FM 8-10-25

EMPLOYMENT OF FORWARD SURGICAL TEAMS

TACTICS, TECHNIQUES, AND PROCEDURES

HEADQUARTERS, DEPARTMENT OF THE ARMY

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FIELD MANUAL
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PREFACE

The art of military surgery during war is performed in a theater of operations (TO) by the dedicated professionals of the corps and echelons above corps (EAC) hospitals; it is often provided in an environment under adverse conditions. The true professionalism of these Army Medical Department (AMEDD) personnel is demonstrated by their ability to maintain sound medical principles and practices as fully as possible in this resource- and time-restricted environment. The first unit capable of performing surgery on life-threatening wounds is the forward surgical team (FST). The FST is employed in direct support of the maneuver brigade and the armored cavalry regiment (ACR) (light). The surgical intervention performed by these small unique units enables the patient to be stabilized and made transportable for evacuation to a hospital for definitive care.

This publication provides the doctrine for the employment of the FST and will become the primary reference document for both the Army Active Component (AC) and the Reserve Component (RC). It discusses specific tactics, techniques, and procedures when it is necessary to clarify doctrinal principles. It is intended primarily for the use of the FST commander and his team and the medical company/troop commander and staffs. Other intended users include senior medical commanders and their staff, senior medical staff advisors, and combat health support (CHS) planners.

Field Manual (FM) 8-10-25 is fully compatible with the Army's operations doctrine in war and stability operations and support operations as outlined in FM 100-5. It is also compatible with combat service support (CSS) and CHS doctrine outlined in FM 8-10, FM 100-10, and FM 100-15. This publication assumes that the user has a fundamental understanding of FM 8-10, FM 100-5, FM 100-10, and FM 100-15; it does not repeat the concepts contained therein except to explain operations unique to the FST.

The proponent of this publication is the United States (US) Army Medical Department Center and School (AMEDDC&S). Send comments and recommendations on Department of the Army (DA) Form 2028 to **Commander, AMEDDC&S, ATTN: MCCS-FCD-L, 1400 East Grayson Street, Fort Sam Houston, Texas 78234-6175.**

This publication implements and/or is in consonance with the following North Atlantic Treaty Organization (NATO) International Standardization Agreements (STANAGs) and American, British, Canadian, and Australian (ABCA) Quadripartite Standardization Agreement (QSTAG):

NATO STANAG	ABCA QSTAG	TITLE
2027	512	Marking of Military Vehicles
2047		Emergency Alarms of Hazard or Attack (NBC and Air Attack)
2068		Emergency War Surgery (Edition 4) (Amendment 3)
2931		Orders for the Camouflage of the Red Cross and Red Crescent on Land in Tactical Operations

Unless this publication states otherwise, masculine nouns and pronouns do not refer exclusively to men.

The use of trade or brand names in this publication does not imply endorsement by the Department of Defense (DOD), but is intended only to assist in the identification of specific products.

The staffing and organizational structure presented in this publication reflects information in the most current living table(s) of organization and equipment (LTOE). However, staffing is subject to change to comply with Manpower Requirement Criteria outlined in Army Regulation (AR) 570-2 and tables of organization and equipment (TOE) can be subsequently modified.

CHAPTER 1

DOCTRINAL CONCEPT

> The medical history of war casts light not only upon the suffering of those who fight but upon the dedication of those who save. Though the association between slaying and saving is paradoxical, it exists and helps to shape the nature of modern warfare—and of modern medicine as well.
>
> — The Medics' War, Albert E. Cowdrey, Washington, D.C., 24 March 1986

1-1. Force Projection

Fighting future engagements on a nonlinear, expanded battlefield demands changes in the delivery of CHS. Changes in CHS doctrine must address the requirements for force projection, as well as the future battlefield characteristics of dispersion, lightning-quick military operations, increased mobility, rapid task organization, and lengthened lines of communications.

1-2. Casualties

In the setting of major weapons technologies, the major cause of mortality following wounding is hemorrhage. The more quickly a casualty is resuscitated and stabilized, the lower the mortality and disability, and the fewer the complications. Stabilization of the wounded or severely injured is achieved by prompt, vigorous resuscitation near where wounding or injury occurs, followed by rapid medical evacuation and initial wound surgery as far forward as the tactical situation permits.

a. Casualties who can be stabilized by nonsurgical means are evacuated to an Echelon III medical treatment facility (MTF) for surgery, if required. However, in some cases, nonsurgical resuscitation techniques alone cannot adequately stabilize the patient for evacuation. Despite prompt nonsurgical treatment, severely injured casualties may not survive evacuation. For such casualties, immediate surgery within a forward MTF is necessary prior to further evacuation.

b. The need for far forward surgery increases as evacuation time and distances to the Echelon III MTF increase. Lessons learned during operations in Grenada, Panama, and Iraq have driven enhanced forward surgical capability within the airborne, air assault, and special operations units.

1-3. Threat

The AMEDD views the threat from two perspectives (Figure 1-1): (1) as a potential adversary's capability to disrupt or threaten the survival of CHS operations on the battlefield and, (2) as a medical threat; that is, ongoing or potential enemy actions and environmental conditions that reduce the performance effectiveness of the soldier.

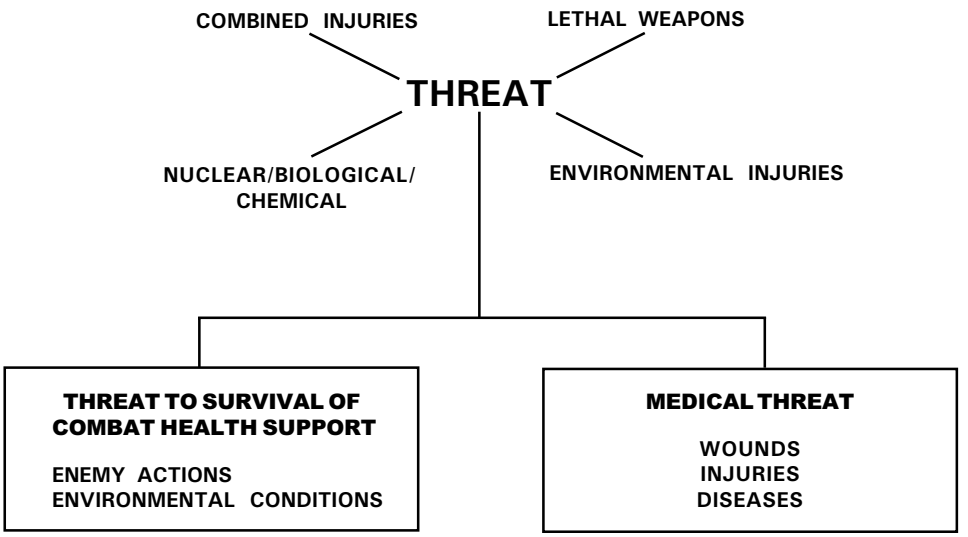


Figure 1-1. Threat.

a. Enemy combat operations must be anticipated, to include nuclear, biological, and chemical (NBC) threats that can severely disrupt all CHS operations. As surgical capabilities are pushed forward to points on the battlefield where mortality and morbidity can be influenced by early intervention, the risk of loss of these assets to enemy operations will increase. Risk of loss versus the benefit of early intervention must be weighed by the medical planner and commander in any given operation.

b. Wounds, injