupful of rice and water twice a day each.⁷⁷

The writer, the Commanding Office of the 43rd, has never been so heartsick as he was the night the two sections rejoined near Tumbanghka. The enlisted men and officers of the forward unit were virtually skeletons -- they must have lost an average of 25 pounds per man -- they staggered when they walked...Next day, some of the Liaison Officers of the 38th Division told the Commanding Officer of the unit that several of the men in this group should be "broken" for complaining about short rations. The officers of the same unit were decorated -- what rational?⁷⁸

The two halves of the 43rd PSH rejoined at Tumbanghka on 6 June 1944 (D-Day). At Tumbanghka the 43rd PSH functioned as a field hospital because the monsoon rains prevented evacuation of patients. The 43rd PSH maintained a patient load between 90 and 140 patients at Tumbanghka. Near the end of June 1944, a large segment of the 43rd PSH moved south to Numnawn. On 14 July 1944, the rest of the 43rd PSH relocated to Numnawn and established an 80 bed field hospital within the defensive perimeter of the 38th CH DIV. The 43rd PSH remained at Numnawn for the rest of the monsoon. Of minor note, while at Numnawn, a small team on temporary duty with the 113th CH RGT at Mogaung reunited with the 43rd PSH by using elephants as transportation.⁷⁹

Operations Around Myitkyina

Two PSHs were involved in providing forward surgical support to NCAC's "Myitkyina Task Force" besieging Myitkyina. These units were the 42nd and 58th PSH. The 58th PSH was a recent addition to the PSHs providing surgical support in the North Burma Campaign. Also

providing forward surgical support in operations around Myitkyina were provisional surgical units from the 25 FLD, 73rd Evacuation (EVAC), and Seagrave Hospitals.⁸⁰

On 19 May 1944, the provisional surgical unit from Seagrave Hospital supporting H-Force (1st Battalion, 5307th Composite Unit (Provisional) and 150th CH RGT, 50th CH DIV) reached the airfield at Myitkyina. North of the airfield the 42nd PSH and a provisional surgical unit from the 73rd EVAC Hospital were supporting K-Force (3rd Battalion, 5307th Composite Unit (Provisional) and the 88th CH RGT, 30th CH DIV). On 23 May 1944, a provisional surgical unit from the 25th FLD Hospital deployed to the airfield at Myitkyina to support the 5307th Composite Unit (Provisional). This unit would remain at Myitkyina and augment the 42nd PSH and Seagrave Hospital until the fall of Myitkyina in August 1944.⁸¹

On 29 May 1944, the 42nd PSH collocated with the Seagrave Hospital at the Myitkyina airfield site. Except for a brief separation from 7 June through 14 June 1944, when the 42nd PSH moved to support the concentrated GALAHAD Force, the two units operated together. These units gradually developed a large hospital which handled medical and surgical cases. In general, the Seagrave Hospital handled Chinese casualties while the 42nd PSH received American casualties. Both units maintained a heavy workload until the fall of Myitkyina in August 1944.⁸²

On 10 June 1944, a new unit, the 58th PSH, arrived at Myitkyina. The 58th PSH was assigned to relieve the 42nd PSH supporting the GALAHAD Force concentration. While supporting the GALAHAD Force during the Myitkyina operation the 58th PSH handled 662 surgical and 729 medical cases.⁸³ The following excerpts from the unit history of the 58th PSH highlight the experience of this unit while at Myitkyina.

The first hospital was set up in a deserted basha less than two hundred yards (sic) of the Jap front lines. After operating in this building for a few days, an air dropped package crashed through the roof; and besides almost killing the occupants of the hospital made the building unfit for occupation.⁸⁴

Because of the proximity of the Japanese, the hospital was repeatedly subjected to artillery, mortar, and small arms fire....When enemy fire began to come in, the patients were placed on the ground where the surgical team continued the surgical procedure on (sic) it's knees. This was definitely hard on (sic) ones knees to say nothing of one nerves.⁸⁵

The fall of Myitkyina on 3 August 1944, effectively marked the end of the North Burma Campaign. Of the seven PSHs assigned to NCAC during the North Burma Campaign, six provided forward surgical support to the CAI. These units were the 42nd, 43rd, 45th, 46th, 58th and 60th PSHs. Based on the allocation of one PSH to each regiment in combat the demand for PSHs was greater than the number of units available to NCAC. To compensate for a shortfall of PSHs, provisional PSHs and surgical units were created from medical units such as the 13th Mountain Medical Battalion,

151st Medical Battalion, 25th FLD Hospital, 73rd EVAC Hospital, and Seagrave Hospital. The medical support concept plan and forward surgical support scheme developed for the North Burma Campaign derived its success directly from the use of these portable surgical units in support of highly mobile combat forces.

Analysis of PSH Employment

An analysis of the employment of the PSHs in the North Burma Campaign quickly focuses on several aspects of their capabilities. The performance of the PSHs are evaluated in terms of their *mobility, flexibility, and adequacy* in providing forward surgical support to *nonlinear operations*. The techniques utilized by combat forces typify nonlinear operations as defined in AirLand Operations. NCAC combat forces in the North Burma Campaign continuously employed flanking maneuvers lasting from weeks to months. More often fighting isolated from each other than together on a continuous front, the Chinese divisions and regiments nevertheless maintained a continuously advancing front by use of self-contained task forces. This is the kind of fluidity forecast for the battlefield of the future.

Mobility was a strength of the PSHs in the North Burma Campaign, both in terms of their ability to maintain contact and to echelon multiple units to support combat forces. PSHs in the dynamic North Burma Campaign never lost contact with the combat force they supported. "This

advantage was especially important on a steadily moving front, and in connection with the extensive use of penetration and flanking operations by isolated, self-sufficient task force."⁸⁶ Additionally, as demonstrated by the PSHs supporting the 22nd CH DIV, the ability to echelon these surgical units by medical planners resulted in continuous forward surgical support at all times to combat forces as they fought.

The capability to conduct independent operations by the PSH can not be underestimated. Although limited to 37 personnel, the PSH was capable of conducting prolonged stand alone operations and operating isolated for extended periods of time. This is a critical element of the PSH's overall capability, as it was frequently called upon to accompany brigade-size units on wide, independent flanking maneuvers for weeks at a time. The nature of nonlinear operations during the North Burma Campaign in the CBI Theater demanded that key medical units be capable of sustained operations devoid of the usual methods of logistical support. The ability to operate independently is a pivotal component of any mobile surgical hospital designed to support nonlinear operations.

Flexibility was another feature demonstrated by the PSHs. Dr. James H. Stone, Ph.D., summed up the flexibility of PSHs in October 1949 by stating:

Flexibility and adaptability appeared as primary characteristics of the portable surgical hospitals. They could be quickly assembled, rapidly supplied and equipped by air if necessary, fitted into any normal chain of evacuation, or set aside to provide the (sic) principal medical element of a jungle combat team. If necessary the unit could be split into two equivalent surgical detachments to provide service at the regimental level. At full strength, the portable surgical hospitals served divisional needs under the combat conditions typical in the ...Burma Campaign. They could operate more or less efficiently as mobile surgical units, medical headquarters (regimental or divisional), collecting stations, clearing stations, medical supply points, air or motor ambulance centers, and - except in battle - field hospitals.⁸⁷

The high mobility of the PSH, combined with the ability to split into two surgical units, allowed medical planners unparalleled flexibility in their ability to rapidly shift surgical units based on the tactical situation. Using several PSHs, or a PSH split into two surgical units, medical planners were able to leapfrog units as combat forces advanced rapidly or operated independently on flanking maneuvers. The flexibility to rapidly shift and echelon PSHs was a key advantage as medical units quickly became nonmobile the moment they begin to actively receive patients and do not regain their mobility again until patients are finally evacuated from the unit. The ability to echelon PSHs allowed extreme flexibility in the provision of forward surgical support during the North Burma Campaign.

The insufficient level of PSH support in the North Burma Campaign was of considerable concern to medical planners. This deficiency resulted not from its mobility or flexibility, but from the fact that insufficient numbers of PSHs were made available to the medical planners to support its combat operations. Medical planners had established early during CBI Theater operations that combat tactics and casualty rates would require an initial allocation of one PSH per each Chinese Division in NCAC.

Actual combat experience in the North Burma Campaign further showed medical planners that one PSH was required for each regiment that became involved in combat. This was especially true when combat tactics required the use of extended flanking and combat maneuvers that resulted in isolated, self-contained task forces. Medical planners maintained the forecasted basis of allocation for PSHs by innovatively creating provisional surgical units from medical assets in theater to support those combat forces that lacked an assigned or supporting PSH. By maintaining approximately one PSH to each regiment committed to combat the time for a casualty to reach a surgical unit after wounding averaged two to four hours.⁸⁸

Another key to the success of the PSH was the organizational emphasis on maximizing surgical workload. The heart of the PSH was the employment of between four to five operating room (OR) tables for its three surgeons

during an operational setup. Having more OR tables than surgeons allowed the unit to utilize all surgical staff members simultaneously and maximize surgical procedures when the medical situation demanded the capability to save the large numbers of wounded soldiers that can be generated in a short time by combat operations. The post-op recovery section of the PSH was specifically geared to evacuating the patient by ground or air as soon as the patient was stable enough to survive evacuation. Post-op time for a stable patient was held to the absolute minimum time that the tactical situation allowed.

Summing up the performance of the PSHs in the North Burma Campaign is no small task. Dr. Stone, Ph.D., best enumerates the many contribution of the PSHs when he states:

Under conditions prevailing in the...Burma Campaign, the small mobile surgical hospital was a highly flexible organization, well adapted to jungle and mountain warfare on an advancing front [nonlinear operations]. It supplied a link in the chain of air-ground evacuation when no larger or smaller unit could have filled as well under the existing logistical conditions. Its performance was far above rated capacity. Judging by the reports of observers and of hospitals receiving patients from the surgical units, the portable surgical hospital was remarkably effective in terms of treatment and of conservation of manpower.⁸⁹

CHAPTER 4

30-BED MOBILE ARMY SURGICAL HOSPITAL (MASH)

Evolution of the Mobile Army Surgical Hospital

The 30-bed MASH replacing the 60-bed MASH in the AMEDD structure can trace its lineage to WWII. The very success of the PSH (T/O 8-572) in providing far forward surgical support in the CBI and Pacific Theaters demonstrates the rationale for developing, employing, and maintaining small, highly mobile surgical hospitals. Tables 2 - 6 show the 70 PSHs that received official campaign credit during WWII.¹ Of the 70 PSHs credited with official WWII campaign participation, 18 PSHs served in the CBI Theater and 52 PSHs served in the Pacific Theater. Six PSHs also received WWII occupation credit for service in Germany. While the PSH flourished in the CBI and Pacific Theaters, it was the FLD hospital in the ETO that was the primary unit for successfully providing far forward surgical support through its platoons reinforced by surgical teams.²

Unlike the PSH, the 400-bed surgical hospital (T/O 8-231) played no significant role in providing far forward surgical support in any theater. It is a commonly held belief in today's AMEDD that this type of surgical hospital

was widely employed in WWII.³ Only eight surgical hospitals of this type were actually activated for WWII and only three functioned as such.⁴ Table 7 shows the list of eight surgical hospital activated for WWII, the three that received official campaign credit, and the unit to which they were eventually redesignated.⁵ The decision to eliminate 400-bed surgical hospitals (T/O 8-231) began when The Surgeon General's Office recognized a need for "... a combat zone hospital that was more mobile and required less personnel than ... the 400 bed surgical hospital."⁶

The Surgeon General's Office response to the need to provide a more mobile, less personnel intensive, combat zone hospital resulted in the development of the 400-bed motorized evacuation (EVAC) hospital. The motorized EVAC hospital was capable of forming two self-contained 200-bed surgical hospitals operating under a single headquarters. "The motorized evacuation hospital soon superseded the surgical hospital in the troop basis, although the table of organization of the latter was not rescinded until August 1944."⁷

Medical planners in the ETO recognized the need for a surgical unit, like the PSH, that was specially designed to provide forward surgical support. Even with the FLD hospital providing forward surgical support and the EVAC hospital replacing the surgical hospital, medical planners

saw that a void nevertheless existed.⁸ The emphasis for developing a mobile surgical unit in the ETO was fueled by successful experiences of the British Royal Army Medical Corps.⁹ But, the development and employment of a mobile surgical hospital was delayed because

The Surgeon General opposed this development, believing that the reinforcement of available units - such as platoons of field hospital - with surgical teams met the need adequately and at the same time promoted flexibility in the use of scarce categories of officers. The former view prevailed and on 23 August 1945 a table of organization for a 60-bed mobile army surgical hospital was published.¹⁰

It is this 60-bed MASH that is the progenitor of the MASH concept currently used in the AMEDD force structure. It is from this 60-bed MASH that we can trace the lineage of the 30-bed MASH.

60-Bed Mobile Army Surgical Hospital in Korea

The table of organization and equipment (T/O&E) that established the 60-bed MASH (T/O&E 8-571) as a regular and permanent organization in the AMEDD had the following features in 1948:

...a headquarters and headquarters detachment, a preoperative and shock treatment section, an operating section, a postoperative section, a pharmacy, an x-ray section, and a holding ward. Fourteen medical officers, twelve nurses, two Medical Service Corps officers, one warrant officer, and ninety-seven enlisted men formed the complement. One medical officer commanded; one was a radiologist; two were anesthesiologists; one was an internist; four were general duty medical officers; and five were surgeons.¹¹

The Korean War was to test the theory that would validate the concept of the MASH. Between the end of WWII and the start of the Korean War five MASHs were activated. Yet little was known about this new type of surgical hospital when the Korean War started. Based on severe transportation problems in Korea "...the Eighth Army Surgeon selected the MASH...as his first units because they had their own transport and their complements were small."¹²

The five MASHs in existence prior to the start of the Korean War were not available for immediate deployment. The need to meet the immediate requirement for surgical hospitals and other units in Korea required creative improvisation.

The Army's make-do response to the Korean emergency is reflected in the organization of the new MASHs under tables of distribution (TDs). These units were created to perform temporary missions and were not intended to see extended service. Many such units were formed during the Korean War and were commonly numbered in the 8,000 series to reflect their assignment to the Eighth Army.¹³

The employment and usage of MASHs in the Korea War can be divided into three phases. These three phases corresponded to an initial period of mobile warfare, a middle period of static warfare, and a final transitional period for the MASH. The tactical situation dictated the modus operandi for the MASH in Korea. The speed with which combat forces moved up and down the Korean peninsula during 1950 and early 1951 required the MASH to exploit its designed mobility by relocating often and to modify its

TD in order to provide far forward surgery to multiple divisional units. Beginning in mid-1951 until early 1953 the MASH operated in semi-permanent facilities, and became a general purpose hospital located near the front line. From early 1953 until the end of the Korean War the MASH reverted back and functioned in its intended 60-bed surgical hospital T/O&E structure.

Table 8 shows the MASH units that participated in the Korean War.¹⁴ The first MASHs committed to the Korean War were the following TD units: 8055th, the "Double Nickel," (later the 43rd); 8063rd (later the 44th); and the 8076th (later the 45th). These units were quickly followed by the 1st and 2nd MASHs. Eventually, six MASHs were active at any one time during the Korean War.¹⁵ The MASH in Korea was originally intended to support only one division. As usual, combat forces expanded faster than support troops and it was not unusual for a MASH to provide forward surgical support to several divisions simultaneously. To accommodate the requirement to support multiple divisions and due to a lack of EVAC hospitals the TD of the MASH was modified in late 1951 to increase bed strength from 60 to between 150 - 200 beds. In effect the MASH became a small, highly mobile EVAC hospital and its bed strength fluctuated with need.¹⁶

Following the Chinese intervention in late 1950, combat operations had evolved into static warfare roughly along the 38th Parallel by late 1951. During the period from late 1951 through early 1953, MASHs became less mobile. In effect, as the MASH settled down they became general purpose forward hospitals. "MASHs...were allowed to dig in and to construct temporary buildings...[and] 'few, if any, individuals on duty in any of our hospitals at the present time have seen the unit[s] moved.'"¹⁷ This period of the Korean War for the MASH was described as follows:

At the MASH during late 1951 and 1952 baseball diamonds appeared on level spots, horseshoes clanged, and volleyball teams practiced. On summer days swimming parties visited "clear pools formed by mountain streams." As danger lessened, the surgical hospitals gained a reputation for insouciance bordering on wackiness. Liquor was abundant and cheap, and the MASH was normally the farthest point forward that American women got in Korea. Questioned about the nature of the hijinks during off-duty hours, a MASH doctor later said tersely, "Oh, sex and liquor. What else is there?"¹⁸

The final employment phase for the MASH during the Korean War began in early 1953. In February 1953, the MASH assumed the standardized T/O&E for a 60-bed surgical hospital and retained this organizational structure until well after the end of the Korean War. The Eighth Army TD units assigned to Korea during mid 1950 were finally converted to Regular Army units on 2 February 1953. Besides the organizational change to a T/O&E 60-bed MASH the unit also underwent a change in nomenclature as well. Originally

known as a Mobile Army Surgical Hospital (MASH), the unit was eventually redesignated by the US Army as a Surgical Hospital (Mobile Army).¹⁹

The MASH was considered an outstanding success in the Korean War, especially in the modified role as both a surgical hospital and as a small, mobile EVAC hospital. During the Korean War there was one major issue that concerned the employment of the surgical hospital. This observation was made by both senior medical planners and division medical units. This criticism centered around the point that during combat operations the MASH was often located too far to the rear to provide forward surgical support to divisional medical units.²⁰ The following excerpt offers several explanations for employing the surgical hospital in this manner:

For several reasons, however, the surgical hospital still was not located adjacent to the clearing station but rather 1,000 to 20,000 yards in the rear, depending on local terrain and the road net. The helicopter and improved ground transport combined to make this possible, but rotation [of personnel] made it desirable. MASH personnel received credit for only two constructive months instead of three, as they would have in division areas, an essential move to slow the turnover among...staff.²¹

Although considered highly successful, the Korean vintage 60-bed MASH did not offer a significant improvement in surgical capability over the WWII PSH. When measured in terms of surgeons, the six surgeons of the 60-bed MASH provided only three more surgeons than the PSH. OR table capability was essentially the same between the two units.

The focus in capacity improvement of the 60-bed MASH therefore appears to be in post-op bed capacity and in the nursing staff of the 60-bed MASH which was substantially improved over the PSH.

The Surgical Hospital in Vietnam

The Vietnam War required modification to the normal employment methodology of hospitals in the combat zone. The Vietnam War, unlike WWII and the Korean War, was a counterinsurgency war fought without front lines. "In contrast to World War II and the Korean War, the hospital did not follow in direct support of tactical operations. All Army hospitals in Vietnam...were fixed installations with area support missions."²²

Seven surgical hospitals served in the Vietnam War. The allocation of surgical hospitals to Vietnam provided a rough basis of one per division or division-level equivalent.²³ Table 9 identifies these surgical hospitals.²⁴ While surgical hospitals did not move to provide forward surgical support to divisional units during tactical operations, they did move to provide surgical support based on increased combat operations in the various Corps tactical zones (CTZ) on an area basis. Vietnam was divided into four CTZs to facilitate combat and support

operations. These CTZs were the I, II, III, and IV. The majority of surgical hospitals served in the I and III CTZs.²⁵

A new innovation in military field hospitals, MUST, (medical unit, self-contained, transportable), equipment was first used in Vietnam by the 45th Surgical Hospital in October 1966.²⁶ MUST was developed by the Garrett Corporation under a 1963 contract to create a self-contained, transportable medical unit. The following describes the MUST concept:

The basic features of the new unit were to increase mobility, short set up time, high reliability and efficiency, controlled environment and the capability of maintaining all weather operation. The MUST consisted of a combination expandable shelter shipping container, a ward type inflatable shelter, and a self-contained utility system providing electric power, air conditioning, heating, hot and cold running water and waste water service. Principle advantages of the MUST system were that it would provide a world wide operating capability under any environmental condition, improve medical treatment capability, allow maximum use of physicians and nurses' skills and increase mobility of combat support units.²⁷

In all, five surgical hospitals (2nd, 3rd, 18th, 22nd, and 45th) were equipped with MUST equipment. Designed for mobility, MUST equipment was used by units on an interim basis until semi-permanent facilities could be constructed for them. By 1968 surgical hospitals had become "fixed" and lost their intended mobility. Problems in relocating the 18th and 22nd Surgical Hospitals in 1968 highlighted the need for surgical hospitals to retain their mobility.²⁸

To ensure the requirement for mobile surgical hospitals the United States Army, Vietnam, (USARV) Surgeon adopted the following policy:

...two MUST surgical hospitals would retain all equipment to be completely mobile and that drills would be held frequently to keep hospital personnel trained to displace, move, and emplace their hospital rapidly. The 2d and 18th Surgical Hospitals were designated "mobile" (sic) MUST's.²⁹

According to Major General (Retired) Sprugeon Neel, MC, the major shortcoming of the employment of surgical hospitals in Vietnam was a failure to capitalize of their mobility. MUST equipment represented a practical innovation to controlling mobility requirements in Vietnam for the AMEDD. Unfortunately, the "T" (transportability) factor of MUST was not exploited by medical planners. Closeness to combat operations was important only from the point of view that hospitals met reasonable helicopter air-evacuation criteria. Hospitals only moved when major combat forces shifted to new areas of operation.

The "mobile" MUST equipped surgical hospital would have been an excellent choice to establish immediate surgical and hospitalization support in new areas of operations. Then less expensive semipermanent hospitals could be employed to replace the "mobile" MUST equipped surgical hospital and free it for future employment.³⁰ One other note about the Vietnam 60-bed MASH must be pointed out. Like its Korean era predecessor, the Vietnam 60-bed MASH offered no significant change in surgical capability

over the WWII PSH. Static warfare served to highlight post-op bed capability over surgical capacity for both the Korean and Vietnam era 60 bed MASHs. Only the nature of mobile warfare can highlight the need for surgical capability over post-op capacity where the MASH is concerned.

Mobile Army Surgical Hospitals in Operation "Desert Storm"

Operation "Desert Storm" represents the latest large scale deployment of MASHs. Table 10 identifies the nine MASH units that were deployed in support of Operation "Desert Storm."³¹ These MASHs were divided between the VII and XVIII Airborne Corps. Six MASHs were assigned to the VII Corps and three MASHs to the XVIII Airborne Corps. Based on the number of units deployed to Southwest Asia the basis of allocation for MASHs was roughly one for each division.

Employment methodology for MASHs varied and depended on which Corps, or more specifically, the medical brigades and medical groups which controlled the MASHs. In XVIII Airborne Corps, the 44th Medical Brigade (commanded by Colonel (later Brigadier General) Jerry Faust, MS), assigned the 2nd, 5th and 10th MASH to the 1st Medical Group (commanded by COL Eldon Ideus, MS).³² In the VII Corps, the 332nd Medical Brigade (commanded by Brigadier General (BG) Michael D. Strong, MC), assigned one MASH, the 115th, to the 127th Medical Group. While assigned to the 127th Medical Group the 115th MASH collocated and worked with the

31st Combat Support Hospital as a single organization. The four other MASHs, the 159th, 475th, 807th, and 912th, were assigned to the 341st Medical Group.³³ A sixth MASH, the 300th, while assigned to VII Corps, was deployed to Europe and never arrived in the Saudi Arabian theater.³⁴

In the XVIII Airborne Corps area of operations the 44th Medical Brigade employed two medical groups. These groups were employed with the 1st Medical Group forward to support XVIII Airborne Corps divisions and the 62nd Medical Group assigned to support the corps rear area. All MASHs were assigned to the 1st Medical Group. The 1st Medical Group utilized task forces to control hospital units. The 2nd and 10th MASH were assigned together to one task force and the 5th MASH was assigned to another task force. Over in the VII Corps area of operations, the 332nd Medical Brigade employed three medical groups, the 30th, 127th, and 341st Medical Groups. Four of the five MASHs were assigned to the 341st Medical Group which was utilized chiefly to provide command and control to MASHs. The fifth MASH, the 115th, was assigned to the 127th Medical Group. The 127th Medical Group was used predominately to provide command and control to CSHs.³⁵ Three MASHs moved forward to support VII Corps divisions and one MASH supported the division in reserve and never went forward because ground operations terminated so quickly.³⁶ Of the three that went forward only the 159th MASH became

operational during the ground war phase of Operation "Desert Storm." The other two MASHs remained uploaded during ground operations.³⁷

In the XVIII Airborne Corps, where MASHs were tasked organized, "...over 40% percent of the bed capacity was left behind the line of departure, [and] ...the units managed to remain reasonably close to supported forces and were in position to provide surgical support early in the campaign."³⁸ This tactic serves to reinforce the lessons learned earlier in WWII by the PSH during the North Burma Campaign in the CBI Theater. The emphasis of a MASH must be on its surgical capability, not post-op bed capacity. Experiences during the Korean and Vietnam Wars dulled the true point of the MASH - maximum surgical capability forward. To emphasize this point, MASHs in the VII Corps "...were completely uploaded on organic and corps transportation assets. The units could not keep up with the pace of operations, and by the end of the ground war, only one MASH was operational."³⁹

Several issues surfaced concerning the employment of MASHs in Operation "Desert Storm." Mobility was a central theme expressed by many medical planners. The MASH was found to lack the necessary mobility to support offensive operations. The mobility of MASH was affected by both its organic transportation and Deployable Medical System

(DEPMEDS) equipment.⁴⁰ The following thoughts about the TO&E of the MASH emerged following Operation "Desert Storm."

MASH hospitals, considered 100 per cent mobile with their TO&E equipment, were found to be only 50 to 60 per cent mobile once the equipment from the Common Table of Allowances and needed supplies were added.⁴¹

We had 60 bed hospitals with really (sic) heavily surgically intense equipment. We could back off of this some. We could possibly do with 30- or 40-bed hospitals, instead of 60-bed hospitals.⁴²

If a MASH is going to be truly mobile, significant changes need to be made in its composition. Decreasing the MASH personnel, decreasing the number of ward beds, and increasing the operating room capability is a start in the right direction. In addition, the DEPMEDS temper tent and a majority of of the self-contained "iso-boxes," both of which are bulky and time consuming to erect and break down...Also, the operating room equipment should be considered for replacement by the more mobile equipment currently used....⁴³

Another issue concerned using the MASH to provide support to garrison or staging areas. While appropriate as a temporary role, it was felt this was a more appropriate role for other hospital units. This issue was much like the employment of the MASH in Vietnam.⁴⁴ A final significant issue was the use of forward surgical teams to fill the mobility shortfall of the current MASH and provide additional forward surgical support assets to the division during combat operations. Major Peter Cardinal, MC, in his article, "Health Service Support in Operations Desert Shield

and Desert Storm," points out that "...Forward Surgical Teams...are a very poor substitute for a MASH...because of their very limited operating room capacity."⁴⁵

Forward Surgical Teams

The Forward Surgical Team (FST) is not a new concept on the battlefield. The first notable appearance of the FST occurred on the WWI battlefield in the form of the Mobile Surgical Unit.⁴⁶ During WWII, various types of forward surgical teams were created ad hoc from field hospital platoons and other medical units as the situation demanded. The FST reemerged on the modern battlefield following problems associated with rapidly deploying the 5th MASH to provide corps-level forward surgical support to the 82nd Airborne Division on Grenada during Operation "Urgent Fury."⁴⁷

Interest in developing a rapidly deployable forward surgical capability by the AMEDD led to testing of the French Parachutist Surgical Unit (FPSU) by the 307th Medical Battalion (Airborne) at Fort Bragg, North Carolina during 1984 and 1985. The 44th Medical Brigade followed up on the FPSU by developing a FST to provide a forward surgical capability prior to the arrival of a MASH. The FST was designed to fill the deployment void until a MASH arrived. The FST concept developed by the 44th Medical Brigade was successfully employed in Panama during Operation "Just Cause."⁴⁸

Problems with rapid deployment and ground mobility of the H-series TOE 60-bed MASH led to many medical units creating provisional FSTs. The numbers of aircraft made available to airlift a 60-bed MASH often constrained its ability to rapidly deploy for a mission. The 60-bed MASH required large numbers of both the C-5 "Galaxy" and C-141 "Starlifter" aircraft to deploy quickly by air. Once on the ground the mobility of the 60-bed MASH was limited as evidenced by actual operational experience from Operation "Desert Storm" and numerous training exercises. Attempts by many MASHs to overcome the many doctrinal limitations of the 60-bed MASH led to the development and employment of a provisional FST as part of the unit's organic capability to provide forward surgical support.

In response to the doctrinal mobility limitations of the 60-bed MASH, the 43rd Surgical Hospital (Mobile Army) developed a provisional FST in 1992. Figures 14 and 15 show the organization and layout of this particular FST.⁴⁹ It was heavily influenced by the FST developed and employed by the 5th MASH at Fort Bragg, North Carolina.⁵⁰

The 43rd Surgical Hospital (MA) FST was capable of being transported on two 5-Ton trucks and one 5/4-Ton truck. Designed to fit under one general purpose (GP) large tent, the FST provided two emergency medical treatment (EMT) stations, one OR table, and ten post-op beds. Two general surgeons staffed the FST and provided a general surgical

capability of 24 OR table hours for two days. The FST was designed to operate independently for up to 48 hours before rejoining the unit.⁵¹

At first glance the FST appears remarkably similar to the PSH developed for the CBI and Pacific Theaters during WWII. Both the FST and PSH are highly mobile and rapidly deployable. Unlike the FST, which has one OR table (Figure 15) and two general surgeons, the PSH employed four to five OR tables (Figure 13) and three general surgeons. The emphasis of the PSH organization was on surgical capability as demonstrated by OR tables and assigned general surgeons. The FST, relying on only one OR table is severely constrained in its ability to provide forward surgical capability. Indeed, the single OR table becomes the key chokepoint in the FST's ability to provide forward surgical capability.⁵²

The PSH with its 37 assigned personnel (Figure 12) was designed to provide 25 beds. Actual bed capacity expanded or contracted based on the tactical situation. Emphasis was on quick post-op recovery of the patient with minimum medical assets and prompt evacuation by air or ground to the supporting FLD or EVAC hospital. The FST, with its 25 assigned personnel (Figure 14), provided 10 post-op beds. These beds were designed as intensive care

beds with full medical capability for the post-op patient. Emphasis was placed on full post-op recovery of the patient before being evacuated from the FST.

The most significant and key characteristic that distinguishes the PSH from the FST is the ability to operate independently. The PSH, which required only twelve more personnel than the FST, had the significant added capability of being able to perform stand alone operations indefinitely.⁵³ However, the FST, by design, is limited to missions of 48 hours or less. Additionally, it is highly dependent on its parent unit or on the medical unit it is supporting for subsequent administrative, logistical, and communications support.

The nature of nonlinear operations on the modern battlefield favors those units capable of conducting and sustaining independent operations. During the North Burma Campaign the PSH successfully demonstrated its capability to operate independently and provide forward surgical support during nonlinear operations. The FST lacks the critically important capability to operate independently during nonlinear operations. The FST doctrinal inability to conduct stand alone operations is its key limitation to the provision of forward surgical support during nonlinear operations.

THE 30-BED MASH

The AMEDD is changing its current force structure to support the new doctrine called AirLand Operations. This future force structure, called Medical Force 2000 (MF2K), attempts to apply lessons learned from the current AirLand Battle doctrine and recent lessons learned from Operation "Desert Storm." Paramount to the new AirLand Operations doctrine is a change from the current AirLand Battle mindset of linear defense. The emphasis of AirLand Battle centered on controlling the flow of echelons into the close battle. AirLand Operations doctrine prepares for a future battlefield that will be nonlinear in nature. The emphasis of AirLand Operations is on attacking enemy formations by fire and defeating them by rapidly maneuvering combined arms teams to grab the initiative and force the battle.⁵⁴

Certain medical objectives for supporting AirLand Operations impact on the provision of forward surgical support on the future battlefield. Key to health service support for the injured soldier is far forward treatment. Two fundamental time planning factors guide the provision of far forward treatment. First is that the medic being on the scene providing treatment to the soldier in 30 minutes or less. Second and most important,

to the MASH, is the provision of surgical support to those injured soldiers requiring this type of medical intervention in six hours or less.⁵⁵

To meet the medical objectives and goals on the future nonlinear battlefield espoused in AirLand Operations requires the AMEDD to develop "highly mobile" treatment units with "stand alone capability." Additionally, a "closer relationship between corps level medical support and [the] division" will be necessary to successfully provide forward surgical support to AirLand Operations.⁵⁶ To provide forward surgical to AirLand Operations the AMEDD has proposed redesigning the current 60-bed H-series TOE MASH into the new L-series 30-bed MASH. The 30-bed MASH concept incorporates many of the lessons learned about the current 60-bed MASH in supporting AirLand Battle doctrine.

The L-series TOE 30-bed MASH was designed to support "...the overall objective of *conserving the trained fighting strength* by optimizing the recovery potential through early surgical intervention for the critically injured soldier."⁵⁷ The 30-bed MASH can function independently and is designed to be employed as far forward as the division rear area. Its mission is to provide lifesaving surgical support to injured soldiers in order to stabilize them for further evacuation to other corps or higher level hospitals.⁵⁸

To enhance the mobility and flexibility of the 30-bed MASH, the unit is capable of dividing and operating as two separate surgical units. Figure 16 illustrates the organization of the 30-bed MASH.⁵⁹ The ability to operate as two distinct surgical units allows the 30-bed MASH to operate by echelon and enhances its tactical employment. The two surgical units of the 30-bed MASH are the 20-bed Hospital Unit Surgical - Main (HUSM) and the 10-bed Hospital Unit Surgical - Forward (HUSF).⁶⁰

The HUSM is the heart of the 30-bed MASH. Consisting of 20 beds and two OR tables it functions as the main or second echelon of the 30-bed MASH. The HUSF, with one OR table and 10 beds functions as the first echelon of the 30-bed MASH.⁶¹ The HUSF is capable of operating detached from the unit for up to 48 hours. The staff of the HUSF is sufficient to provide limited surgery and short-term postoperative care. Figure 17 shows the HUSF personnel.⁶² Based on the tactical situation the HUSF can be employed far forward into the division and attached to the medical company of either the Forward Support Battalion or Main Support Battalion.⁶³

The 30-bed MASH was designed to transport 100% of its TOE and CTA equipment and supplies in a single lift with organic transportation assets.⁶⁴ Its mobility was conceived to enable the 30-bed MASH to keep up with the maneuver units it is to support. Additionally, the ability

to echelon the unit through its two separate surgical units allows enhanced flexibility during support of tactical operations as compared to the 60-bed MASH. However, unlike the 60-bed MASH which was allocated on the basis of one per division, the 30-bed MASH has a basis of allocation of only two per corps.⁶⁵ Since a corps consists of between two to five divisions a shortfall in forward surgical assets to a division within the corps could occur.

Summary

Designed to provide far forward surgical support to AirLand Operations the 30-bed MASH exhibits significant doctrinal shortfalls when compared to the WWII PSH. The nature of nonlinear operations on the future battlefield with its rapid maneuver and isolated operations places great demands on the MASH designed to support this doctrine. The WWII PSH in the CBI Theater provides a highly appropriate comparison with the 30-bed MASH. Nonlinear operations where the forte of maneuver forces during the North Burma Campaign in the CBI Theater and the PSH provided outstanding forward surgical support to this type of warfare. Employment experiences of the PSH in providing surgical support to nonlinear operations in the North Burma Campaign provides an actual operational template for evaluating the proposed 30-bed MASH.

The PSH was designed to provide forward surgical support by emphasizing the use of OR tables and surgeons in its organization. The PSH employed four to five OR tables for its staff of three general surgeons. The 30-bed MASH employs only three OR tables for a staff of six surgeons: four general surgeons (including the hospital commander), one orthopaedic surgeon, and one thoracic surgeon).⁶⁶ The difference in bed capacity between the PSH (25 beds) and the 30-bed MASH is insignificant except in terms of the size of the nursing staff. The 30-bed MASH nursing staff is substantially larger to reflect a philosophy of full post-op recovery and stabilization prior to patients being evacuated. As the MASH has evolved through its history, except for the PSH, the principal focus of the MASH has been on the number of hospital beds and not on its principal role - OR surgical capability. The 30-bed MASH represents no substantial gain in surgical capability over the PSH.

Mobility of the 30-bed MASH is reflected in the large number of organic trucks (24 5-Ton trucks) necessary to transport the unit. Compared to the PSH, which was transportable on three trucks, and as often as not, on the backs of the personnel of the unit, the 30-bed MASH mobility is suspect until verified by operational testing.⁶⁷ Another measure of mobility is the ability to echelon standardized, like medical units to support combat operations. Based on the doctrine of the 30-bed MASH, it

has the ability to echelon separate surgical units. The PSH could also echelon two separate surgical units when the demanded by the tactical situation. However, unlike the HUSF of the 30-bed MASH, both sections of the PSH could operate as independent surgical units if required by the tactical situation.

The mobility and flexibility of the PSH and 30-bed MASH is best reflected in the basis of allocation of both types of mobile surgical units. The PSH was employed during the North Burma Campaign on the basis of one PSH per Chinese regiment. The 30-bed MASH is allocated on the basis of two per corps. Historical experience with the MASH in supporting combat operations since WWI has stressed a minimum allocation of one MASH per division.

Nonlinear operations in the CBI Theater during the North Burma Campaign showed that brigade size maneuver units often operated isolated from each other as they maneuvered for tactical advantage over Japanese forces. Even with its ability to operate two separate surgical echelons on the battlefield the 30-bed MASH, with a basis of allocation of two per corps, falls well short of the historical experience of the number of PSHs utilized in providing forward surgical during nonlinear operations. One after action report following Operation "Desert Storm" recognized

that the basis of allocation for the proposed 30-bed MASH "...probably does not provide enough mobile [surgical] hospitalization to a corps."⁶⁸

The PSH during the North Burma Campaign in the CBI Theater demonstrated that nonlinear operations require a medical unit to be capable of independent and sustained operation for long periods of time. Employed on the basis of one PSH per Chinese regiment in combat the PSH often operated isolated during extended flanking operations for several weeks to a month or more at a time. The HUSF from the 30-bed MASH, while designed to operate in support of brigade operations for up to 48 hours, lacks the ability to stand alone during those extended nonlinear combat operations. Additionally, the HUSF, with one OR table, provides insufficient surgical capability and surgical staff when compared to the operational experiences of the PSH during the North Burma Campaign in the CBI Theater.

In summary, the 30-bed MASH lacks the mobility, flexibility, and adequacy to provide forward surgical support to the type of nonlinear operations forecast by AirLand Operations on the future battlefield. This conclusion is based on comparing the actual combat experiences of the PSH during the North Burma Campaign in the CBI Theater to the proposed doctrine for the 30-bed MASH. Using the operational experiences of the PSH provides a valid methodology for evaluating the 30-bed MASH.

Additionally, the historical evolution of the MASH itself provides critical insights into identifying the doctrinal deficiencies of the 30 bed MASH. The best methodology for evaluating future medical units designed to provide forward surgical support to nonlinear operations is to use a composite template based on previous doctrinal strengths shown by the MASH during its long operational history.

CHAPTER 5

ANALYSIS

The employment of PSH units during the WWII North Burma Campaign in the CBI Theater provides a appropriate template to compare the new 30-bed MASH designed to provide forward surgical support to nonlinear operations defined in AirLand Operations. The North Burma Campaign in the CBI Theater is a suitable campaign that demonstrated nonlinear operations on a large scale. This scale is synonymous to current corps-level operations. From a field medical operations standpoint, it required corps-level medical units, especially the PSH, assigned to support the North Burma Campaign to adopt the principles of nonlinear operations. These principles include: fluidity of movement, isolated operations, and often a lack of distinction between front and rear operations.¹

Analysis of the 60-bed MASH

In comparing the new 30-bed MASH to the PSH we begin by first comparing the PSH to the principal lineal predecessor of the 30-bed MASH, the 60-bed MASH. Although mobile surgical units can trace their lineage back to WWI, these units were designed and employed to provide forward

surgical support during traditional linear operations. Additionally, WWI mobile surgical units were discontinued after the completion of the war and provided no direct linkage to the evolution of the 400-bed surgical hospital or other mobile surgical units that emerged during WWII.²

The 60-bed MASH originated from a need to provide forward surgical support in the ETO.³ With the demise of the 400-bed surgical hospital by October 1943, no mobile surgical unit existed to provide forward surgical support in the ETO. In the Pacific and CBI Theaters, the PSH was providing outstanding forward surgical support to combat forces. The gap in providing forward surgical support to combat forces in the ETO was filled by platoons from field hospitals augmented with surgical teams.⁴ The 60-bed MASH was designed to fill this forward surgical support need.

The comparison of the PSH to other mobile surgical units will be in terms of adequacy, flexibility, and mobility. These terms have previously been defined but are again discussed for purposes of clarifying this analysis. Adequacy is defined as the ability of a medical unit to provide support on the basis of its doctrinal mobility and flexibility. Flexibility is defined as the ability to rapidly shift standardized, like medical units, to areas of greatest need within the theater of operations.⁵ Mobility for medical units is defined as the ability to move with the speed of the force being supported. Lacking this speed, it

is the ability to echelon standardized, like medical units and to move these units to best support combat operations.⁶ Since adequacy of a mobile surgical unit is a function of both flexibility and mobility it will be addressed after an evaluation of these two concepts.

Flexibility

The 60-bed MASH when deployed by BOA provides flexibility to the medical planner. The early stage of the Korean War showed that the 60-bed MASH while mobile, had trouble supporting multiple divisions during mobile warfare. Medical planners had trouble echeloning 60-bed MASH units to compensate for loss of mobility once a unit started receiving patients. The problem came from the fact the insufficient numbers of units were deployed in theater.

Conflicts such as the Vietnam War, in which 60-bed MASHs were static and not required to be mobile on the battlefield camouflaged the issue of flexibility required by medical planners on the future nonlinear battlefield. Indeed, only the early stage of the Korean War truly tested the mobility and flexibility of the 60-bed MASH. During this stage of the Korean War the 60-bed MASH, when its mobility was at a premium, was found to be insufficient in terms of total number of units assigned to the theater to provide flexibility to medical planners. Because the Korean

War quickly transformed into a static war, the total number of MASHs required to support mobile combat operations, like the Vietnam War, ultimately became an mute issue.

MASHs developed before and since the PSH have been organizationally geared to the extended post-op care of the patient as measured by bed capacity and nursing staff assigned. The number of surgeons and OR tables in the current 60-bed MASH have not significantly expanded beyond the capability of the WWII PSH, although personnel strength for the 60-bed MASH exceeds the PSH by over 600%. Table 11 highlights this comparison. The current emphasis of the modern MASH on post-op bed capability is detrimental to the true mission of a mobile surgical hospital - the capacity to operate independently in order to provide the maximum number of surgical procedures based on surgical staff and OR tables.

Mobility

The 60-bed MASH has been a standardized unit in the AMEDD force structure since 1945. The 60-bed MASH was designed to have mobility equal to the force it supported. While the 60-bed MASH has served in the Korean and Vietnam Wars and Operations "Urgent Fury," "Just Cause," and "Desert Storm," only the Korean War and Operation "Desert Storm" have tested the mobility of the 60-bed MASH in other than static warfare. Both these conflicts found the 60-bed MASH to have major mobility problems. The foremost problem

being the inability of the unit to move 100% of its equipment and personnel with organic transportation assets. During Operation "Desert Storm" one MASH required 55 heavy equipment transporters (HETs) and stake and platform (S&P) trucks from VII Corps transportation units to move the unit's equipment.⁷

The other issue of mobility in the 60-bed MASH is one of organic capability to deploy the unit. The PSH was capable of moving its own equipment and personnel during combat operations. The 60-bed MASH, while designed to be 100% mobile was, in fact, only 50-60% mobile.⁸ During Operation "Desert Storm," 60-bed MASH units assigned to provide forward surgical support to combat forces of the VII Corps were uploaded on 2nd COSCOM transportation units to compensate for lack of organic mobility. Sufficient numbers of 60-bed MASH units were deployed to allow medical planners to echelon these units if required to maintain mobility and contact with combat forces. However, if the VII Corps and 2nd COSCOM had not provided additional transportation assets these 60-bed units would not have kept up with combat operations.

In the XVIII Airborne Corps, medical planners of the 44th Medical Brigade and 1st Medical Group compensated for lack of organic capability by paring down the size of the 60-bed MASH units. In the case of these 60-bed MASH units, over "...40% of the bed capacity was left behind...."⁹

Of critical note is the fact that these units left behind bed capacity and not surgical capacity. Medical planners recognized that forward surgical capacity is the forte of the 60-bed MASH and cannot be sacrificed.

Besides the mobility problems of moving the equipment of the 60-bed MASH, the above conflicts demonstrated that mobile surgical units lose their mobility once they begin to receive patients. In fact, once any mobile surgical unit begins to receive and treat patients it is no longer mobile. It must stop to set up equipment in order to manage patients. No mobile surgical unit regains its mobility again until it has transferred or discharged all accumulated patients to other units. When a MASH becomes nonmobile because it is receiving and treating patients, medical planners compensate for this loss of mobility by moving or echeloning other MASHs to provide forward surgical support to combat operations. This is where the basis of allocation (BOA) of mobile surgical units to support combat forces becomes critical.

One other significant mobility issue concerning the 60-bed MASH becomes apparent by noting its historical employment. When utilized to provide forward surgical support to static combat operations the premium on the 60-bed MASH shifts to longer term post-op bed management. In other words, the 60-bed MASH concentrates on retaining post-op patient longer than they normally would under mobile

warfare conditions. Not needing to rapidly divest itself of post-op patients to quickly regain mobility negatively effects the ability of the MASH to move and support swiftly moving combat forces. The 60-bed MASH that was originally designed to be a highly mobile surgical unit changes to a unit that now stresses a longer post-op bed management of surgical cases and static employment.

The WWII PSH, utilized in the North Burma Campaign in the CBI Theater, provides a model for comparing the problems that will be encountered by the 60-bed MASH in supporting highly mobile, nonlinear operations. The PSH was a substantially smaller unit in terms of personnel and equipment than the 60-bed MASH. The diminished size of the PSH kept this mobile surgical unit highly mobile. Despite having only three trucks assigned, the PSH was highly mobile. In fact, the PSH was designed to be transported solely by the personnel assigned to the unit if necessary.¹⁰ The mobility of the PSH was designed to match the speed of the combat forces supported. In the case of the CBI Theater, this was geared to the mobility of light infantry.

In addition to matching the mobility of the combat force supported, medical planners recognized the fact that the PSH lost its high degree of mobility once it became engaged in providing forward surgical support. To offset this loss of mobility, the PSH was utilized in sufficient

numbers to ensure the combat force always had forward surgical support. Utilizing a BOA of one PSH per brigade, medical planners were able to echelon PSHs to ensure that one PSH was always uploaded and moving with combat forces while other PSH units were providing surgical support.

Adequacy

The adequacy of the 60-bed MASH is of concern to the medical planner. The 60-bed MASH has been more than adequate in providing forward surgical support to combat operations during static warfare. The later stages of the Korean War and the Vietnam War have shown that the 60-bed MASH is more than adequate in terms of mobility and flexibility when it is employed in a static nature. However, the 60-bed MASH is inadequate to provide forward surgical support during highly mobile combat operations such as nonlinear operations. The early stage of the Korean War demonstrated clearly that the 60-bed MASH was not deployed in sufficient numbers to give medical planners necessary flexibility to match the mobility of combat operations by echeloning MASH units. On the other hand, Operation "Desert Storm" demonstrated the 60-bed MASH, even when planned to be echeloned to support combat operations, lacked the organic mobility to support highly mobile combat operations without additional support from other corps units.

The BOA for the 60-bed MASH, or for that matter any mobile surgical unit, has traditionally been planned at one unit per division since WWI. The concept behind this BOA is to allow the medical planner flexibility in planning forward surgical support. By echeloning the MASH, the medical planner is able to overcome the loss of mobility by a MASH when it must stop to receive and treat patients. While one or more MASH units are receiving and treating patients, the medical planner is able to continue to move or echelon other MASHs to provide continuous forward surgical support to combat forces. Only when sufficient numbers of mobile surgical units are lacking does the medical planner lack the necessary flexibility to provide forward surgical support to combat operations.

Because the CBI Theater originally lacked sufficient numbers of assigned PSH units, medical planners compensated by creating provisional PSH units to fill the anticipated shortfall to support combat operations. The ability to create provisional PSH units was based on the relatively small size of this type mobile surgical unit. The issue here is that medical planners must have sufficient numbers of mobile surgical units to support highly mobile combat operations such as nonlinear operations. Medical planners cannot provide adequate forward surgical support when insufficient numbers of mobile surgical units are provided.

Summary

In summary, the WWII experience of the PSH, when compared with the combat experiences of the 60-bed MASH, shows the 60-bed MASH lacks the necessary organic mobility to provide forward surgical support during nonlinear operations. Medical planners still retain flexibility to overcome the lack of organic mobility of the 60-bed MASH when it is deployed by BOA. This was demonstrated in Operation "Desert Storm" when approximately one 60-bed MASH was deployed for each division. When deployed to support combat operations at less than the BOA, medical planners lose flexibility to support highly mobile combat operations. The early stage of the Korean War demonstrates this fact.

Finally, when compared to the PSH, the 60-bed MASH offers no substantive increase in surgical capability as defined by assigned surgical staff or OR tables. With an increase in personnel strength of over 600% it would be reasonable to expect a major increase in surgical workload. What the 60-bed MASH offered instead was a significant increase in nursing staff to manage post-op cases. This is the type of care more appropriate for static than mobile warfare. It should, however, be noted that the majority of combat experience acquired by the 60-bed MASH has occurred predominately during periods of static warfare such as that in the later stages of the Korean War and the Vietnam War.

The mission of mobile surgical units must always remain the provision of highly mobile forward surgical support to combat operations. The increase in nursing staff and bed capability of the 60-bed MASH adversely effected mobility as demonstrated in Operation "Desert Storm." It will impact adversely on the 60-bed MASH capability to support nonlinear operations as well. Post-op patient management is a role more suitable for other less mobile corps-level and above hospital units.

Analysis of the Forward Surgical Team

The current FST concept evolved to provide forward surgical capability when the entire 60-bed MASH could not deploy due to mission requirements. The mission requirements that limited the deployment of the 60-bed MASH were typically either lack of available aircraft to deploy the entire 60-bed MASH unit or a mission of relatively short duration. Both Operations "Urgent Fury" and "Just Cause" are representative of this type situation.

Flexibility

Highly mobile, the FST could established a GP-Large tent with two EMT tables, one OR table, and ten post-op beds in about one and one-half hours utilizing 25 personnel. Figure 10 highlights this layout. Between the FST and the remaining elements of the 60-bed MASH, medical planners were provided a new capability to echelon the unit by sections to

provide forward surgical support to combat operations. However, unlike the PSH, the FST was capable of only conducting independent operations for 48 hours or less before rejoining the 60-bed MASH. This limitation severely impacted the flexibility of medical planners to echelon forward surgical support elements in the sense that the FST was operational and independent for short missions of only 48 hours or less. Contrast this to the PSH, which although similar in size to the FST, was capable of continuous sustained independent operations as demonstrated during the North Burma Campaign in the CBI Theater.

Mobility

The FSTs developed by the 5th MASH at Fort Bragg, North Carolina, and 43rd Surgical Hospital (Mobile Army), Camp Humphreys, Korea, were designed to be highly mobile. Table 11 provides a comparison with the PSH. Like the PSH, the FST is deployable on three vehicles. Again, Figure 9 illustrates the organization of the FST developed by the 43rd Surgical Hospital (Mobile Army). This FST was designed to bridge the gap between the H-series 60-bed and L-series 30-bed MASH by giving the 43rd Surgical Hospital (Mobile Army) a capability similar to that of the HUSF of the 30-bed MASH. Both the FST and PSH are highly mobile surgical units.

Adequacy

Mobile surgical units such as the FST that lack the capability to conduct sustained independent operations impact adversely on the ability of medical planners to provide adequate support. Unlike the PSH, while similar in total number of personnel assigned to both units, the FST has significantly less surgical capability. When compared to the three surgeons and four/five OR tables of the PSH, the two surgeons and one OR table of the FST highlights the difference in organizational thrust. The FST provides limited surgical capability when compared to the premise that mobile surgical units must focus on providing maximum surgical workload consistent with the forward surgical support mission.

Besides a greatly reduced surgical capability when compared to the PSH, the FST also offers less post-op bed capacity while employing a nursing staff of substantially greater capability than the PSH. Again, the emphasis of the FST is geared more to supporting short term and static warfare with low surgical volume than the PSH which was highly capable of supporting combat nonlinear operations in mid to high intensity combat.

Summary

The FST, while a recent development designed to fill the shortfall when deployment of a complete 60-bed MASH is impractical, is ill-prepared to provide the full range of

forward surgical capability provided by the WWII PSH. Equally as mobile as the PSH in terms of organic transport, the FST nevertheless lacks the ability to conduct sustained, independent operations. This feature alone limits the flexibility needed by medical planners to provide adequate forward surgical support to nonlinear operations.

Analysis of the 30-bed MASH

This leads directly to the 30-bed MASH designed to provide forward surgical support to AirLand Operations. The reduction in bed capacity from 60 to 30 beds does not necessarily reflect a design change to increase mobility, enhance surgical capability, or reduce nursing staff. The decrease from 60 to 30 beds reflects computer modeling of the future AirLand battlefield and analytical casualty forecasts. The computer model developed utilized 43 categories of injured patient that were most appropriate for management and surgical treatment at a MASH.¹¹ The computer model was based on mid to high intensity combat envisioned for the future nonlinear battlefield of AirLand Operations. Using this model the computer forecast that every two divisions in combat in a typical five division corps would produce approximately 15 patients in one of the 43 categories every 24 hours. Expecting it to take 24 hours to medically regulate these 15 patients to other corps-level hospital units produced the requirement for a MASH to have a 30 bed capability.¹²

Flexibility

The reduction in BOA of the 30-bed MASH to two units per corps represents an approximate loss of three MASHs per corps. The employment of only two 30-bed MASHs per corps is counter to actual combat experience since WWI in which mobile surgical units have been assigned on the BOA of one per division. In the case of the PSH in the CBI Theater, one PSH was required for each brigade in combat to provide adequate forward surgical support to nonlinear operations. Even with the ability of each 30-bed MASH to forward deploy the HUSF for periods up to 48 hours, the AirLand battlefield still has less than one mobile surgical unit supporting each division in a typical five division corps.

Mobility

Mobility for the 30-bed MASH was expected to increase over the 60-bed MASH and reach 100% as the number of organic trucks in the 30-bed MASH would remain approximately the same as in the 60-bed MASH. Additionally, pieces of heavy equipment, such as deployable rigid-walled shelters for certain patient care modules, were expected to be eliminated from the organizational structure of the 30-bed MASH. Besides a reduction in equipment, the number of personnel

for the 30-bed MASH was reduced to 124 individuals. This represents a personnel reduction of approximately 54% from the 60-bed MASH.

Adequacy

Besides a reduction in bed capacity, the BOA for the 30-bed MASH was also reduced from the historical based one per division to two per corps. Developers anticipated that giving the 30-bed MASH the HUSF with its capability to forward deploy one OR table and ten post-op beds would provide medical planners with sufficient flexibility to echelon units and elements capable of providing adequate forward surgical support when supporting nonlinear operations.

When compared to the PSH, the 30-bed MASH is a remarkably large mobile surgical unit that provides less forward surgical capability. Table 11 provides a comparison of the PSH and 30-bed MASH. From a personnel perspective, the 30-bed MASH is approximately 350% larger than the PSH. When evaluating surgical capability the 30-bed MASH has assigned six surgeons as compared to the three surgeons of the PSH, yet the PSH operated four/five OR tables in contrast to the three OR tables of the 30-bed MASH. Additionally, the 30-bed MASH provides only five more beds than the 25 beds of the PSH, despite a numerically greater nursing staff in the 30-bed MASH. Again, the emphasis of

the 30-bed MASH is organizationally weighted to the management of post-op cases at the expense of increased surgical workload and capability.

Summary

Based on the experience of the PSH during the North Burma Campaign in the CBI Theater it is doubtful that medical planners could adequately provide forward surgical support to future nonlinear operations using the 30-bed MASH. Even if the 30-bed MASH has sufficient mobility to support nonlinear combat operations, there would still be insufficient numbers of mobile surgical units in the BOA to allow medical planners to properly echelon 30-bed MASH or HUSFs. This will become apparent on the future AirLand battlefield when the 30-bed MASH or HUSF stops to receive and begin treating patients. The nature of static warfare in the later stages of the Korean War and the Vietnam War have obscured this fact when employing mobile surgical units.

Operational Evaluation of the 30-bed MASH

The 30-bed MASH has undergone operational testing to determine if it can provide forward surgical support to nonlinear operations on the AirLand battlefield. The operational testing of the 30-bed MASH occurred in September 1992 at Fort Bragg, North Carolina. The 5th MASH was the test unit for the 30-bed MASH.¹³

Flexibility

A significant finding from the 30-bed MASH operational test concerned the BOA. The current BOA of the 30-bed MASH of two per corps was determined to be inadequate. Subject matter experts felt that flexibility on the AirLand Operations nonlinear battlefield could not be obtained with this BOA. If the 30-bed MASH was adopted for providing forward surgical support, it recommend changing the BOA back to the historical BOA of one unit per division.¹⁴

Mobility

Several principle findings surfaced from the operational test of the 30-bed MASH concerning mobility. 100 percent mobility of the 30-bed MASH was not achieved by this unit. Testing showed that the unit required 25% (24 authorized/six more required) more trucks and 33% (9 authorized/three more required) more trailers to achieve 100% mobility. Adding additional vehicles and trailers to the 30-bed MASH impacts unfavorably on the ability of this type unit to deploy by aircraft.¹⁵ The inability of the 30-bed MASH to achieve 100% mobility affects the ability of medical planners to provide flexible forward surgical support to nonlinear operations.

Adequacy

It is extremely interesting to note that operational testing at Fort Bragg validated many historical comparisons of the combat experience of the PSH when contrasted to the 30-bed MASH. Foremost among the findings of the operational test was that finding that the 30-bed MASH

...cannot accomplish the mission for which it was designed since it is still too large... [and] ...[W]ith its current mix of people and equipment it simply can not do the job for which it was designed.¹⁶

Summary

Of even greater interest was the recommendation to develop a mobile surgical unit along the lines of the HUSF from the 30-bed MASH. This recommendation further recommended a "HUSF" type mobile surgical unit, consisting of 20-25 personnel, on a BOA of three per Combat Support Hospital (CSH) supporting a division.¹⁷ This recommendation to replace the 30-bed MASH with a new type mobile surgical hospital sounds remarkably familiar to recreating the WWII PSH from the North Burma Campaign of the CBI Theater. Perhaps the AMEDD is on the verge of coming full circle to rediscover a unit it previously developed to provide forward surgical support to the type of nonlinear operations now visualized for AirLand Operations.

Conclusion

This research answers all the primary and secondary questions originally posed in this thesis. In response to the first secondary question about whether the CBI Theater provides an example of nonlinear operations proposed by AirLand Operations, the answer is yes. Chapter 2 provides clear examples of nonlinear warfare as practiced by the CAI's 22nd and 38th Chinese Divisions. These nonlinear combat operations are typical of that espoused in future AirLand Operations.

The next secondary research question asked if the PSHs employed in the CBI Theater was a satisfactory model for evaluating the 30-bed MASH. The answer from this research is yes. The PSH in the CBI Theater provides a highly satisfactory mobile surgical unit for evaluating proposed mobile surgical units designed to support nonlinear operations. Chapter 3 highlights the employment methodology of the PSH in providing forward surgical support to combat forces during historical nonlinear operations.

The last secondary research question asked how should the 30-bed MASH be employed doctrinally to support nonlinear operations in AirLand Operations. This question becomes mute as the 30-bed MASH is not being recommended for fielding by the AMEDD. This leads to a recommended future

research topic. What organization design is most appropriate for a mobile surgical unit developed to provide forward surgical support to AirLand Operations?

In answering the secondary research questions, the primary research question is addressed and acknowledged. The primary research question was if the 30-bed MASH was adequate to provide forward surgical support to nonlinear operations in AirLand Operations. Both historical and operational evaluation of the 30-bed MASH establishes this unit to be inadequate to met this mission. Operational evaluation at Fort Bragg serves to confirm the historical analysis that finds the 30-bed MASH seriously inadequate for providing forward surgical support to nonlinear operations in AirLand Operations. Future research must address what type mobile surgical unit is appropriate utilizing both historical analysis and the results of the operational evaluation. Five concepts for future evaluations of mobile surgical units are recommended by this research.

If both a historical analysis of the WWII PSH and the operational test for the 30-bed MASH finds the 30-bed MASH unsuitable for providing forward surgical support to nonlinear operations in AirLand Operations what conclusions can be drawn by the medical planner. In effect, five key concepts surface that are better for providing future

evaluations of mobile surgical units. Instead of utilizing adequacy, mobility, and flexibility to rate future mobile surgical units these five concepts are recommended:

- mobility
- basis of allocation
- surgical capability
- sustained operations
- personnel strength

The first and most important concept is mobility. The mobility of a surgical unit providing forward surgical support during nonlinear operations is its greatest asset. The WWII PSH again confirms that mobile surgical units must have mobility equal to that of the combat force being supported. Therefore, medical planners must ensure the mobile surgical unit selected for providing forward surgical support has sufficient organic transportation capability to provide 100% lift to assigned personnel, equipment, and operational supplies.

The second concept is BOA. BOA provides flexibility to the medical planner. Historical experience since WWI has shown the minimum BOA for mobile surgical units to be one unit per division. Combat experience of the PSH during the North Burma Campaign in the CBI Theater demonstrates clearly that nonlinear operation require a greater BOA. This BOA is along the line of one unit per brigade. Medical planners should not confuse mobility of a mobile surgical unit in

terms of lift capacity with BOA. The ability to compensate for lack of mobility by echeloning mobile surgical units does not redress this essential component of mobile surgical units.

Another component of flexibility for the medical planner in providing forward surgical support by mobile surgical units is the concept of surgical capability. Overlooked by critical combat experiences during periods of static warfare during the later stages of the Korean War and during the Vietnam War is the ability to maximize surgical workload. No mobile surgical unit before or since the PSH has emphasized surgical capability like this type unit.

Static warfare has placed the premium of post-op care in other mobile surgical units. The surgical staff has been minimized while the nursing staff has been emphasized. Nonlinear operations and the requirement for mobility must refocus the mobile surgical unit on its mission of providing forward surgical care. The mobile surgical unit that supports AirLand Operations must emphasize surgical capability and plan to divest itself rapidly of post-op patients in order to retain mobility and flexibility for the medical planner.

Synonymous with the concept of BOA is the ability of a mobile surgical unit to conduct sustained, independent forward surgical support operations. Flexibility by the medical planner in the ability to echelon mobile surgical

units is only as good as the ability of the mobile surgical unit to conduct independent operations. This will be especially true when supporting the type of nonlinear operations projected for AirLand Operations. The experience of the PSH during the North Burma Campaign in the CBI Theater clearly highlights this critical point.

The final element of flexibility for mobile surgical components arising from the combat experience of the PSH is personnel strength. Large mobile surgical units have proven to lack mobility. Only mobile surgical units like the PSH and FST, with relatively small personnel staffs, retain great mobility. And within the small personnel staff of the PSH and FST, only the PSH personnel staff emphasized surgical capability over post-op care. Additionally, mobile surgical units with small personnel staffs allow medical planners to utilize the greater BOA necessary to adequately provide forward surgical support to nonlinear operations.

In conclusion, the 30-bed MASH was designed to provide forward surgical support to nonlinear operations in AirLand Operations. The combat experiences of the PSH during the North Burma Campaign in the CBI Theater provides a satisfactory methodology for evaluating the 30-bed MASH. Historical experiences of the PSH suggests strongly that the 30-bed MASH is unsuitable for this mission. Operational testing supports this historical conclusion. In spite of this outcome, the combat experience of the PSH and other

mobile surgical units strongly suggest five concepts to use when developing and evaluating future mobile surgical units. These concepts are mobility, BOA, surgical capability, sustained operations, and personnel strength. These five concepts taken together will provide the medical planner the ability to provide adequate forward surgical support in terms of mobility and flexibility to the nonlinear battlefield found in AirLand Operations.

ENDNOTES

Chapter 1

1. United States, Department of the Army, Headquarters, United States Army Training and Doctrine Command, TRADOC PAM 525-5, Airland Operations. A Concept for the Evolution of Airland Battle for the Strategic Army of the 1990s and Beyond, (Fort Monroe, Virginia, 1 August 1991), p. foreword, 1. (Hereafter referred to as Airland Operations).
2. Ibid., p. 14.
3. Ibid., p. 26.
4. United States, Academy of Health Sciences, Health Service Support - Futures (Final Draft), (Fort Sam Houston, Texas, March 1989), p. 1 - 8. (Hereafter referred to as Futures).
5. Ibid., p. 1 - 8.
6. United States, Department of the Army, Field Manual 100-5, Operations, (Washington: DC, 5 May 1986), p. 2 - 3.
7. Futures, p. 1-14 thru 1-15.

Chapter 2

1. Otha C. Spencer, Flying the Hump, (College Station, Texas: Texas A&M University Press, 1992), p. xi - xiv.
2. United States Army, Headquarters, United States Army Forces, "General Orders, Number 74," China Burma India, APO 885, 17 July 1944. NOTE: G.O. # 74, dated 17 July 1944, identified seven AMEDD PSHs assigned to NCAC. These units were the 42nd, 43rd, 44th, 45th, 46th, 58th, and 60th PSHs. Eleven other PSHs are identified in other references for this thesis as assigned to the CBI Theater. These units were the 28th, 32nd, 34th, 35th, 36th, 40th, 47th, 48th, 49th, 50th, and 53rd PSH. (Ref. # 99 for 40th PSH in India and 48th PSH to Y-Force in China). (Ref. # 85 for 49th PSH being assigned to X-Force in North Burma after July 1944) (Ref. # 157 for 28th, 32nd, 34th, 35th, 36th, 40th, 47th, 50th and 53rd PSHs as evidence of these units assigned to support Y-Force in China).

3. Julian Thompson, The Lifeblood of War: Logistics in Armed Conflict, (London: Brassey's, 1991), p. 99.
4. Charles F. Romanus and Riley Sunderland, United States Army in World War II. China-Burma-India Theater. Stilwell's Mission to China. (Washington, DC: United States Army, Office of the Chief of Military History, 1956), p. 357 - 360. (Hereafter referred to as SMC).
5. Ibid., p. 357 - 360.
6. Ibid., p. 357 - 360.
7. SMC, p. 355 - 389. United States, Department of the Army, United States Army. Medical Service in Combat in India and Burma 1942 - 1945, (New Delhi, India: Office of the Surgeon, Headquarters, United States Forces, India-Burma Theater, 1 January 1946), p. 36 - 37. (Hereafter referred to as MS/IB). NOTE: LT Stone identifies the Quadrant Conference held in Quebec, Canada, during August 1943 as the Quebec Conference.
8. Louis Allen, Burma, The Longest War, 1941 - 1945, (London: J.M. Dent & Sons, Ltd, 1984), p. 655. (Hereafter referred to as Burma).
9. SMC, p. 355 - 389. MS/IB, p. 36 - 37.
10. Viscount Slim, Defeat Into Victory, (Hong Kong: Papermac, 1987), p. 205 - 208.
11. Burma, p. 655, 660. Viscount Slim, Defeat Into Victory, (Hong Kong: Papermac, 1987), p. 205 - 208.
12. MS/IB, p. 37.
13. Charles F. Romanus and Riley Sunderland, United States Army in World War II. China-Burma-India Theater. Stilwell's Command Problems. (Washington, DC: United States Army, Office of the Chief of Military History, 1956), p. 138 - 139. (Hereafter referred to as SCP). MS/IB, p. 36 - 37.
14. United States, Department of the Army, Medical Department, United States Army. Organization and Administration in World War II. Washington, DC: Office of the Surgeon General, 1963, p. 524.
15. Burma, p. 660. SCP, p. 333.
16. United States Army, Headquarters, United States Army Forces, "General Orders, Number 74," China Burma India, APO 885, 17 July 1944.

17. MS/IB, p. 38.
18. Burma, p. 655, 660.
19. SCP, p. 120.
20. SCP, p. 119 - 122. MS/IB, p. 97 - 98.
21. MS/IB, p. 99.
22. SCP, p. 120, 132, 144, 151, 179, 184, 207, 217, 224, 231.
23. United States, Department of the Army, Merrill's Marauders, Washington, DC: Center of Military History, 1990, p. 19.
24. SCP, p. 121.
25. SCP, p. 124 - 134. MS/IB, p. 103.
26. SCP, p. 124 - 134. MS/IB, p. 107.
27. SCP, p. 124 - 134. MS/IB, p. 113 - 114.
28. MS/IB, Map 6.
29. SCP, p. 134 - 136. MS/IB, p. 123 - 125.
30. SCP, p. 142 - 159. MS/IB, p. 127.
31. SCP, p. 142 - 159. MS/IB, p. 128 - 129.
32. SCP, p. 142 - 159. MS/IB, p. 128 - 129.
33. SCP, p. 142 - 159. MS/IB, p. 130.
34. SCP, p. 142 - 159. MS/IB, p. 130.
35. MS/IB, Map 10.
36. SCP, p. 185 - 188. MS/IB, p. 140.
37. SCP, p. 185 - 188. MS/IB, p. 140.
38. SCP, p. 188.
39. SCP, p. 204 - 220. MS/IB, p. 151.
40. MS/IB, p. 151.
41. SCP, p. 204 - 220. MS/IB, p. 151 - 152.

42. SCP, p. 204 - 220. MS/IB, p. 151 - 152.
43. SCP, p. 204 - 220. MS/IB, p. 151 - 152.
44. MS/IB, p. 152 - 153.
45. Ibid., p. 153.
46. SCP, p. 204 - 220. MS/IB, p. 153 - 154.
47. SCP, p. 204 - 220. MS/IB, p. 154.
48. SCP, p. 204 - 220. MS/IB, p. 154.
49. SCP, p. 204 - 220. MS/IB, p. 154 - 155.
50. SCP, p. 204 - 220. MS/IB, p. 154 - 155.
51. Burma, p. 654.
52. SCP, p. 220.
53. SCP, p. 220 - 221. MS/IB, p. 155 - 156.
54. SCP, p. 223 - 256. United States, Department of the Army, Merrill's Marauders, (Washington, DC: Center of Military History, 1990), p. 93 - 97.
55. SCP, p. 223 - 256. MS/IB, p. 179.
56. SCP, p. 223 - 256. MS/IB, p. 179 - 180.
57. SCP, p. 223 - 256. MS/IB, p. 179 - 180.
58. United States, Department of the Army, Merrill's Marauders, Washington, DC: Center of Military History, 1990, p. 114. NOTE: Merrill's Marauders were basically rendered combat ineffective by June 1944 due to nonbattle injuries. Amoebic dysentery (503 cases), typhus fever (149 cases), malaria (296 cases evacuated, with nearly every member of the force having it in more or less severe form), psychoneurosis (72 cases), and miscellaneous fevers (approximately 950 cases) had produced 1,970 disease casualties between February and June 1944. By June 1944, 80% of the original Marauders were casualties (66% disease [1,970 cases], 14% battle [424 cases]).
59. SCP, p. 223 - 256. MS/IB, p. 202.
60. SCP, p. 223 - 256. MS/IB, p. 205 - 206.
61. SCP, p. 253 - 254.

62. MS/IB, p. 208.
63. MS/IB, p. 254 - 256.
64. SCP, p. 357 - 360.

Chapter 3

1. United States, Department of the Army, The Medical Department of the United States in the World War, Volume VIII, Field Operations, (Washington, DC: Government Printing Office, 1925), p. 201. (Hereafter referred to as FQ).
2. Ibid., p. 201. NOTE: The businessman was Mr. George E. Turnure of New York. His voluntary offer was quickly accepted by the Secretary of War.
3. Ibid., p. 201.
4. Ibid., p. 200.
5. United States, Department of the Army, The Medical Department of the United States in the World War, Volume XI, Surgery, (Washington, DC: Government Printing Office, 1927), p. 445 - 446. FQ, p. 184 - 186. NOTE: The French called their mobile hospital the auto-chir and the mobile surgical unit the groupe complementaire.
6. FQ, p. 187.
7. United States, Department of the Army, United States Army in the World War, 1917 - 1919, General Orders, G.H.O., A.E.F., (Washington, DC: Historical Division, 1948), p. 312 - 315.
8. FQ, p. 187.
9. Ibid., p. 187, 188, 190, 199, 201.
10. Ibid., p. 186, 188.
11. United States, Department of the Army, The Medical Department of the United States in the World War, Volume XI, Surgery, (Washington, DC: Government Printing Office, 1927), p. 445 - 446.
12. FQ, p. 187.
13. Ibid., p. 192.
14. Ibid., p. 199.

15. Ibid., p. 187.
16. Ibid., p. 199 - 200.
17. Ibid., p. 145.
18. Ibid., p. 199.
19. Military Medical Manual, 4th Edition (Revised), (Harrisburg, PA: The Military Service Publishing Company, 2nd Printing, April 1941), p. 669 - 677.
20. United States, War Department, Mobile Units of the Medical Department, (Carlisle Barracks, PA: Medical Field Service School, 1941), p. 316 - 328.
21. Military Medical Manual, (Harrisburg, PA: The Military Service Publishing Company, 1944), p. 643.
22. Walter Marsh, "Army Surgical Hospitals at Work in Korea," Army Information Digest, Volume 8, Number 8, (August 1953): 48. (Hereafter referred to as "SHK").
23. United States, Department of the Army, United States Army in World War II. The Technical Services. The Medical Department: Medical Service in the European Theater of Operations, (Washington, DC: Center of Military History, 1992), p. 377.
24. United States, War Department, Mobile Units of the Medical Department, (Carlisle Barracks, PA: Medical Field Service School, 1941), p. 278, 280 - 281, 286.
25. James H. Stone, "Surgeons in Battle: The Mobile Surgical Hospital in Burma 1943 to 1945," The Military Surgeon, Volume 105, Number 4, (October 1949): 311 - 320. (Hereafter referred to as "SHB").
26. United States, War Department, Table of Organization and Equipment, No. 8-572S. Portable Surgical Hospital. Washington, DC: War Department, 4 June 1943. United States, War Department, Table of Organization and Equipment, No. 8-572S Change 1. Portable Surgical Hospital. Washington, DC: War Department, 2 September 1943. United States, War Department, Table of Organization and Equipment, No. 8-572S Change 2. Portable Surgical Hospital. Washington, DC: War Department, 7 December 1943. United States, War Department, Table of Organization and Equipment, No. 8-572. Portable Surgical Hospital. Washington, DC: War Department, 14 December 1944.

27. United States, Academy of Health Sciences, Evolution of the Mobile Army Surgical Hospital, Fort Sam Houston, Texas: Academy of Health Sciences, date unknown, p. 3.

28. "SHB," p. 311 - 313.

29. James H. Stone, Crisis Fleeting. Original Reports on Military Medicine in India and Burma in the Second World War, (Washington, DC: Office of the Surgeon General. Department of the Army, 1969), p. 324 - 325.

30. "SHB," p. 313. NOTE: These specific units were the 42nd, 43rd, 44th, 45th, 46th, 49th, 58th, and 60th PSHs. (Also see Ref. # 9). NOTE: DA PAM 672-1 (Ref. # 157) also identifies a ninth PSH, the 34th PSH, as participating in this campaign. The role the 34th PSH performed is not identified in references used for this thesis.

31. United States Army, Headquarters, United States Army Forces, "General Orders, Number 74," China Burma India, APO 885, 17 July 1944.

32. "SHB," p. 313.

33. United States, War Department, Table of Organization and Equipment, No. 8-572 . Portable Surgical Hospital. Washington, DC: War Department, 14 December 1944. Philip Katcher, The U.S. Army 1941 - 1945, (London: Osprey Publishing, Ltd, 1986), p. 18.

34. Morris Fishbein, Doctors At War, (New York: E.P. Dutton & Company, Inc., 1945), p.181 - 182. "SHB", p. 311 - 320.

35. United States, Department of the Army, Merrill's Marauders, Washington, DC: Center of Military History, 1990, p. 19.

36. "SHB," p. 312 - 313.

37. SMC, p. 357 - 360. "SHB," p. 311 - 313.

38. MS/IB, p. 6.

39. Ibid., p. 6, 7, 43, 44, 51, 69.

40. Ibid., p. 6, 7, 43, 44, 51, 69.

41. Ibid., p. 49, 51, 61.

42. MS/IB, p. 58. "SHB," p. 311 - 312.

43. "SHB," p. 311.

44. MS/IB, p. 103, 122. NOTE: The 40th and 48th PSHs are not identified as serving in the North Burma Campaign with NCAC's CAI during the period covered in this thesis (See Ref. # 9).

45. United States, Department of the Army, 43rd Portable Surgical Hospital - History from July 5, 1943 - September 7, 1944, Suitland, MD: National Archives, 10 October 1992, p. 1. (Hereafter referred to as 43rd PSH History).

46. Ibid., p. 1.

47. MS/IB, p. 4, 104 - 115, 132, 134. James H. Stone, Crisis Fleeting. Original Reports on Military Medicine in India and Burma in the Second World War, (Washington, DC: Office of the Surgeon General. Department of the Army, 1969), p. 11, 132. NOTE: The Seagrave Hospital is named after Dr. Gordon Seagrave, the famous "Burma Surgeon." Prior to the start of WWII, Dr. Gordon Seagrave was an American missionary who had established a hospital at Namhkam, Burma, to provide medical care to tribesman of northern Burma. Dr. Gordon Seagrave eventually became a Lieutenant Colonel in the US Army Medical Corps. He was placed in command of his mission hospital. The hospital staff was composed of American, British, Burmese, Indian, and Chinese personnel. His hospital provided medical and surgical support to NCAC in the North Burma Campaign.

48. Ibid., p. 133.

49. 43rd PSH History, p. 2.

50. Jack E. Pontius, "The History of the 43D Surgical Hospital (Mobile Army)," Uijonbu, Korea: 1962, p. 3.

51. 43rd PSH History, p. 2.

52. United States, Department of the Army, 42nd Portable Surgical Hospital - Annual Historical Report - 1944, Washington, DC: Center for Military History, 1944, p. 4. (Hereafter referred to as 42nd PSH History).

53. 43rd PSH History, p. 2. NOTE: The unit history refers to Hkawnglawnyang as Hkawnlayang.

54. 42nd PSH History, p. 2.

55. Ibid., p. 2. NOTE: The T/O for the PSH authorized only 1/4 ton truck, not two. The second 1/4 ton truck was probably a local modification to the T/O.

56. Ibid., p. 2.

57. Ibid., p. 2.
58. MS/IB, p. 141.
59. MS/IB, p. 168 - 169, 175. 43rd PSH History, p. 2.
NOTE: Minor discrepancies exist between the dates of these two accounts as to when the 43rd PSH moved to Laban and West Tingring.
60. MS/IB, p. 175.
61. Ibid., p. 175.
62. United States, Department of the Army, 45th Portable Surgical Hospital - Unit Annual Report- Medical History 1944, Suitland, MD: National Archives, 10 October 1992, p. 1.
(Hereafter referred to as 45th PSH History).
63. United States, Department of the Army, 60th Portable Surgical Hospital in Burma. Dated 23 September 1944, Suitland, MD: National Archives, 10 October 1992, p. 2.
(Hereafter referred to as 60th PSH History).
NOTE: Unit history refers to Wakang as Wakong.
64. MS/IB, p. 175.
65. 60th PSH History, p. 2.
66. 45th PSH History, p. 1. NOTE: The unit history refers to Pakhren Sakan as Pakren-Sakan.
67. Ibid., p. 1.
68. United States, Department of the Army, 46th Portable Surgical Hospital - Operations from 1 January 1944 to 15 May 1944, Suitland, MD: National Archives, 10 October 1992, p. 2.
69. 60th PSH History, p. 2 - 3.
70. 43rd PSH History, p. 3.
71. Ibid., p. 3.
72. Ibid., p. 3.
73. Jack E. Pontius, "The History of the 43D Surgical Hospital (Mobile Army)," Uijonbu, Korea: 1962, p. 4.
74. 43rd PSH History, p. 4.
75. Ibid., p. 4.

76. Ibid., p. 5.
77. Ibid., p. 5.
78. Ibid., p. 3.
79. MS/IB, p. 174 - 175.
80. Ibid., p. 186 - 187, 189, 192, 202.
81. Ibid., p. 187, 189, 192.
82. Ibid., p. 202 - 203.
83. United States, Department of the Army, 58th Portable Surgical Hospital - Annual Report - 1945, Suitland, MD: National Archives, 10 October 1992, p. 2. (Hereafter referred to as 58th PSH History).
84. Ibid., p. 1.
85. Ibid., p. 1.
86. "SHB," p. 318.
87. Ibid., p. 319.
88. 42nd PSH History, p. 2.
89. "SHB," p. 319 - 320.

Chapter 4

1. United States, Department of the Army, Department of the Army Pamphlet 672-1, with Changes 1 - 4, Unit Citation and Campaign Participation Credit Register, (Washington, DC: Headquarters, Department of the Army, July 1961), p. 1, 2, 9, 16, 17, 23, 27, 31, 34, 38, 41, 45, 48, 50, 52, 54, 56, 58, 59, 61, 62, 63, 65, 67, 68, 69, 72, 75, 77, 79, 80, 81, 83, 85, 87, 88, 90, 91, 93, 95, 98, 100, 101, 109, 110, 112, 113, 115, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 152, 153, 154, 155, 162, 163, 165, 166, 167. (Hereafter referred to as DA PAM 672-1).
2. United States, Department of the Army, U.S. Army in the Korean War. The Medics' War, (Washington, DC: Center of Military History, 1987), p. 69, 70. (Hereafter referred to as Medics' War). United States, Department of the Army, U.S. Army in World War II. The Technical Services. The Medical Department: Medical Service in the European Theater of Operations, (Washington, DC: Center of Military History,

1992). p. 236, 294, 377. (Hereafter referred to as MD/ETO).
"SHK", p. 48.

3. As late as the December 1992, the HSC Mercury, published by the United States Army Health Services Command, identifies in the article, "Warriors of Mercy, Chapter Eleven" the 400 bed surgical hospital as a key field army hospital.

4. United States, Department of the Army, United States Army in World War II. The Technical Services. The Medical Department: Hospitalization and Evacuation, Zone of the Interior, (Washington, DC: Office of the Chief of Military History, 1956), p. 146. (Hereafter referred to as MD/HE).

5. DA PAM 672-1, p. 80, 88, 108. MD/ETO, p. 145, 146, 164.

6. MD/HE, p. 145.

7. Ibid., p. 145, 146.

8. MD/ETO, p. 531. NOTE: The Third Army Surgeon suggested the following: "A completely mobile surgical hospital was a necessity for the support of a division." He suggested the following T/O for such a unit as a "two platoon arrangement which would permit leapfrog movement of platoons or forward displacements of one while the second retain[s] the post operative cases until they become transportable."

9. United States, United States Army, Medical Department. United States Army. Surgery in World War II. Activities of Surgical Consultants. Volume II, (Washington, DC: Office of the Surgeon General, 1964), p. 16, 78 - 92. NOTE: Colonel Elliot C. Cutler, MC, Chief Consultant in Surgery, Division of Professional Services, Office of the Chief Surgeon, European Theater of Operations, U.S. Army (ETOUSA), had expressed early on that the key to providing far forward surgery in the ETO was through mobile, self-sufficient surgical units. On 16 February 1943, Colonel Cutler attended a presentation by Major General David C. Monro, Royal Army Medical Corps (RAMC), consulting surgeon to the British Army. This presentation was on the development and experience of the British with mobile surgical units. On 31 March 1943, Colonel Cutler attended another presentation on British mobile surgical units by Colonel Arthur E. Porritt, RAMC. Colonel Cutler, following these meetings submitted a memorandum dated 18 April 1943, to the Chief Surgeon, ETOUSA, outlining his plan for developing mobile surgical teams by restructuring the Auxiliary Surgical Group. Colonel Cutler tasked Major (Later Colonel) Zollinger, MC, of the 5th General Hospital to develop a prototype mobile field surgical unit. Completed in November 1944, the mobile surgical unit was sent to the 3rd Auxiliary Surgical Group. This was the catalyst that began the process leading to the

formal development of the 60 bed mobile army surgical hospital in 1945.

10. MD/HE, p. 282.

11. Medics' War, p. 70.

12. Ibid., p. 69.

13. Ibid., p. 69.

14. DA PAM 672-1, p. 102, 103, 105, 106, 107, 108, 505, 506, 508, 509. Medics' War, p. 69, 168, 342.

15. Medics' War, p. 70, 71, 99, 107, 168, 342.

16. Ibid., p. 88, 89.

17. Ibid., p. 203, 204.

18. Ibid., p. 208.

19. Ibid., p. 342.

20. Ibid., p. 108, 165, 171, 180, 181, 193, 213, 343, 362.

21. Ibid., p. 343.

22. United States, Department of the Army, Vietnam Studies. Medical Support of the U.S. Army in Vietnam 1965 - 1970. (Washington, DC: U.S. Government Printing Office, 1973), p. 59. (Hereafter referred to as VN/MS).

23. NOTE: The following infantry divisions served in Vietnam: the 1st Cavalry Division (Airmobile), 4th Infantry Division, 9th Infantry Division, 23d Infantry Division (Americal), and the 25th Infantry Division. The following separate infantry brigades served in Vietnam: 11th Armored Cavalry Regiment; 1st Brigade, 5th Infantry Division (Mechanized); 3rd Brigade, 82nd Airborne Division; 173rd Airborne Brigade; and the 199th Light Infantry Brigade.

24. United States, Department of the Army, Department of the Army Pamphlet 672-3, (Washington, DC: Department of the Army, 28 October 1986), p. 3, 4, 8, 9, 24, 29, 36. VN/MS, p. 194.

25. VN/MS, p. 10, 62, 63.

26. Ibid., p. 65.

27. United States. Academy of Health Sciences. Evolution of the Mobile Army Surgical Hospital, (Fort Sam Houston, Texas: Academy of Health Sciences, date unknown), p. 8.

28. VN/MS, p. 65 - 68.

29. Ibid., p. 67.

30. Ibid., p. 68, 173, 174.

31. "Medicine in the Gulf War," U.S. Medicine, Volume 27, Numbers 15 & 16 (August 1991): 42, 67. (Hereafter referred to as Gulf War). Major Jim Wickham, MS, telephone interview by author, 2 February 1993, Health Care Operations, Office of the US Army Surgeon General, Falls Church, Virginia. NOTE: There is a contradiction between these two references. The article in US Medicine does not mention the 300th MASH identified by MAJ Wickham as assigned to VII Corps. Additionally, MAJ Wickham, specifically identified the 115th MASH as "not utilized" due to operational considerations.

32. NOTE: The issue of a Medical Corps versus Medical Corps Officer in command of medical units is not a new issue. During the Korean War in early 1951, Medical Service Corps officers as "[A] major source of stability and continuity.... would command the medical battalions of four of the six U.S. divisions." Medics' War, p. 142. The following highlights one Medical Service Corps medical battalion commander: "On one occasion an ambulance with five patients lost its way and failed to report at its destination. In savage cold a search party set out under the 7th Medical Battalion commander, Maj. Oren C. Atchley, a Medical Service Corps officer, only to run into an ambush. Atchley became separated from his men and ultimately was listed as missing in action." Medics' War, p. 114.

33. Lieutenant Colonel James B. Martin, personal interview by author, 22 March 1993, Department of Sustaining and Resource Operations, United States Army Command and General Staff College, Fort Leavenworth, Kansas. NOTE: LTC Martin provided the author copies of unclassified VII Corps briefing slides that highlighted the employment of MASH units assigned to the 332nd Medical Brigade. These MASHs supported the VII Corps during Operation "Desert Storm."

34. Sergeant Zeisch, telephone interview by author, 24 March 1993, Patient Administration NCO (71G), 300th MASH, Syria, Tennessee. NOTE: SGT Zeisch is a full-time soldier assigned to the 300th MASH. She stated that while the 300th MASH was assigned to VII Corps, it never deployed to the Saudi Arabian theater of operations, but instead deployed directly to Germany. Personnel from the 300th MASH were then deployed to

Belgium, England, and Germany. After the completion of the ground war during Operation "Desert Storm" as many as four - five personnel from the 300th MASH deployed to Saudi Arabia.

35. Colonel (Retired) Jess Fulfer, Medical Service Corps, telephone interview by author, 27 April 1993, Daingerfield, Texas. NOTE: COL Fulfer deployed as Commander, 30th Medical Group during Operation "Desert Storm." The 30th Medical Group was assigned to the 332nd Medical Group. Due to problems internal to the 332nd Medical Brigade, COL Fulfer was assigned to the 332nd Medical brigade as Deputy Commander for Operations where he developed the medical concept of support for the VII Corps during Operation "Desert Storm."

36. Gulf War, p. 42, 67.

37. Lieutenant Colonel James B. Martin, personal interview by author, 22 March 1993, Department of Sustaining and Resource Operations, United States Army Command and General Staff College, Fort Leavenworth, Kansas.

38. United States, United States Army, Draft Desert Storm Lessons Learned (CALL), Volume 37, Fort Leavenworth, Kansas: Combined Arms Research Library, 24 February 1992, p. II-184.

39. Ibid., p. II-184.

40. Gulf War, p. 42, 54, 67.

41. Ibid., p. 41.

42. Ibid., p. 67.

43. Peter A. Cardinal, "Health Service Support in Operations Desert Shield and Desert Storm," Military Medicine, Volume 157 (April 1992): 175 - 179.

44. Ibid., p. 175 - 179.

45. Gulf War, p. 42, 67. NOTE: The forward surgical team (FST) is also referred to as the forward area surgical team (FAST).

46. FQ, p. 145, 184 - 188.

47. David L. Nolan, "Airborne Tactical Medical Support in Grenada," Military Medicine, Volume 155, Number 3, (March 1990): p. 104 - 111.

48. The author was the Officer-In-Charge (OIC) of the team that tested the French Parachutist Surgical Unit (FPSU). Responsibility for testing the FPSU was given to members of

Headquarters and Support Company (HSC), 307th Medical Battalion (Airborne), 82nd Airborne Division. The author was in command of HSC, 307th Medical Battalion (Airborne) during this time. Medical staff (one general surgeon and one nurse anesthetist) for the test was provided by Womack Army Community Hospital, Fort Bragg, North Carolina. The author broke his left leg jumping with the FPSU into Camp Bullis, located near Fort Sam Houston, Texas, during a demonstration test in March 1985.

49. Briefing to Dr. Mendez, Assistant Secretary of Defense for Health Affairs (ASD-HA), Dr. Collis, Deputy Assistant Secretary of Defense for Health Affairs Readiness (ASD-HA(Readiness)), and Colonel Timboe, MC, Commander, 18th Medical Command, at Camp Humphreys, Korea, by the 43rd Surgical Hospital (Mobile Army) on 17 February 1992.

50. The 5th MASH provided a complete FST operational packet to the 43rd Surgical Hospital (MA) during 1991. The commander of the 5th MASH in 1991, Lieutenant Colonel (LTC) Hank Sebastian, Medical Service Corps (MS), had previously been assigned as the executive officer (XO) of the 43rd Surgical Hospital (MA). The author succeeded LTC Sebastian as XO of the 43rd Surgical Hospital (MA) in February 1991 and implemented a FST based on the guidance and operational experience of the 5th MASH with its FST. Direction to create a FST by the 43rd Surgical Hospital (MA) was provided by Colonel (later Brigadier General) James J. James, MC, Commander, 18th Medical Command, in response to theater demands for a rapidly deployable/mobile surgical capability.

51. Briefing to Dr. Mendez, Assistant Secretary of Defense for Health Affairs (ASD-HA), Dr. Collis, Deputy Assistant Secretary of Defense for Health Affairs Readiness (ASD-HA(Readiness)), and Colonel Timboe, MC, Commander, 18th Medical Command, at Camp Humphreys, Korea, by the 43rd Surgical Hospital (Mobile Army) on 17 February 1992.

52. Peter A. Cardinal, "Health Service Support in Operations Desert Shield and Desert Storm," Military Medicine, Volume 157 (April 1992): 175 - 179.

53. The 42nd PSH 1944 historical report recommended the addition of a Medical Administration Corps (MAC) operations officer (the Medical Administration Corps has since become the Medical Service Corps), a First Sergeant (1SG), four additional OR technicians, and one pharmacy tech to the T/O "...to increase the efficiency of this type unit."

54. Lewis E. Thomas, Major, MS, "Airland Operations - Emerging Concepts," briefing presented to AMEDD officers at Command and General Staff College, Fort Leavenworth, Kansas,

on 8 August 1992.

55. Sam Brown, Colonel, MS, "A Synchronization of Health Services Operations on the Battlefield, Part I," A1701-91-0063, a video presentation to AMEDD officers at Command and General Staff College, Fort Leavenworth, Kansas, on 8 August 1992.

56. Lewis E. Thomas, Major, MS, "Airland Operations - Emerging Concepts," briefing presented to AMEDD officers at Command and General Staff College, Fort Leavenworth, Kansas, on 8 August 1992.

57. United States, Department of the Army, Field Manual 8-10-13, Employment of the Mobile Army Surgical Hospital (Coordinating Draft), Fort Sam Houston, Texas: Academy of Health Sciences, October 1991, p. 1-1.

58. United States, Department of the Army, Field Manual 8-10-13, Employment of the Mobile Army Surgical Hospital (Final Draft), Fort Sam Houston, Texas: Academy of Health Sciences, July 1992, p. 1-1. (Hereafter referred to as FM MASH).

59. FM MASH, p. 1-3.

60. FM MASH, p. 1-2.

61. FM MASH, p. 1-3.

62. Ibid., p. 2-39, 2-41, 2-42, 2-45, 2-47, 2-48, 2-63, 2-64.

63. Ibid., p. 1-3.

64. Ibid., p. 2-2, 2-3.

65. United States, Academy of Health Sciences, Health Sciences Support - Futures (Final Draft), Fort Sam Houston, Texas: Academy of Health Sciences, March 1989, p. C-1, C-2.

66. FM MASH, p. 2-45.

67. United States, United States Army, Draft Desert Storm Lessons Learned (CALL), Volume 37, Fort Leavenworth, Kansas: Combined Arms Research Library, 24 February 1992, p. II-185. NOTE: This reference doubts the mobility of 30 bed MASH. Specifically, "[T]he 30-bed MASH will not be equipped with DEPMEDS, but the tactical mobility of the unit is suspect."

68. Ibid., p. II-185.

Chapter 5

1. United States, Department of the Army, Field Manual 100-5, Operations, (Washington, DC: 5 May 1986, p. 2 - 3.
United States, Department of the Army, Field Manual 100-5, Operations (Final Draft), (Washington, DC: January 1993), p. 2-5.
2. NOTE: The 400-bed surgical hospital existed in few numbers at the start of WWII. Only a total of eight 400-bed surgical hospital were activated for WWII. Five 400-bed surgical hospitals were converted to evacuation hospitals in August 1942, one to an evacuation hospital in May 1943, and the last two 400-bed surgical hospitals were converted to station hospitals in Oct 1943. Only three 400-bed surgical hospitals received credit for combat participation.
3. United States, United States Army, Medical Department, United States Army. Surgery in World War II. Activities of Surgical Consultants. Volume II, (Washington, DC: Office of the Surgeon General, 1964), p. 16, 78 - 92. MD/HE, p. 282.
4. Medics' War, p. 69, 70. MD/ETO, p. 236, 294, 377. "SHK", p. 48.
5. Futures, p. 1-8.
6. Ibid., p. 1-8.
7. Lieutenant Colonel James B. Martin, personal interview by author, 22 March 1993, Department of Sustaining and Resource Operations, United States Army Command and General Staff College, Fort Leavenworth, Kansas. NOTE: LTC Martin served as XO, Material Management Center (MMC), 2nd Corps Support Command (COSCOM), and as Support Operations Officer at Log Base Nelligan during Operation "Desert Storm."
8. Gulf War, p. 41.
9. United States, United States Army, Draft Desert Storm Lessons Learned (CALL), Volume 37, Fort Leavenworth, Kansas: Combined Arms Research Library, 24 February 1993, p. II-184.
10. Morris Fishbein, Doctors at War, (New York: E.P. Dutton & Company, Inc., 1945), p. 181 - 182.
11. FM MASH, p. A-1 thru A-4. United States, Department of the Army, "Senior Command and Control Subject Matter Expert Overall Comments," Fort Sam Houston, Texas: AMEDD Center and School, no date.

12. Major Roy Silence, MS, personal interview by author, 17 September 1991, Medical Operations Officer, 18th Medical Command, Yongsan, Korea. NOTE: MAJ Silence previously served in Combat Developments, Academy of Health Sciences, Fort Sam Houston, Texas. Major General Moore, MC, briefing on the 30-bed MASH, 10 December 1991, 43rd Surgical Hospital (Mobile Army), Camp Humphreys, Korea. NOTE: Major General Moore served as Commander, Army Medical Department Center and School, Fort Sam Houston, Texas. NOTE: Based on the generation of only 15 casualties per day from each two divisions in combat in the 43 patient categories appropriate for management at a MASH, the AMEDD originally recommended dropping the MASH unit from the AMEDD force structure. According to both Major General Moore and MAJ Silence the retention of the MASH became an emotional issue with combat arms leaders and the recommendation was rejected and the AMEDD was directed to retain the MASH in the force structure.

13. United States, Department of the Army, Memorandum for HQDA (DASG-HCD), SUBJECT: Early Feedback of the Medical Force 2000 (MF2K) Mobile Army Surgical Hospital (MASH), Fort Sam Houston, Texas: United States Army Medical Board, 18 November 1992.

14. Ibid.

15. United States, Department of the Army, Memorandum for HQDA (DASG-HCD), SUBJECT: Early Feedback of the Medical Force 2000 (MF2K) Mobile Army Surgical Hospital (MASH), Fort Sam Houston, Texas: United States Army Medical Board, 18 November 1992.

16. United States, Department of the Army, "Senior Command and Control Subject Matter Expert Overall Comments," Fort Sam Houston, Texas: AMEDD Center and School, no date. NOTE: These are the comments of Lieutenant Colonel Frank W. Hiller, MS, Chief, Command and Staff Branch, Military Science Division, AMEDD Center and School, who acted as the Senior Command and Control Subject Matter Expert (SME) during the operational test of the 30-bed MASH.

17. United States, Department of the Army, Memorandum for HQDA (DASG-HCD), SUBJECT: Early Feedback of the Medical Force 2000 (MF2K) Mobile Army Surgical Hospital (MASH), Fort Sam Houston, Texas: United States Army Medical Board, 18 November 1992.

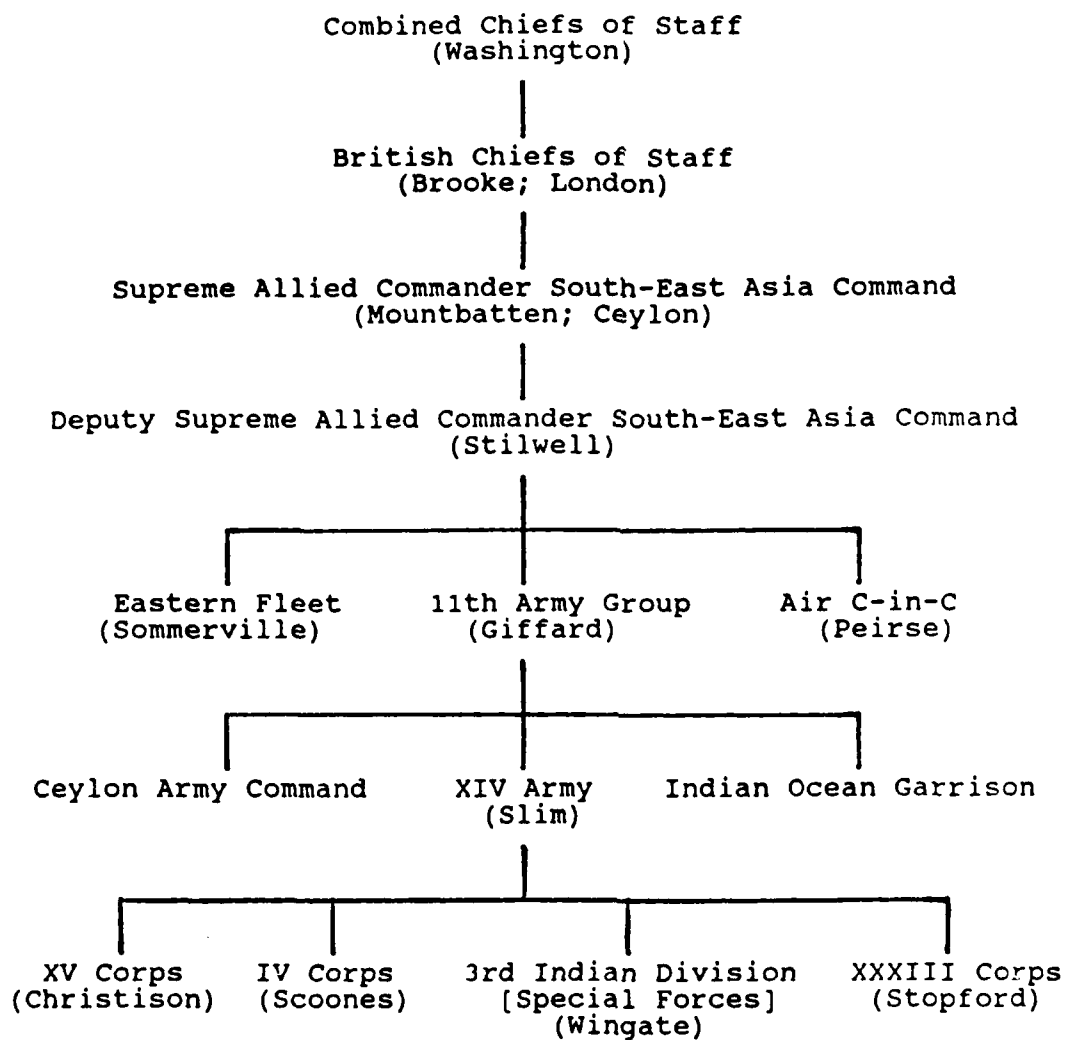


Figure 1. Chain of Command South-East Asia Command

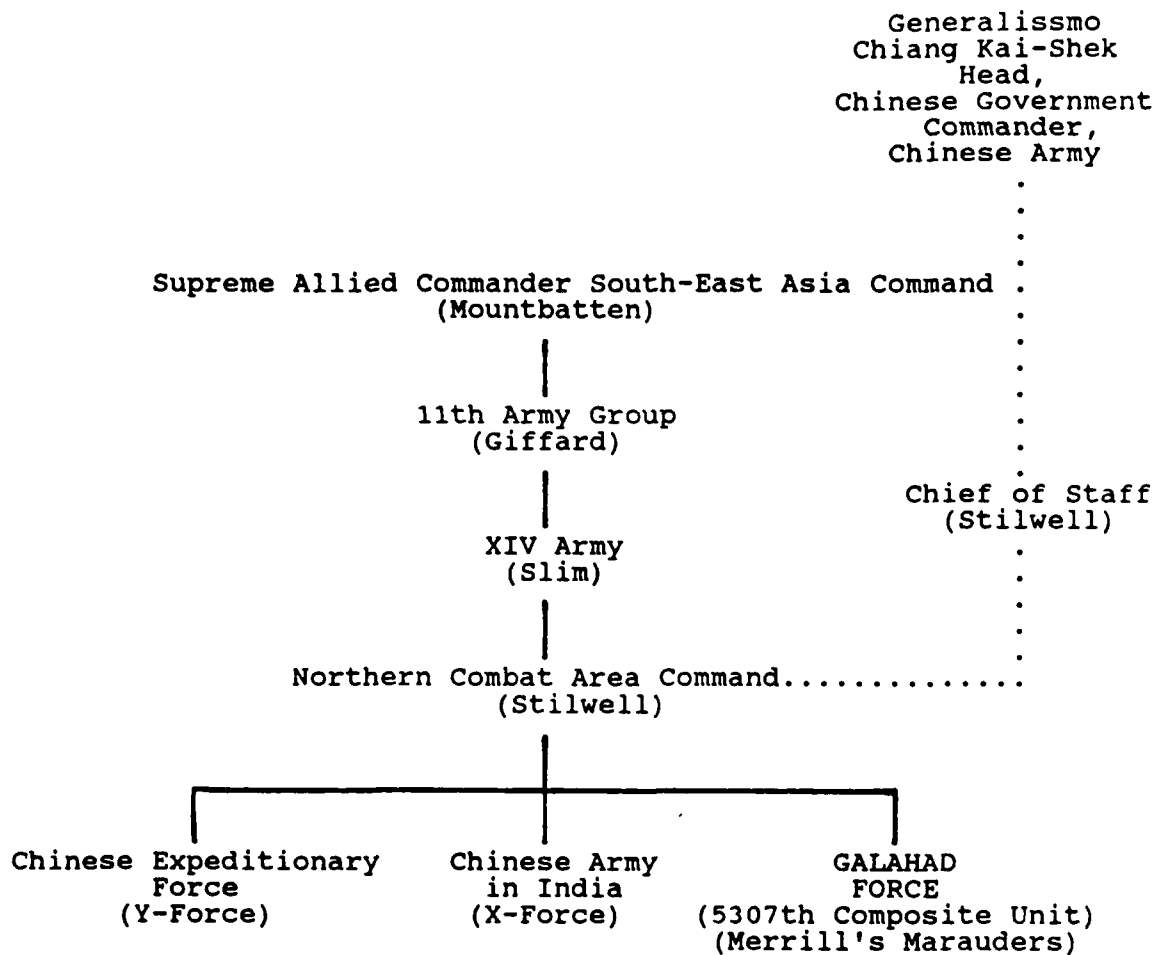


Figure 2. Actual Chain of Command for South-East Asia Command

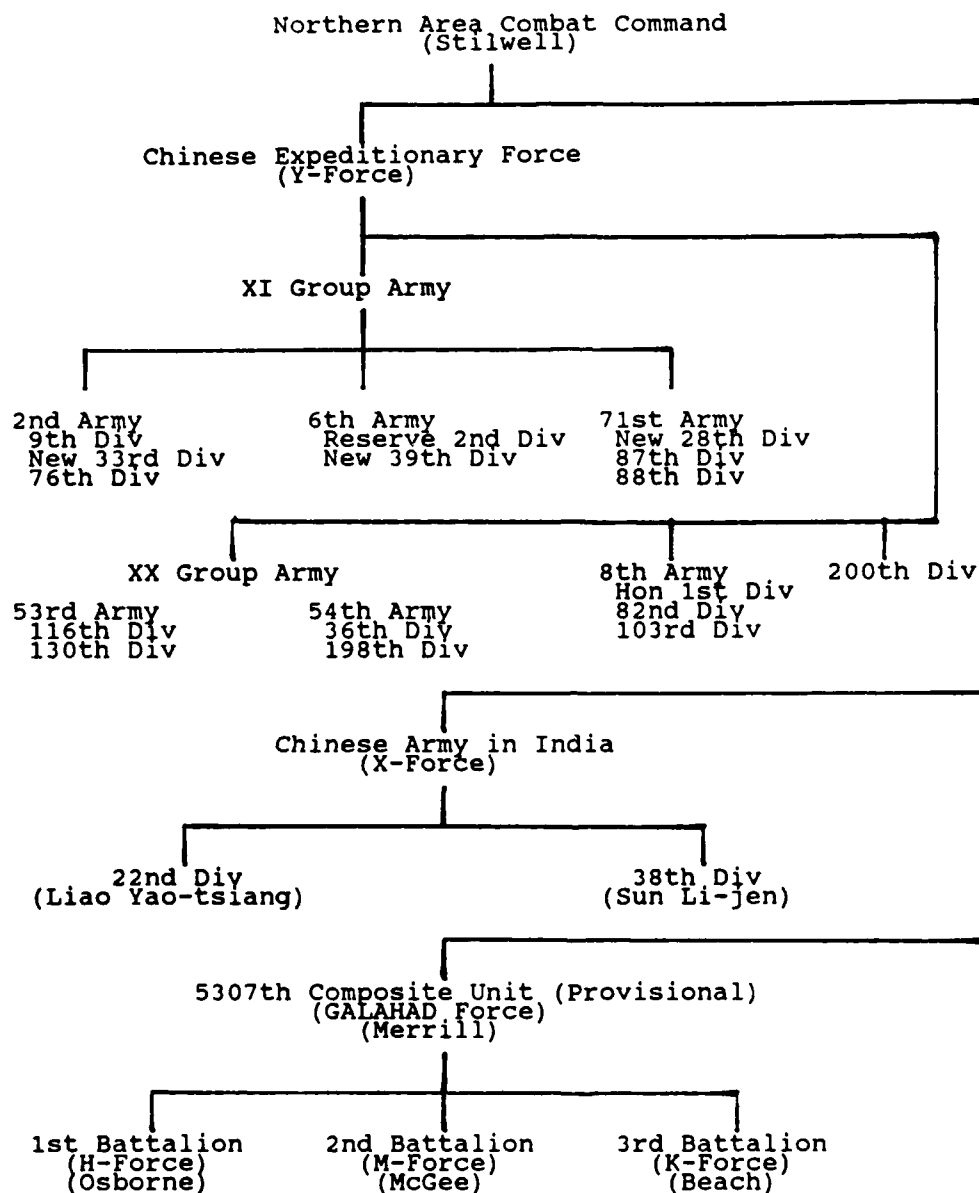
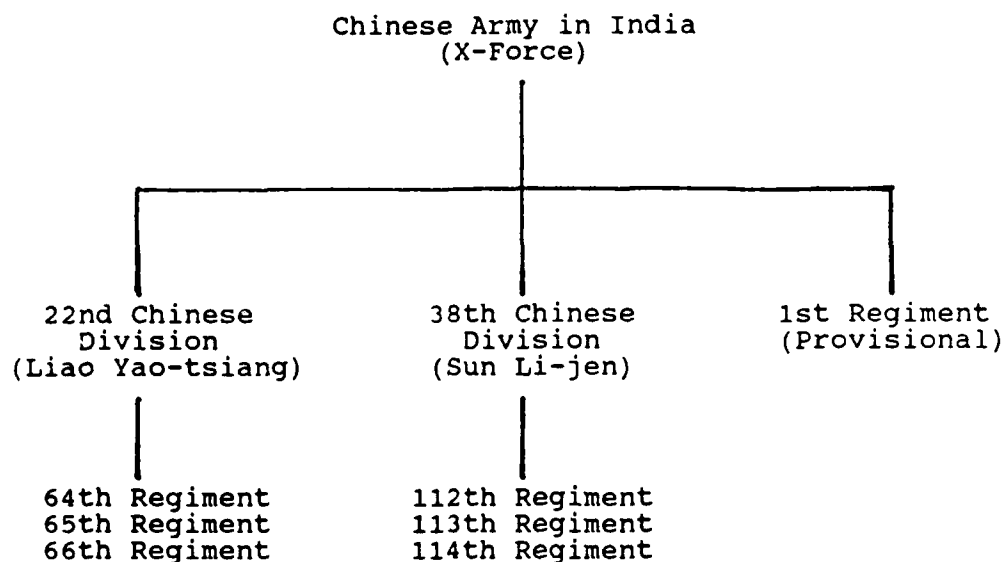


Figure 3. Chain of Command Northern Combat Area Command



NOTE: In Chinese formations, an Army was the equivalent of a British division (13,700 troops), a Chinese division the equivalent of a British brigade (2,500 troops), and a Chinese regiment was the equivalent of a British battalion (800 troops).

Figure 4. Chain of Command of Chinese Army in India

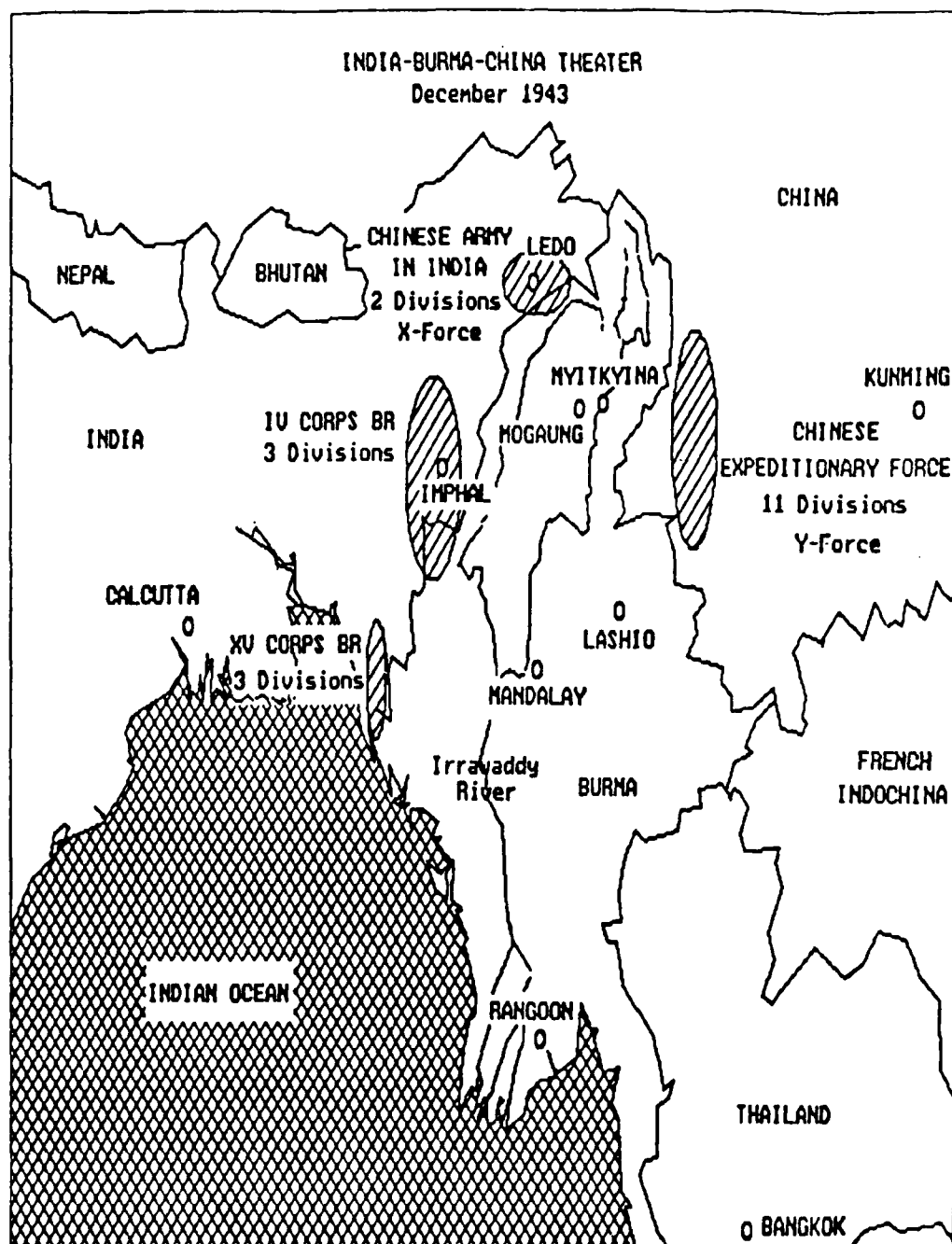


Figure 5. China-Burma-India Theater Map

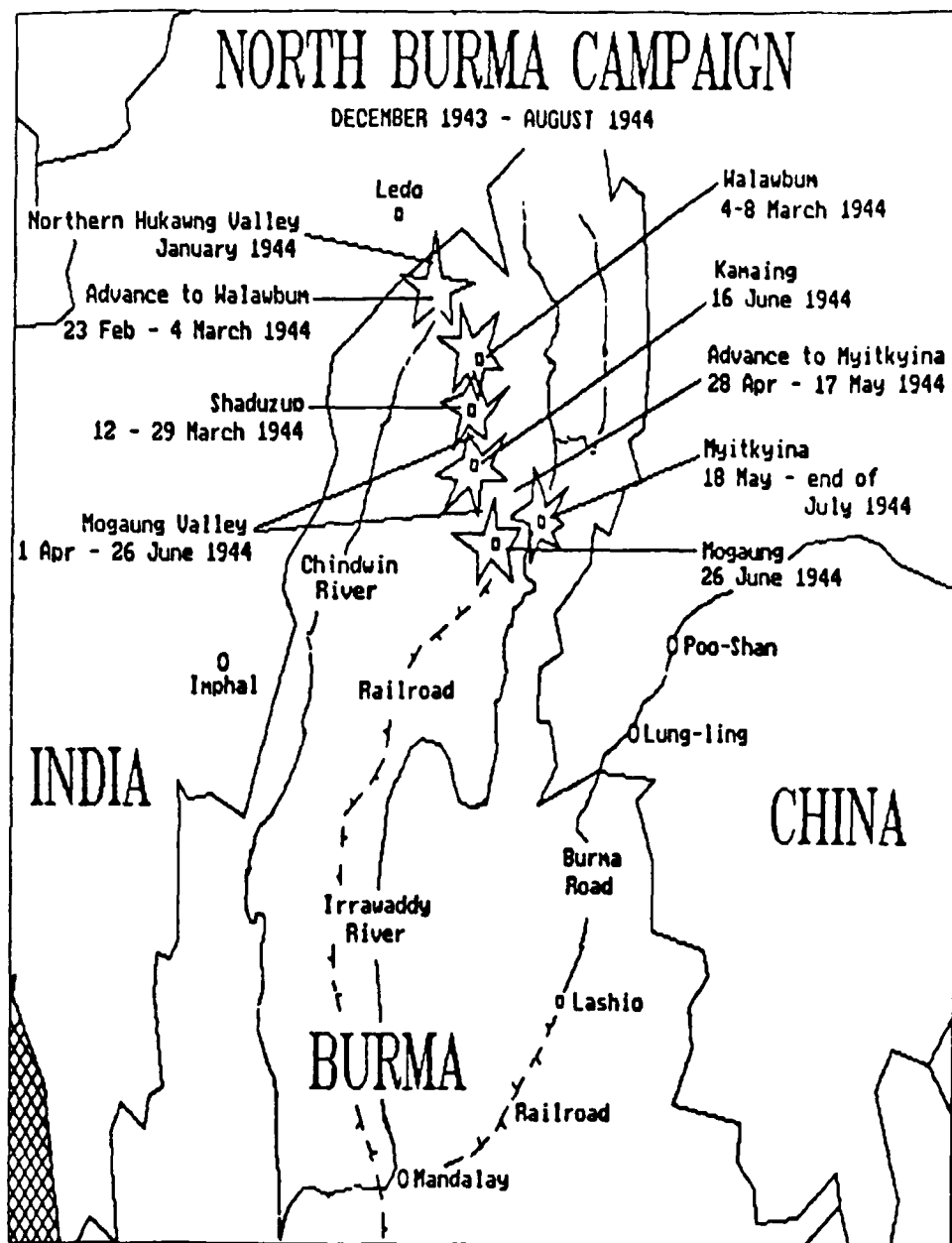


Figure 6. North Burma Campaign Map

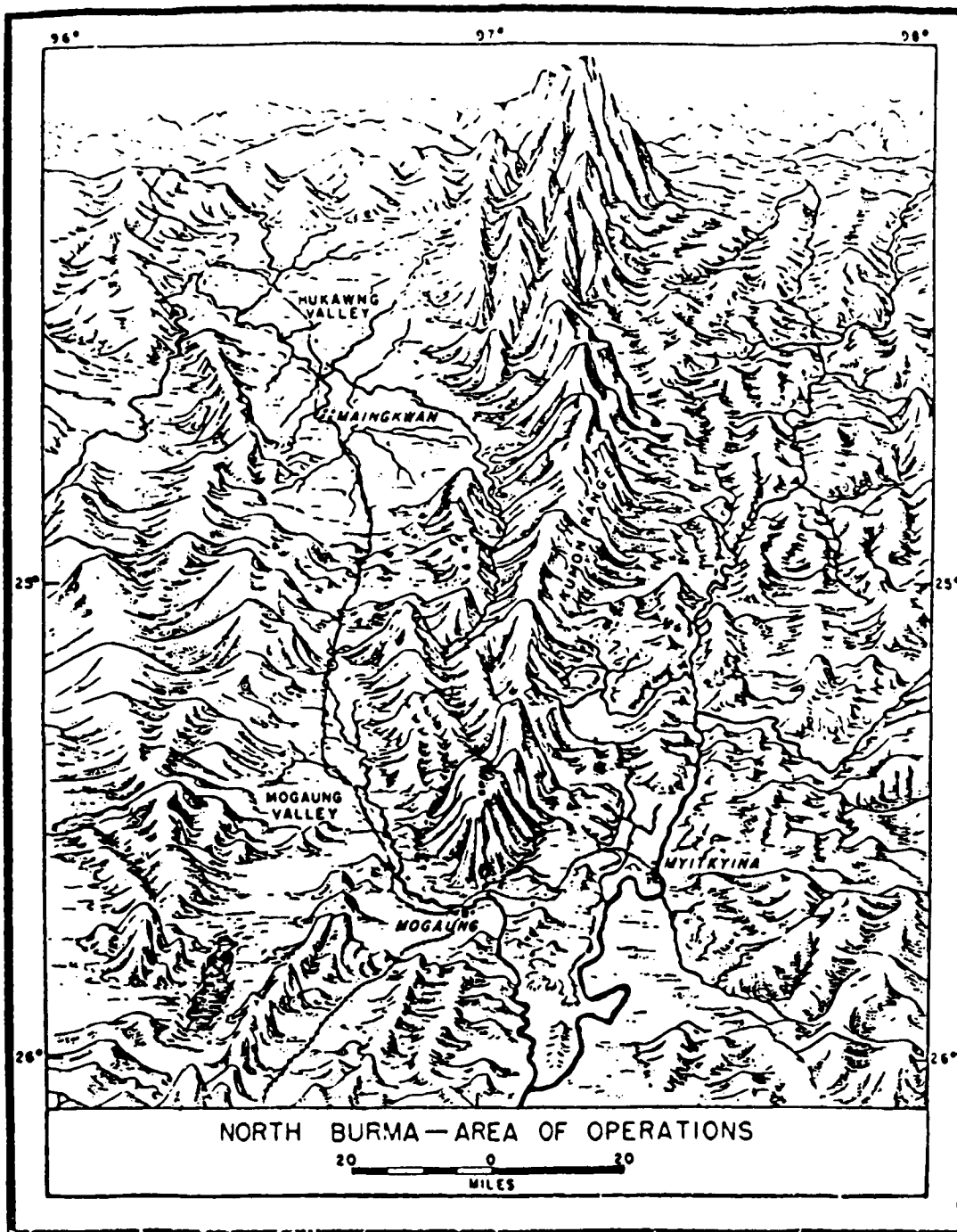


Figure 7. North Burma Area of Operations Map

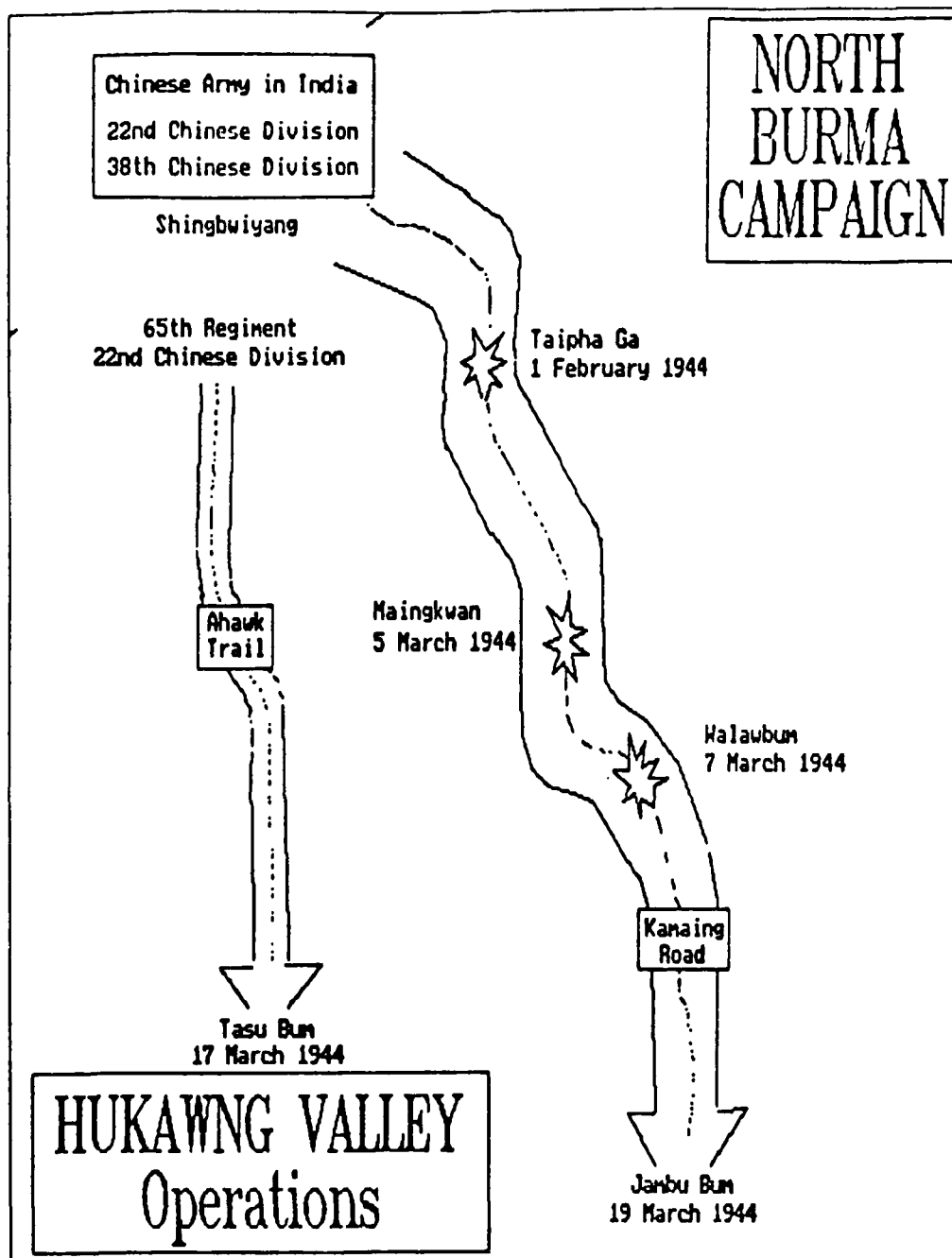


Figure 8. Hukawng Valley Operations Map

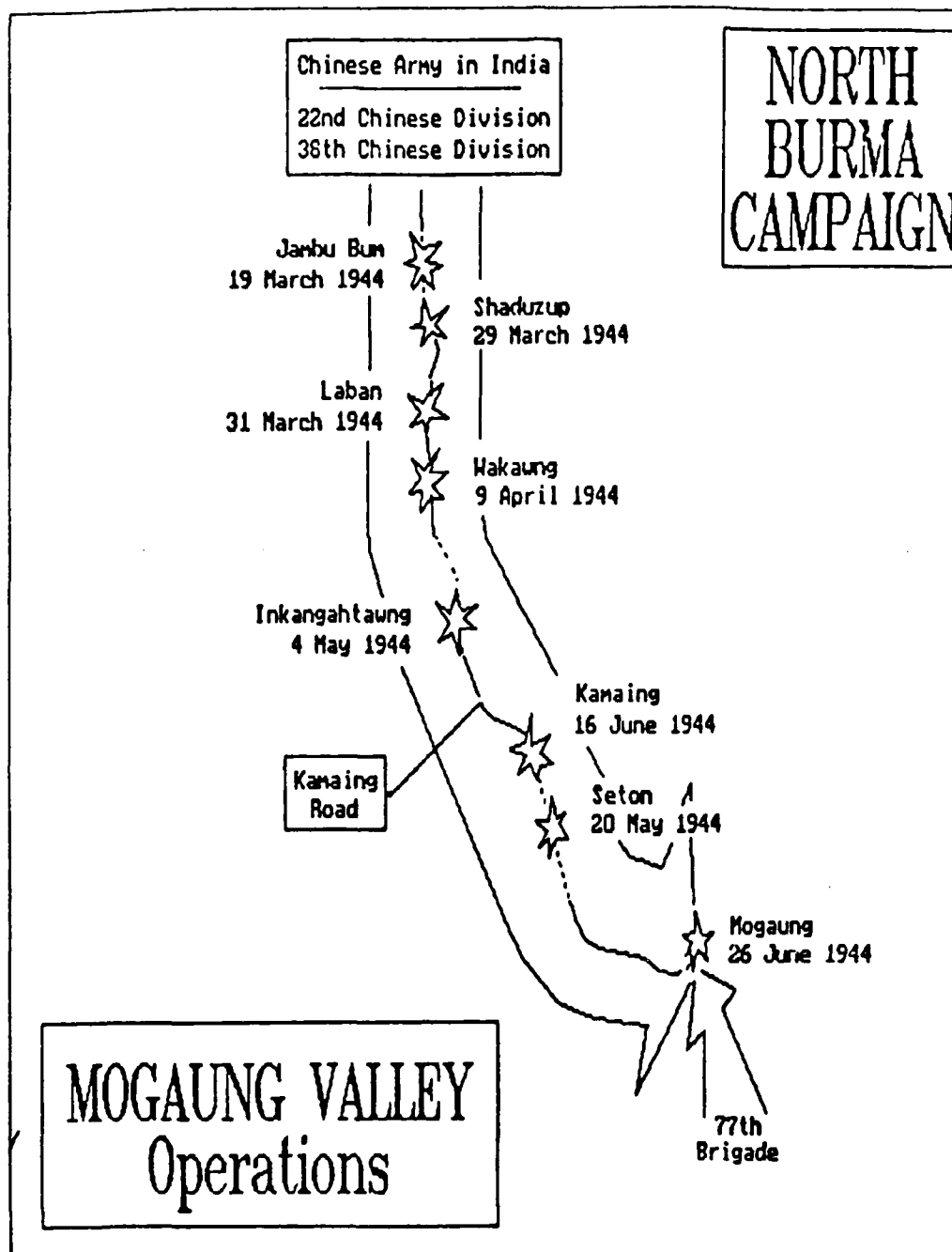


Figure 9. Mogaung Valley Operations Map

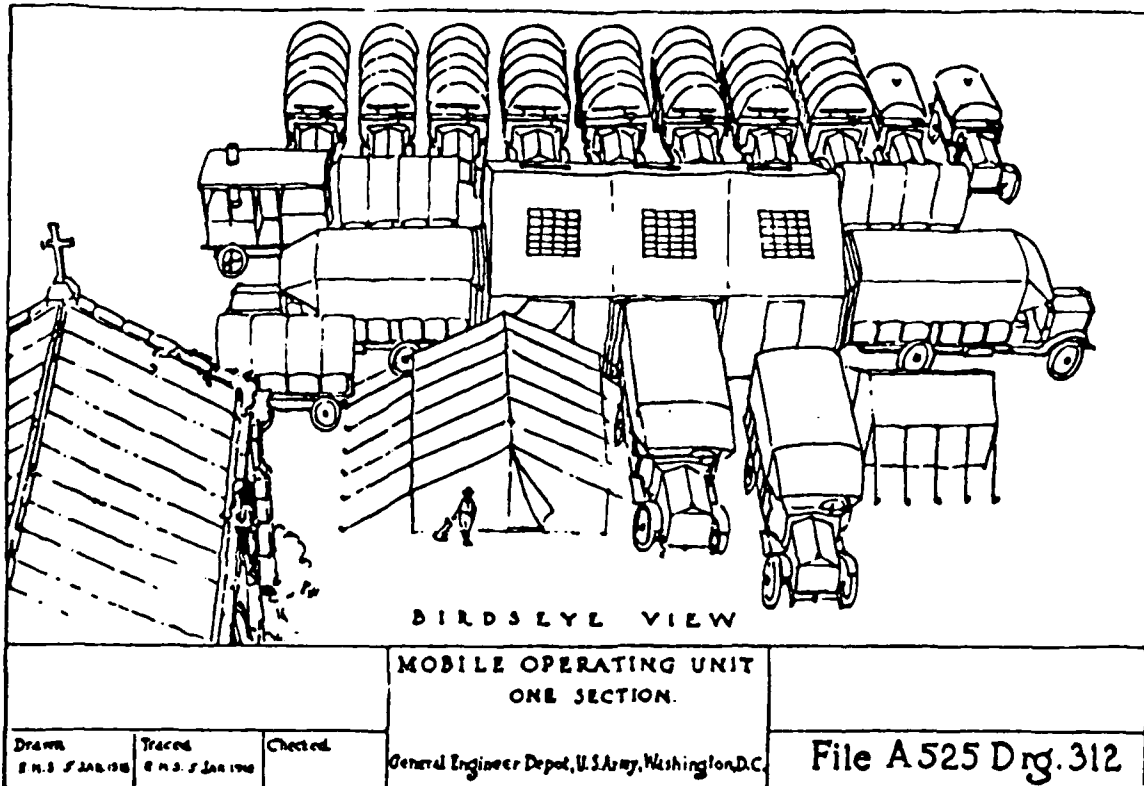


Figure 10. Section of Mobile Operating Unit No. 1

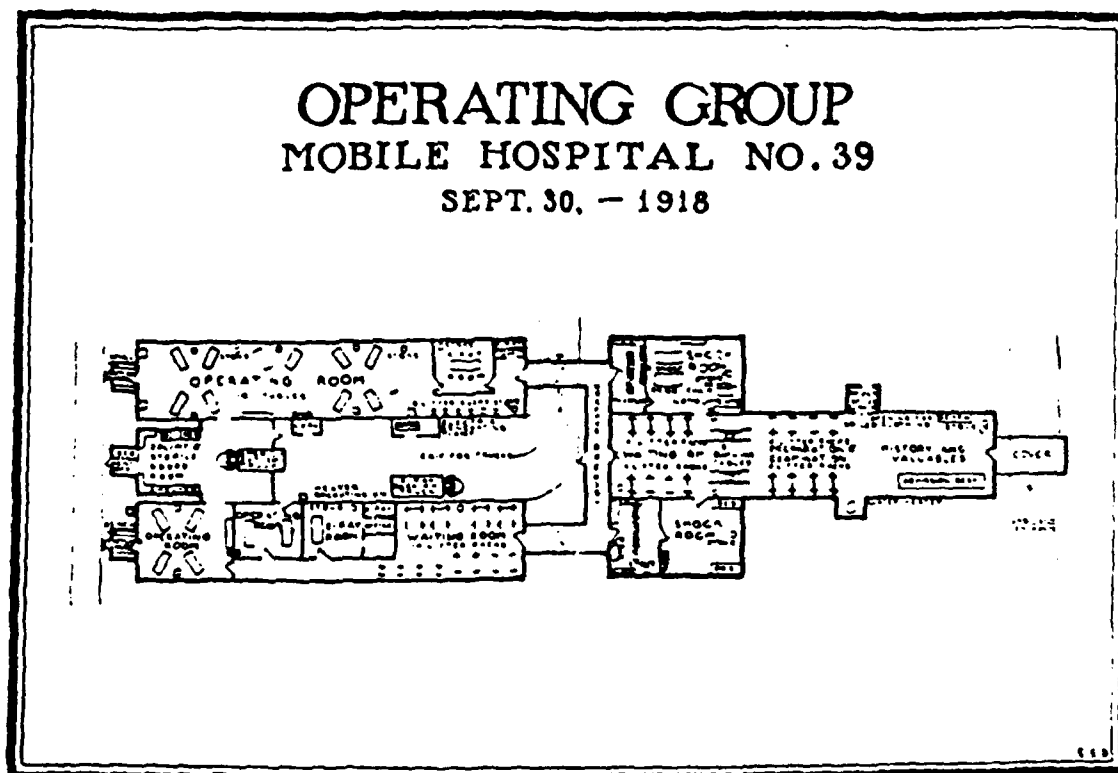
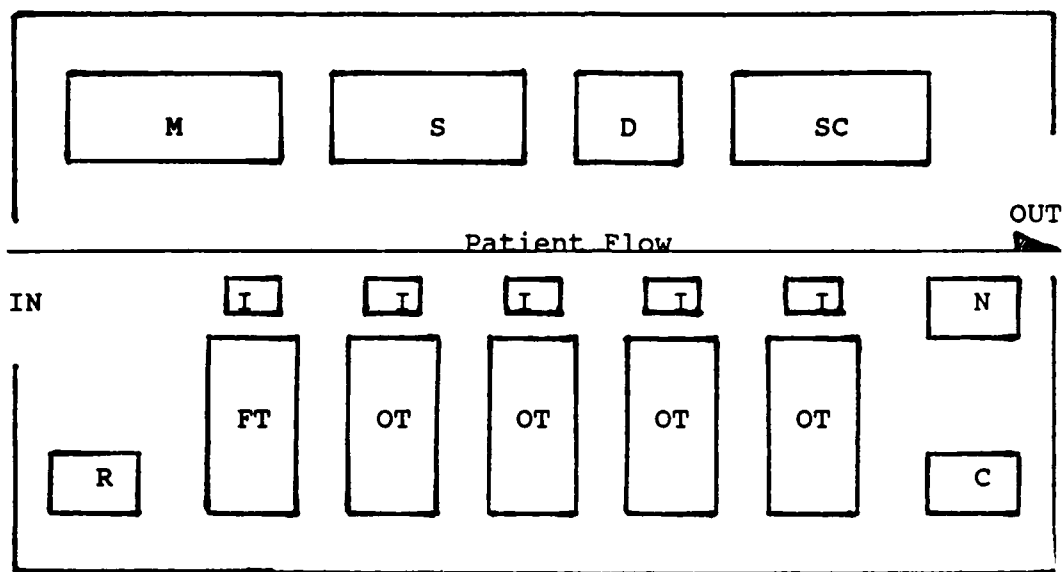


Figure 11. Operating Group of Mobile Hospital No. 39

PERSONNEL	AUTHORIZATION	REMARKS
Commissioned Officers		
Major	1	Hospital Cdr / Surgeon
Captain/First Lieutenant	2	Surgeon
Captain/First Lieutenant	1	Internist-Anesthetist
Total Commissioned	4	
Enlisted Personnel		
Technical Sergeant	1	Chief clerk
Staff Sergeant	1	Mess and supply
Technician, Grade 3	1	Technician, surgical
Sergeant	2	Medical
Technician, Grade 4	1	Cook
Technician, Grade 4	1	Technician, medical
Technician, Grade 4	1	Technician, medical
Technician, Grade 4	1	Technician, surgical
Technician, Grade 5	1	Carpenter, construction
Technician, Grade 5	1	Clerk, typist
Technician, Grade 5	1	Cook
Technician, Grade 5	1	Driver, truck, light
Technician, Grade 5	1	Technician, medical
Technician, Grade 5	1	Technician, medical
Technician, Grade 5	1	Technician, medical
Technician, Grade 5	1	Technician, surgical
Private First Class	1	Clerk, general
Private First Class	1	Cook's Helper
Private First Class	1	Driver, truck, light
Private First Class	3	Technician, medical
Private First Class	1	Technician, sanitary
Private First Class	1	Technician, surgical
Private	1	Driver, truck, light
Private	5	Technician, medical
Private	1	Technician, surgical
Private	1	Basic
Total Enlisted	33	
Total Personnel	37	
EQUIPMENT		
Truck, 1/4 Ton	1	
Truck, 3/4 Ton	2	
Trailer, 1 Ton	1	

NOTE: The WWII enlisted rank of Technician, Grade 3, is roughly equivalent to a Staff Sergeant; a Technician, Grade 4, to a Sergeant; and a Technician, Grade 5, to a Corporal.

Figure 12. Organization of the Portable Surgical Hospital



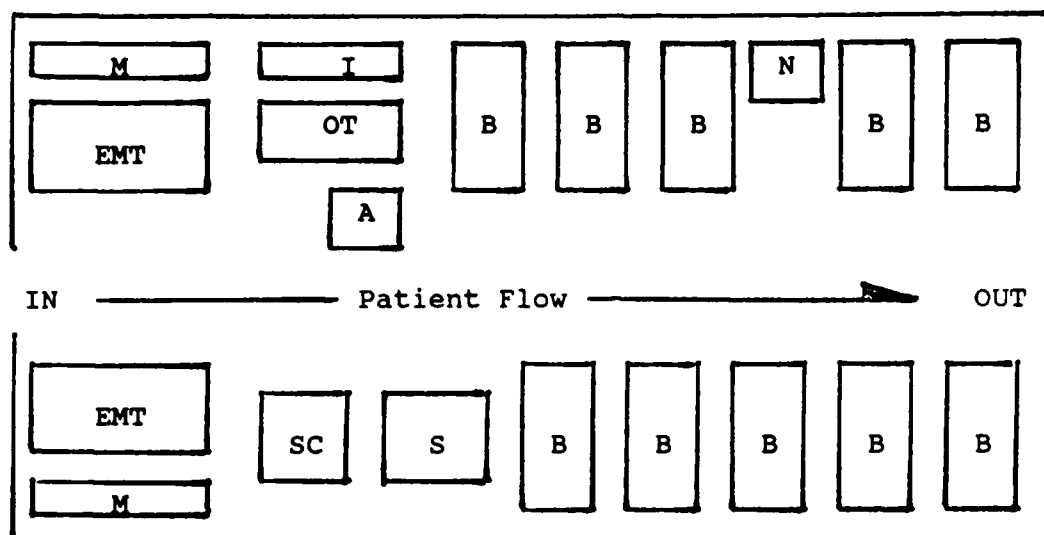
Legend:

C = Cast Plaster Tray
 D = Dirty Nurse Table
 I = Instrument Trays
 M = Medications
 N = Scrub Nurse Table
 R = Recorder Desk
 S = Sterile table
 FT = Fracture Table
 OT = Operating Table
 SC = Scrub Table

Figure 13. 42nd PSH Floor Plan for Surgical Suite

PERSONNEL	AUTHORIZATION	REMARKS
Commissioned Officers		
Major	1	61J OIC/General Surgeon
Captain	1	61J General Surgeon
Captain	1	66E OR Nurse
Captain	2	66F Nurse Anesthetist
Captain	1	66H Clinical Nurse/Head Nurse
Lieutenant	1	66E OR Nurse
Lieutenant	1	66H Clinical Nurse
Total Commissioned	8	
Enlisted Personnel		
Sergeant First Class	1	91C NCOIC, FST
Staff Sergeant	1	91B NCOIC, EMT
Staff Sergeant	1	91C Wardmaster
Staff Sergeant	1	91C Practical Nurse
Staff Sergeant	1	91D NCOIC, Operating Room
Sergeant	4	91B EMT NCO
Sergeant	2	91C Practical Nurse
Sergeant	2	91D OR Section Sergeant
Sergeant	1	91V Respiratory Technician
Specialist	1	91D OR Specialist
Specialist	1	63B Mechanic
Specialist	1	31C Communications Specialist
Total Enlisted	17	
Total Personnel, FST	25	
EQUIPMENT		
Truck, 5/4 Ton	1	
Truck, 5 Ton	2	
Trailer	1	
Trailer, Gen	1	
EMT = Emergency Medical Treatment OIC = Officer-In-Charge NCO = NonCommissioned Officer NCOIC = NonCommissioned Officer-In-Charge OR = Operating Room		

Figure 14. Organization of the 43rd Surgical Hospital
(Mobile Army) Forward Surgical Team (FST)



General Purpose (GP) Tent, Large

Legend:

- A = Anesthesia Equipment/Supplies
- B = Post-Op Beds
- E = Emergency Medical Treatment (EMT) Table
- I = Instrument Trays
- M = Medical Supplies
- N = Nurse Table/Medical Supplies
- OT = Operating Table
- S = Surgical Supplies
- SC = Scrub Area

Figure 15. 43rd Surgical Hospital (Mobile Army) Floor Plan for the Forward Surgical Team (FST)

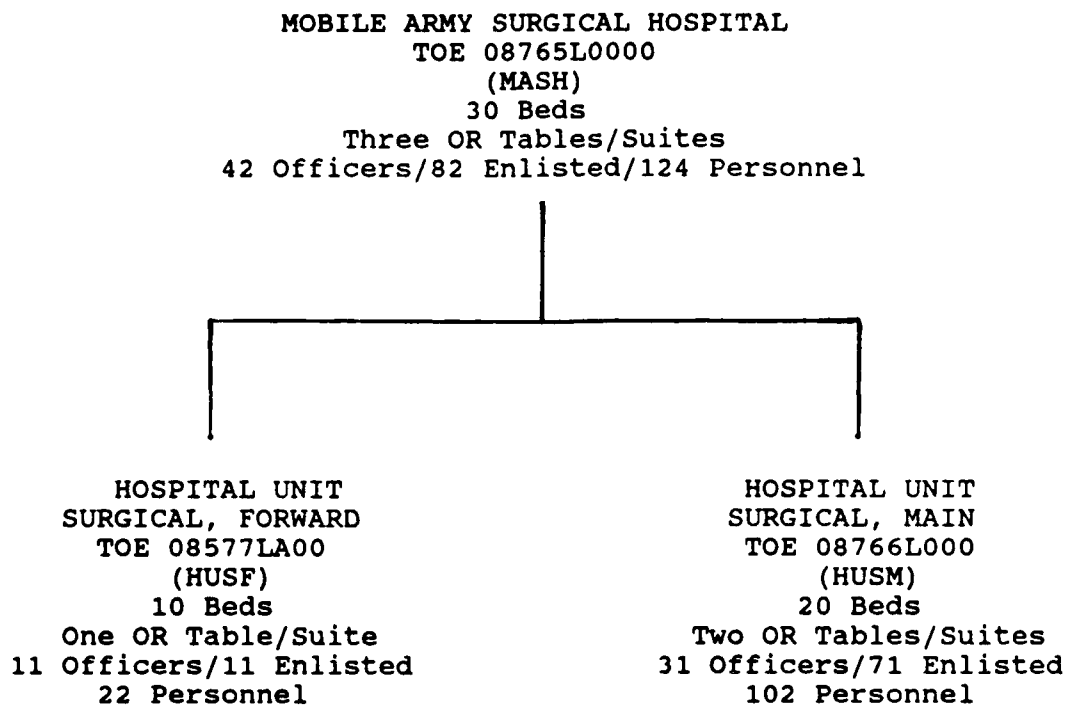


Figure 16. Organization of the 30 Bed Mobile Army Surgical Hospital (MASH), TOE 08765L0000

PERSONNEL	AUTHORIZATION	REMARKS
Commissioned Officers		
Major	1	61J Chief, HUSF/General Surgeon
Major	1	61J General Surgeon
Major	1	66H Clinical Nurse/Head Nurse
Captain	1	66E OR Head Nurse
Captain	2	66E OR Nurse
Captain	2	66F Nurse Anesthetist
Captain	1	66H Clinical Nurse
Lieutenant	2	66H Clinical Nurse
Total Commissioned	11	
Enlisted Personnel		
Sergeant First Class	1	91C Ward Master/NCOIC, HUSF
Staff Sergeant	3	91C Practical Nurse
Sergeant	3	91C Practical Nurse
Sergeant	1	91D OR Section Sergeant
Specialist	1	91D OR Specialist
Specialist	1	91A Patient Care Specialist
Private First Class	1	91D CMS Specialist
Total Enlisted	11	
Total Personnel, HUSF	22	
EQUIPMENT		
Truck, Utility	1	
Truck, Cargo	3	
Trailer, Cargo	1	
30 KW Generator	1	
CMS = Central Material Supply		
OR = Operating Room		

Figure 17. Organization of the Hospital Surgical Unit, Forward (HUSF)

Table 1. Listing of Mobile Surgical Hospitals/Units in World War I

Mobile Hospitals

UNITS

Mobile Hospital No.	1
Mobile Hospital No.	2
Mobile Hospital No.	3
Mobile Hospital No.	4
Mobile Hospital No.	5
Mobile Hospital No.	6
Mobile Hospital No.	7
Mobile Hospital No.	8
Mobile Hospital No.	9
Mobile Hospital No.	10
Mobile Hospital No.	11
Mobile Hospital No.	12*
Mobile Hospital No.	13*
Mobile Hospital No.	14*
Mobile Hospital No.	39
Mobile Hospital No.	100*
Mobile Hospital No.	101*
Mobile Hospital No.	102*
Mobile Hospital No.	103*
Mobile Hospital No.	104*
Mobile Hospital No.	105*

Mobile Surgical Units (Complementary Groups)

UNITS

Mobile Surgical Unit No.	1
Mobile Surgical Unit No.	2
Mobile Surgical Unit No.	3
Mobile Surgical Unit No.	4
Mobile Surgical Unit No.	5
Mobile Surgical Unit No.	6
Mobile Surgical Unit No.	7
Mobile Surgical Unit No.	8
Mobile Surgical Unit No.	9
Mobile Surgical Unit No.	10
Mobile Surgical Unit No.	11
Mobile Surgical Unit No.	12
Mobile Surgical Unit No.	100*
Mobile Surgical Unit No.	101*
Mobile Surgical Unit No.	102*
Mobile Surgical Unit No.	103*

Mobile Operating Unit

UNIT

Mobile Operating Unit No. 1*

* NOTE: Organized or arrived too late to participate in WWI.

Table 2. Listing of Portable Surgical Hospitals (PSH) (T/O 8-572)
Serving in WWII (CBI Theater)

CBI Theater		
<u>CAMPAIGNS</u>		
5 = Central Burma.....	29 Jan 1945 -	15 Jul 1945
7 = China Defense.....	4 Jul 1942 -	4 May 1945
8 = China Offense.....	5 May 1945 -	2 Sep 1945
12 = India-Burma.....	17 Oct 1944 -	28 Jan 1945

<u>UNIT</u>	<u>CAMPAIGNS</u>	<u>AWARDS</u>
28th PSH	7	
32nd PSH	7	
34th PSH	7,8,12	
35th PSH	7	
36th PSH	7	
40th PSH	7	
42nd PSH	12	
43rd PSH	12	
44th PSH	12	
45th PSH	12	
46th PSH	12	
47th PSH	7	
48th PSH	7	
49th PSH	12	
50th PSH	7,8	
53rd PSH	7	
58th PSH	5, 12	
60th PSH	12	

NOTE: Unlike the Pacific Theater, not one (1) Portable Surgical Hospital in the CBI Theater is credited with receiving a unit award. For example, the 5307th Composite Unit (Provisional) (Merrill's Marauders), received a Distinguished Unit Citation for the period 3 March 1944 - 17 May 1944 (War Department General Order # 54 - 44). The 42nd PSH which directly supported the 5307th Composite Unit (Provisional) during this period received no mention as a unit for its participation.

NOTE: Tables 5 & 6 show campaigns in which Portable Surgical Hospitals participated in but were not awarded official credit by the US Army. A request to officially recognize and credit these campaigns has been forwarded to the Department of the Army.

Table 3. Listing of Portable Surgical Hospitals (PSH) (T/O 8-572)
Serving in WWII (Pacific Theater)

Pacific Theater									
CAMPAIGNS									
3 = Bismarck Archipelago.....	15	Dec	1943	-	27	Nov	1944		
9 = East Indies.....	1	Jan	1942	-	22	Jul	1942		
13 = Leyte.....	17	Oct	1944	-	1	Jul	1945		
14 = Luzon.....	15	Dec	1944	-	4	Jul	1945		
15 = New Guinea.....	24	Jan	1943	-	31	Dec	1944		
16 = Northern Solomons.....	22	Feb	1943	-	21	Nov	1944		
17 = Papua.....	23	Jul	1942	-	23	Jan	1943		
19 = Ryukyus.....	26	Mar	1945	-	2	Jul	1945		
20 = Southern Philippines.....	27	Feb	1945	-	4	Jul	1945		
21 = Western Pacific (Ground).....	15	Jun	1944	-	2	Sep	1945		
AWARDS									
DUC.....	Distinguished Unit Citation								
MUC.....	Meritorious Unit Commendation								
PPUC.....	Philippine Presidential Unit Citation								
UNIT	CAMPAIGNS			AWARDS		Assault Landings			
1st PSH	13,14,15,	17		DUC	PPUC	Igi, Asia Island Gp			
2nd PSH	15,	17,	20	DUC	PPUC				
3rd PSH	14,15,	17		DUC	PPUC				
4th PSH	13,14,15,	17		DUC	PPUC				
5th PSH	13,14,15,	17		DUC	PPUC				
6th PSH 3,	14,15					Nasugbu Point Luzon			
7th PSH	13,14,15	17		DUC	PPUC				
						Panoan Island, SP			
						Hollandia, NG			
8th PSH 3,	13,14,15,		20		PPUC	Nasugbu Point Luzon			
9th PSH	15,	17		DUC					
10th PSH	13,14,15,	17,	20	DUC	PPUC	Cebu Island, Luzon			
11th PSH	14,15,	17		DUC	PPUC	Dinagat Island, SP			
12th PSH	14,	17		DUC	PPUC				
13th PSH 3,	13, 15,		20	MUC	PPUC	Zamboanga, Mindanao			
14th PSH	13, 15,	17		DUC	PPUC				
15th PSH	14,15,	17		DUC	PPUC	Lingayen Gulf Luzon			
16th PSH	13,14,15,	17		DUC	PPUC				
						Tanahmerah Bay, NG			
17th PSH	13, 15,	17,	20	DUC	PPUC	Leyte, SP			
18th PSH	13,14,15,	17		DUC	PPUC				
19th PSH 3,	13,14,15,	17		DUC	PPUC	Cebu Island, Luzon			
20th PSH	13,14,15,	17		DUC	PPUC				
21st PSH 3,	13,14,15,	17		DUC	PPUC	Corregidor Island			
22nd PSH	13,14,15,	17		DUC	PPUC				
23rd PSH	15,	17,	20,21	DUC	MUC	Mapia Island, SP			
24th PSH 3,	14,15,	17		DUC	PPUC				
						Nassau Bay, NG			
25th PSH	15,	17		DUC		Lubang Island Luzon			
26th PSH	14,15,		20		PPUC				
27th PSH 3,	13,14,15			MUC	PPUC	Biak Island, NG			
29th PSH 3,	13, 15				PPUC				
30th PSH 3,	13,14,15				PPUC	Leyte, SP			
						Los Negros, BA			

Table 3 Continued. Listing of Portable Surgical Hospitals (PSH)
(T/O 8-572) Serving in WWII (Pacific Theater)

Pacific Theater				
CAMPAIGNS				
3 = Bismarck Archipelago.....	15	Dec 1943	-	27 Nov 1944
9 = East Indies.....	1	Jan 1942	-	22 Jul 1942
13 = Leyte.....	17	Oct 1944	-	1 Jul 1945
14 = Luzon.....	15	Dec 1944	-	4 Jul 1945
15 = New Guinea.....	24	Jan 1943	-	31 Dec 1944
16 = Northern Solomons.....	22	Feb 1943	-	21 Nov 1944
17 = Papua.....	23	Jul 1942	-	23 Jan 1943
19 = Ryukyus.....	26	Mar 1945	-	2 Jul 1945
20 = Southern Philippines.....	27	Feb 1945	-	4 Jul 1945
21 = Western Pacific (Ground).....	15	Jun 1944	-	2 Sep 1945
AWARDS				
DUC.....	Distinguished Unit Citation			
MUC.....	Meritorious Unit Commendation			
PPUC.....	Philippine Presidential Unit Citation			
UNIT	CAMPAIGNS		AWARDS	Assault Landings
31st PSH	14,	16	PPUC	
33rd PSH	9,	14, 16	PPUC	
38th PSH	14,	16	PPUC	Lingayen Gulf Luzon
41st PSH	13,		PPUC	
51st PSH	13,	19	PPUC	Leyte, SP
52nd PSH	13,	19	PPUC	
54th PSH	3, 13, 14, 15,	21	PPUC	
55th PSH	14, 15		PPUC	
56th PSH	14, 15		MUC PPUC	Lingayen Gulf Luzon
57th PSH	14, 15	20	PPUC	Lingayen Gulf Luzon Malabang, Mindanao
59th PSH	14, 15		PPUC	
61st PSH	14, 15		PPUC	
62nd PSH	14, 15	20	PPUC	
63rd PSH	14, 15		PPUC	
64th PSH	13, 14, 15,	20	PPUC	Zambalas, Luzon
65th PSH	13		PPUC	
66th PSH		19		
67th PSH		19		
68th PSH		19		
95th PSH	13,	19, 21	PPUC	Ormoc, Leyte
96th PSH		19, 21		
97th PSH		21		
98th PSH		19, 21		
NOTE: Tables 5 & 6 show campaigns in which Portable Surgical Hospitals participated in but were not awarded official credit by the US Army. A request to officially recognize and credit these campaigns has been forwarded to the Department of the Army.				

Table 4. Listing of Portable Surgical Hospitals (PSH) (T/O 8-572)
Serving in WWII (ETO Theater)

Germany			
<u>UNIT</u>	<u>OCCUPATION CREDIT</u>		
106th PSH	Occupation Credit-Germany	15 Aug 1945	- 31 Oct 1945
107th PSH	Occupation Credit-Germany	15 Aug 1945	- 27 Dec 1945
109th PSH	Occupation Credit-Germany	15 Aug 1945	- 31 Oct 1945
110th PSH	Occupation Credit-Germany	15 Aug 1945	- 31 Oct 1945
111th PSH	Occupation Credit-Germany	15 Aug 1945	- 31 Oct 1945
112th PSH	Occupation Credit-Germany	15 Aug 1945	- 31 Oct 1945

Table 5. Portable Surgical Hospitals (PSH) (T/O 8-572) Not Credited in DA PAM 672-1 dated July 1961, w/Changes 1-4, with Campaign Participation as Confirmed by Official and Unit Histories

CBI Theater		
<u>CAMPAIGNS</u>		
5 = Central Burma.....	29 Jan 1945 - 15 Jul 1945	
7 = China Defense.....	4 Jul 1942 - 4 May 1945	
8 = China Offense.....	5 May 1945 - 2 Sep 1945	
<u>UNIT</u>	<u>CAMPAIGNS</u>	<u>SOURCE FOR CAMPAIGN PARTICIPATION</u>
42nd PSH	5, 8	Unit History, MS/IB
43th PSH	5, 8	Unit History, MS/IB
44th PSH	5	MS/IB
45th PSH	7, 8	Unit History
46th PSH	5, 8	Unit History, MS/IB
49th PSH	5, 8	Unit History, MS/IB
60th PSH	7, 8	Unit History

SOURCES: MS/IB: Pages 313-315 (46th), 316 (58th), 318-320 (43rd), 322 (43rd/58th), 325 (44th), 326 (42nd/44th), and 328 (49th)

Table 6. Portable Surgical Hospitals (PSH) (T/O 8-572) Not Credited in DA PAM 672-1 dated July 1961, w/Changes 1-4, with Campaigns Authorized by Department of the Army General Orders

Pacific Theater		
<u>CAMPAIGNS</u>		
3 = Bismarck Archipelago.....	15 Dec 1943 - 27 Nov 1944	
16 = Northern Solomons.....	22 Feb 1943 - 21 Nov 1944	
17 = Papua.....	23 Jul 1942 - 23 Jan 1943	
20 = Southern Philippines.....	27 Feb 1945 - 4 Jul 1945	
21 = Western Pacific (Ground).....	15 Jun 1944 - 2 Sep 1945	

<u>UNIT</u>	<u>CAMPAIGNS</u>	<u>DA GENERAL ORDER</u>
2nd PSH	21	DA GO # 32-53, P. 6
4th PSH	20	DA GO # 12-46, P. 88
5th PSH	20	DA GO # 12-46, P. 88
6th PSH	17	DA GO # 12-46, P. 33
7th PSH	20	DA GO # 12-46, P. 88
8th PSH	17	DA GO # 12-46, P. 33
12th PSH	20	DA GO # 12-46, P. 89
		DA GO # 29-48, P. 31
13th PSH	17	DA GO # 12-46, P. 34
14th PSH	20	DA GO # 12-46, P. 89
16th PSH	20	DA GO # 12-46, P. 90
18th PSH	20	DA GO # 12-46, P. 90
19th PSH	20	DA GO # 12-46, P. 90
20th PSH	20	DA GO # 12-46, P. 90
21st PSH	20	DA GO # 12-46, P. 90
22nd PSH	20	DA GO # 12-46, P. 90
26th PSH	17	DA GO # 12-46, P. 35
27th PSH	20	DA GO # 12-46, P. 90
29th PSH	17, 20	DA GO # 12-46, P. 35, 90
30th PSH	17, 20	DA GO # 12-46, P. 35, 90
38th PSH	16	DA GO # 12-46, P. 65
41st PSH	20	DA GO # 12-46, P. 91
50th PSH 3	20	DA GO # 12-46, P. 72
51st PSH	20	DA GO # 12-46, P. 91
52nd PSH	20	DA GO # 12-46, P. 91
54th PSH	20	DA GO # 12-46, P. 91
55th PSH	17	DA GO # 12-46, P. 37
56th PSH	17	DA GO # 12-46, P. 37
57th PSH	17	DA GO # 12-46, P. 37
59th PSH	17	DA GO # 12-46, P. 37
61th PSH	17	DA GO # 12-46, P. 37
62th PSH	17	DA GO # 12-46, P. 37
63th PSH	17	DA GO # 12-46, P. 37
64th PSH	17	DA GO # 12-46, P. 37
95th PSH	20	DA GO # 12-46, P. 93

Table 7. Listing of Surgical Hospitals (T/O 8-231) Serving in WWII

<u>CAMPAIGNS</u>				
9 = East Indies.....	1 Jan 1942 - 22 Jul 1942			
17 = Papua.....	23 Jul 1942 - 23 Jan 1943			
23 = Algeria French Moraco.....	8 Nov 1942 - 11 Nov 1942			
38 = Tunisia (Ground).....	17 Nov 1942 - 13 May 1943			
<u>THEATERS</u>				
ETO.....	Mediterranean Theater of Operations			
SWPA.....	Southwest Pacific Area			
<u>AWARDS</u>				
DUC	Distinguished Unit Citation			
<u>UNIT</u>	<u>CAMPAIGNS</u>	<u>AWARDS</u>	<u>ASSAULT LANDING</u>	<u>THEATER</u>
28th Surgical Hospital	17	DUC		SWPA
33rd Surgical Hospital	9			SWPA
48th Surgical Hospital	23,38		North Africa	MTO
<u>NOTE:</u> Only three (3) surgical hospitals were used as such during WW II. By 1943 the surgical hospital was superseded by other hospital units although the table of organization for the surgical hospital was not rescinded until August 1944.				
<u>UNIT</u>	<u>DATE ACTIVATED</u>	<u>REDESIGNATED AS</u>	<u>DATE REDESIGNATED</u>	
6th Surgical Hospital	1 Aug 1940	91st Evac Hosp	31 Aug 1942	
7th Surgical Hospital	1 Aug 1940	92nd Evac Hosp	25 Aug 1942	
28th Surgical Hospital	10 Feb 1941	360th Station Hosp	28 Oct 1943	
33rd Surgical Hospital	25 Jan 1941	361st Station Hosp	28 Oct 1943	
48th Surgical Hospital	10 Feb 1941	128th Evac Hosp	1 May 1943	
61st Surgical Hospital	1 Jun 1941	93rd Evac Hosp	25 Aug 1942	
63rd Surgical Hospital	-1 Jun 1941	94th Evac Hosp	25 Aug 1942	
74th Surgical Hospital	1 Jun 1941	95th Evac Hosp	25 Aug 1942	

TABLE 8. Listing of Mobile Army Surgical Hospitals (MASH)/
Surgical Hospital (Mobile Army) Serving in Korean War

Korea																		
<u>CAMPAIGNS</u>																		
39 = UN Defensive.....	27 Jun 1950 - 15 Sep 1950																	
40 = UN Offensive.....	16 Sep 1950 - 2 Nov 1950																	
41 = CCF Intervention.....	3 Nov 1950 - 24 Jan 1951																	
42 = First UN Counteroffensive.....	25 Jan 1951 - 21 Apr 1951																	
43 = CCF Spring Offensive.....	22 Apr 1951 - 8 Jul 1951																	
44 = UN Summer-Fall Offensive.....	9 Jul 1951 - 27 Nov 1951																	
45 = Second Korean Winter.....	28 Nov 1951 - 30 Apr 1951																	
46 = Korea Summer-Fall 1952.....	1 May 1951 - 30 Nov 1952																	
47 = Third Korean Winter.....	1 Dec 1952 - 30 Apr 1953																	
48 = Korea Summer 1953.....	1 May 1953 - 27 Jul 1953																	
<u>AWARDS</u>																		
MUC.....	Meritorious Unit Commendation																	
RKPUC.....	Republic of Korea Presidential Unit Citation																	
<u>UNIT</u>	<u>CAMPAIGNS</u>	<u>AWARDS</u>																
1st MASH	40, 41, 42, 43	MUC RKPUC																
2nd MASH	42, 43	RKPUC																
43rd MASH	47, 48																	
44th MASH	47, 48	MUC																
45th MASH	47, 48	MUC																
46th MASH	47, 48	MUC																
47th MASH	47, 48	MUC																
48th MASH	47, 48	MUC																
8055th MASH	39, 40, 41, 42, 43, 44, 45, 46, 47	MUC																
8063rd MASH	39, 40, 41, 42, 43, 44, 45, 46, 47	MUC																
8076th MASH	39, 40, 41, 42, 43, 44, 45, 46, 47	MUC RKPUC																
8209th MASH	43, 44, 45, 46, 47	MUC																
8225th MASH	43, 44, 45, 46, 47	MUC																
8228th MASH	43, 44, 45, 46, 47																	
<u>NOTE:</u> According to different nomenclature listed on tables of organization and equipment (TOE), these units were referred to as both a Mobile Army Surgical Hospital (MASH) or as a Surgical Hospital (Mobile Army) at different times during the Korean War.																		
<u>NOTE:</u> <table><tr><td>1st MASH redesignated</td><td>8209th MASH</td></tr><tr><td>2nd MASH redesignated</td><td>8225th MASH</td></tr><tr><td>8055th MASH replaced by</td><td>43rd MASH</td></tr><tr><td>8063rd MASH replaced by</td><td>44th MASH</td></tr><tr><td>8076th MASH replaced by</td><td>45th MASH</td></tr><tr><td>8209th MASH replaced by</td><td>46th MASH</td></tr><tr><td>8225th MASH replaced by</td><td>47th MASH</td></tr><tr><td>8228th MASH replaced by</td><td>48th MASH</td></tr></table>			1st MASH redesignated	8209th MASH	2nd MASH redesignated	8225th MASH	8055th MASH replaced by	43rd MASH	8063rd MASH replaced by	44th MASH	8076th MASH replaced by	45th MASH	8209th MASH replaced by	46th MASH	8225th MASH replaced by	47th MASH	8228th MASH replaced by	48th MASH
1st MASH redesignated	8209th MASH																	
2nd MASH redesignated	8225th MASH																	
8055th MASH replaced by	43rd MASH																	
8063rd MASH replaced by	44th MASH																	
8076th MASH replaced by	45th MASH																	
8209th MASH replaced by	46th MASH																	
8225th MASH replaced by	47th MASH																	
8228th MASH replaced by	48th MASH																	
<u>NOTE:</u> The US Army organized units under tables of distribution (TD) to meet theater requirements quickly in response to the Korean crisis. To reflect their assignment to Eighth Army in Korea they were numbered in the 8000 series. On 1 February 1953, these six (6) Eighth Army TD MASH units were discontinued and six (6) regular army MASH units were reactivated on 2 Feb 1953 to take their place.																		

Table 9. Listing of Surgical Hospitals Serving in Vietnam

Vietnam		
<u>CAMPAIGNS</u>		
1 = Vietnam Advisory Campaign.....	15 Mar 1962 -	7 Mar 1965
2 = Vietnam Defense Campaign.....	8 Mar 1965 -	24 Dec 1965
3 = Vietnam Counteroffensive.....	25 Dec 1965 -	30 Jun 1966
4 = Vietnam Counteroffensive, Phase II.....	1 Jul 1966 -	31 May 1967
5 = Vietnam Counteroffensive, Phase III.....	1 Jun 1967 -	29 Jan 1968
6 = TET Counteroffensive.....	30 Jan 1968 -	1 Apr 1968
7 = Vietnam Counteroffensive, Phase IV.....	2 Apr 1968 -	30 Jun 1968
8 = Vietnam Counteroffensive, Phase V.....	1 Jul 1968 -	1 Nov 1968
9 = Vietnam Counteroffensive, Phase VI.....	2 Nov 1968 -	22 Feb 1969
10 = TET 69 Counteroffensive.....	23 Feb 1969 -	8 Jun 1969
11 = Vietnam Summer-Fall 1969.....	9 Jun 1969 -	31 Oct 1969
12 = Vietnam Winter-Spring 1970.....	1 Nov 1969 -	30 Apr 1970
13 = DA Sanctuary Counteroffensive.....	1 May 1970 -	30 Jun 1970
14 = Vietnam Counteroffensive, Phase VII.....	1 Jul 1970 -	30 Jun 1971
15 = Consolidation I.....	1 Jul 1971 -	30 Nov 1971
16 = Consolidation II.....	1 Dec 1971 -	29 Mar 1972
17 = Vietnam CEASE-FIRE.....	30 Mar 1972 -	28 Jan 1973
<u>AWARDS</u>		
MUC.....	Meritorious Unit Commendation	
RVNGC.....	Republic of Vietnam Gallantry Cross	
<u>UNIT</u>	<u>AWARDS</u>	
2nd Surgical Hospital	MUC	
3rd Surgical Hospital	MUC	
7th Surgical Hospital		
18th Surgical Hospital	MUC	
22th Surgical Hospital		
27th Surgical Hospital	MUC	
45th Surgical Hospital	MUC	
	RVNGC w/Palm	

Table 10. Listing of Mobile Army Surgical Hospitals (MASHs) Serving in Operations "Urgent Fury," "Just Cause," and "Desert Storm"

Grenada - Operation "Urgent Fury"	
Operation "Urgent Fury".....23 Oct 1983 - 21 Nov 1983	
<u>UNIT</u>	
5th MASH	
Panama - Operation "Just Cause"	
Operation "Just Cause".....Dec 1989	
<u>UNIT</u>	
5th MASH	
Operation "Desert Storm"	
Operation "Desert Storm".....Jan 1991 - Feb 1991	
<u>UNITS</u>	<u>CORPS SUPPORTED</u>
2nd MASH (Regular Army)	XVIII Airborne Corps
5th MASH (Regular Army)	XVIII Airborne Corps
10th MASH (Regular Army)	XVIII Airborne Corps
115th MASH (National Guard)	VII Corps
159th MASH (National Guard)	VII Corps
300th MASH (National Guard)	VII Corps
475th MASH (National Guard)	VII Corps
807th MASH (Army Reserve)	VII Corps
912th MASH (Army Reserve)	VII Corps

Table 11. Comparison of the Portable Surgical Hospital (PSH), 60-bed Mobile Army Surgical Hospital (MASH), 30-bed MASH, and the Forward Surgical Team (FST)

TYPE UNIT	BASIS OF ALLOCATION	OPERATING TABLES	NUMBER OF BEDS	NUMBER OF SURGEONS AUTHORIZED	NUMBER OF PERSONNEL AUTHORIZED
60-BED MASH+	1 PER DIVISION	4	60	6	230
30-BED MASH	2 PER CORPS	3	30	6	124
FORWARD SURGICAL TEAM	1 PER MASH*	1	10	2	25**
PORTABLE SURGICAL HOSPITAL	1 PER BRIGADE	4-5***	25	3	37

+ H-series 60-bed MASH

* The Forward Surgical Team (FST) is a locally created unit. Basis of allocation determined by headquarters authorizing the creation of the FST. Based on experience of the 5th MASH, Fort Bragg, North Carolina, and the 43rd Surgical Hospital (Mobile Army), Camp Humphreys, Korea.

** Based on the organization of the 43rd Surgical Hospital (Mobile Army) FST.

*** Based on the historical accounts of the 42nd PSH.

BIBLIOGRAPHY

Books

- Allen, Louis. Burma, The Longest War, 1941 - 1945. London: J.M. Dent & Sons, Ltd, 1984.
- Fishbein, Morris. Doctors at War. New York: E.P. Dutton & Company, Inc., 1945.
- Katcher, Philip. The U.S. Army 1941 - 1945. London: Osprey Publishing, Ltd., 1986.
- Romanus, Charles F., and Riley Sutherland. United States Army in World War II. China-Burma-India Theater. Stilwell's Command Problems. Washington, DC: Office of the Chief of Military History. United States Army, 1956.
- Romanus, Charles F., and Riley Sutherland. United States Army in World War II. China-Burma-India Theater. Stilwell's Mission to China. Washington, DC: Office of the Chief of Military History. United States Army, 1953.
- Slim, Viscount. Defeat Into Victory. London: MacMillian Publishers, Ltd, 1986.
- Spencer, Otha C., Flying the Hump. College Station, Texas: Texas A&M University Press, 1992.
- Stone, James H. Crisis Fleeting. Original Reports on Military Medicine in India and Burma in the Second World War. Washington, DC: Office of the Surgeon General. Department of the Army, 1969.
- Thompson, Julian. The Lifeblood of War: Logistics in Armed Conflict. London: Brassey's. 1991.
- Military Medical Manual, 4th Edition (Revised). Harrisburg, PA: The Military Service Publishing Company, 2nd Printing, April 1941.

Military Medical Manual. Harrisburg, PA: The Military Service Publishing Company, 1944.

Mobile Units of the Medical Department. Carlisle Barracks, PA: Medical Field Service School, 1941.

Periodicals

"Medicine in the Gulf War." U.S. Medicine. Volume 27, Number 15 & 16, (August 1991): 42, 67.

Cardinal, Peter A. "Health Service Support in Operations Desert Shield and Desert Storm." Military Medicine. Volume 157, Number 4, (April 1992): 175-179.

Marsh, Walter. "Army Surgical Hospitals at Work in Korea." Army Information Digest. Volume 8, Number 8, (August 1953): 48-52.

Nolan, David L. "Airborne Tactical Medical Support in Grenada." Military Medicine. Volume 155, Number 3, (March 1990): 104-111.

Stone, James H. "Surgeons in Battle: The Mobile Surgical Hospital in Burma 1943 to 1945." The Military Surgeon. Volume 105, Number 4, (October 1949): 311-320.

Government Documents

United States. Academy of Health Sciences. Health Service Support - Futures (Final Draft). Fort Sam Houston, Texas: Academy of Health Sciences, March 1989.

U.S. Department of the Army. 42nd Portable Surgical Hospital - Annual Historical Report - 1944. Washington, DC: Center for Military History.

_____. 43rd Portable Surgical Hospital - History from July 5, 1943 - September 7, 1944. Suitland, MD: National Archives, 10 October 1992.

_____. 45th Portable Surgical Hospital - Unit Annual Report - Medical History 1944. Suitland, MD: National Archives, 10 October 1992.

- _____. 46rd Portable Surgical Hospital - Operations from 1 January 1944 to 15 May 1944. Suitland, MD: National Archives, 10 October 1992.
- _____. 58th Portable Surgical Hospital - Annual Report - 1945. Suitland, MD: National Archives, 10 October 1992.
- _____. 60th Portable Surgical Hospital - Unit History from 30 December 1944 to 26 August 1945. Suitland, MD: National Archives, 10 October 1992.
- _____. 60th Portable Surgical Hospital - Organizational History. Dated 23 September 1944. Suitland, MD: National Archives, 10 October 1992.
- _____. Department of the Army Pamphlet 672-1, with Changes 1-4, Unit Citation and Campaign Participation Credit Register. Washington, DC: Headquarters, Department of the Army, July 1961.
- _____. Department of the Army Pamphlet 672-3. Unit Citation and Campaign Participation Credit Register. (January 1960 to February 1986). Washington, DC: Headquarters, Department of the Army, 28 October 1986.
- _____. Draft Desert Storm Lessons Learned (CALL), Volume 37. Fort Leavenworth, Kansas: Combined Arms Research Library, 24 February 1992.
- _____. Field Manual 8-10-13 (Coordinating Draft), Employment of the Mobile Army Surgical Hospital. Fort Sam Houston, Texas: Academy of Health Sciences, October 1991.
- _____. Field Manual 8-10-13 (Final Draft), Employment of the Mobile Army Surgical Hospital. Fort Sam Houston, Texas: US Army Medical Department Center and School, July 1991.
- _____. Field Manual 100-5, Operations. Washington, DC: Headquarters, Department of the Army, 5 May 1986.
- _____. Field Manual 100-5, Operations (Final Draft). Washington, DC: Headquarters, Department of the Army, 19 January 1993.
- _____. Merrill's Marauders. Washington, DC: Center of Military History, 1990.

- _____. TRADOC PAM 525-5, Airland Operations. A Concept for the Evolution of Airland Battle for the Strategic Army of the 1990s and Beyond. Fort Monroe, Virginia: Headquarters, United States Army Training and Doctrine Command, 1 August 1991.
- _____. The Medical Department of the United States in the World War, Volume VIII, Field Operations. Washington, DC: Government Printing Office, 1925.
- _____. The Medical Department of the United States in the World War, Volume XI, Surgery. Washington, DC: Government Printing Office, 1927.
- _____. Medical Department, United States Army. Organization and Administration in World War II. Washington, DC: Office of the Surgeon General, 1963.
- _____. Medical Department, United States Army. Surgery in World War II. Activities of Surgical Consultants. Volume II. Washington, DC: Office of the Surgeon General, 1964.
- _____. "Senior Command and Control Subject Matter Expert Overall Comments." Fort Sam Houston, Texas: AMEDD Center and School, no date.
- _____. Memorandum for HODA (DASG-HCD), SUBJECT: Early Feedback of the Medical Force 2000 (MF2K) Mobile Army Surgical Hospital (MASH). Fort Sam Houston, Texas: United States Army Medical Board, 18 November 1992
- _____. United States Army. Medical Service in Combat in India and Burma 1942 - 1945. New Delhi, India: Office of the Surgeon, Headquarters, United States Forces, India-Burma Theater, 1 January 1946.
- _____. U.S. Army in the Korean War. The Medics' War. Washington, DC: Center of Military History, 1987.
- _____. United States Army in the World War, 1917 - 1919, General Orders, G.H.Q., A.E.F. Washington, DC: Historical Division, 1948.
- _____. United States Army in World War II. The Technical Services. The Medical Department: Hospitalization and Evacuation, Zone of the Interior. Washington, DC: Center of Military History, 1956.

_____. United States Army in World War II. The Technical Services. The Medical Department: Medical Service in the European Theater of Operations. Washington, DC: Center of Military History, 1992.

_____. Vietnam Studies. Medical Support of the U.S. Army in Vietnam 1965 - 1970. Washington, DC: U.S. Government Printing Office, 1973.

_____, Headquarters, United States Army Forces, "General Orders, Number 74." China Burma India, APO 885, 17 July 1944.

_____, War Department. Table of Organization and Equipment. No. 8-572S. Portable Surgical Hospital. Washington, DC: War Department, 4 June 1943.

_____. Table of Organization and Equipment. No. 8-572S Change 1. Portable Surgical Hospital. Washington, DC: War Department, 2 September 1943.

_____. Table of Organization and Equipment. No. 8-572S Change 2. Portable Surgical Hospital. Washington, DC: War Department, 7 December 1943.

_____. Table of Organization and Equipment. No. 8-572. Portable Surgical Hospital. Washington, DC: War Department, 14 December 1944.

Interviews

Fulfer, Jess, COL (Ret), MS. Telephone interview by author, 27 April 1993, Daingerfield, Texas.

Martin, James B., LTC, OD. Interview by author, 22 March 1993, Fort Leavenworth, Kansas. Department of Sustaining and Resource Operations, United States Army Command and General Staff College.

Wickham, Jim, MAJ, MS. Telephone interview by author, 2 February 1993, Falls Church, Virginia. Health Care Operations, Office of the Surgeon General.

Zeisch, SGT, 71G. Telephone interview by author, 24 March 1993, Syrma, Tennessee. 300th Mobile Army Surgical Hospital.

Oral/Video Presentations

Brown, Sam, Colonel, MS. "A Synchronization of Health Services Operations on the Battlefield, Part I." A1701-91-0063. Video presentation to AMEDD officers at the United States Army Command and General Staff College, Fort Leavenworth, Kansas, on 8 August 1992.

Thomas, Lewis E., Major, MS. "AirLand Operations - Emerging Concepts." Briefing presented to AMEDD officers at the United States Army Command and General Staff College, Fort Leavenworth, Kansas, on 8 August 1992.

Unpublished Materials

Pontius, Jack E. "The History of the 43D Surgical Hospital (Mobile Army)." Uijonbu, Korea, 1962.

United States. Academy of Health Sciences. Evolution of the Mobile Army Surgical Hospital. Fort Sam Houston, Texas: Academy of Health Sciences, date unknown.

INITIAL DISTRIBUTION LIST

1. Combined Arms Research Library
U.S. Army Command and General Staff College
Fort Leavenworth, KS 66027-6900
2. Defense Technical Information Center
Cameron Station
Alexandria, VA 22314
3. LTC Philip W. Wyssling
Department of Sustaining and Resource Operations
U.S. Army Command and General Staff College
Fort Leavenworth, KS 66027-6900
4. LTC James B. Martin
Department of Sustaining and Resource Operations
U.S. Army Command and General Staff College
Fort Leavenworth, KS 66027-6900
5. COL Catherine H.T. Foster, Ph.D.
1414 Price Drive
Cape Girardeau, MO 63701
6. Chairman, Medical History
Uniformed Services University of the Health Sciences
4301 Jones Bridge Road
Bethesda, MD 20814-4799
7. Commander
U.S. Army Medical Department Center and School
Fort Sam Houston, Texas 78234-6100
8. Commandant
U.S. Army Medical Department Center and School
Military Sciences Division
ATTN: (Military History)
Fort Sam Houston, Texas 78234-6100
9. Office of the Surgeon General
ATTN: COL Tim Jackman
5109 Leesburg Pike
Falls Church, VA 22041-3258

10. Directorate of Health Care Operations
ATTN: DASG-HCZ (Director)
5109 Leesburg Pike
Falls Church, VA 22041-3258
11. Headquarters, Health Services Command
Plans, Operations, and Training Division
Training and History Branch
ATTN: Command Historian
Fort Sam Houston, TX 78234-6000
12. Commander, 7th Medical Command
Unit # 29218
APO AE 09102-2204
13. Commander, 18th Medical Command
Unit # 15281
APO AP 96205-0054
14. Commander, William Beaumont Army Medical Center
ATTN: BG James J. James, Jr.
El Paso, TX 79920-5001
15. Commander
I Corps
ATTN: Surgeon
Fort Lewis, WA 98433-5500
16. Commander
III Corps
ATTN: Surgeon
Fort Hood, Texas 76544-5066
17. Commander
XVIII Airborne Corps
ATTN: Surgeon
Fort Bragg, NC 28307-5000
18. Commander
44th Medical Brigade
Fort Bragg, NC 28307-5000
19. Commander
1st Medical Group
Fort Hood, Texas 76544-5066
20. Commander
55th Medical Group
Fort Bragg, NC 28307-5000

21. Commander
62nd Medical Group
Fort Lewis, WA 98433-5500
22. Commander
68th Medical Group
APO AE 09457
23. President
U.S. Army Medical Department Board
Fort Sam Houston, TX 78234
24. Commander
U.S. Army Medical Department Center and School
Military Science Division
ATTN: Chief, Command and Staff Branch
Fort Sam Houston, Texas 78234-6100
25. Commander
U.S. Army Medical Department Center and School
ATTN: Directorate of Combat and Doctrine Development
Fort Sam Houston, Texas 78234-6100
26. Commander
U.S. Army Medical Department Center and School
ATTN: AMEDD Regiment
Fort Sam Houston, Texas 78234-6100
27. Commander
U.S. Army Medical Department Center and School
ATTN: Historian
Fort Sam Houston, Texas 78234-6100
28. Commander
U.S. Army Medical Department Center and School
ATTN: Stimson Library
Fort Sam Houston, Texas 78234-6100
29. Commander
US Army Forces Command
ATTN: Surgeon
Fort McPherson, Georgia 30330
30. Commander
US Army Training and Doctrine Command
ATTN: Surgeon
Fort Monroe, Virginia 23651

31. US Army Reserve Command
ATTN: Surgeon
3800 North Camp Creek
Parkway SW
Atlanta, Georgia 30331-5099
32. Army National Guard Readiness Center
Health Services Division
NGB-ARP-H
111 South George Mason Drive
Arlington, VA 22204-1382
33. Office of the Surgeon General
ATTN: Medical Library
5109 Leesburg Pike
Falls Church, VA 22041-3258
34. Assistant Secretary of Defense (Health Affairs)
ATTN: Deputy Assistant Secretary (Medical Readiness)
Pentagon,
Washington, DC 20301-1200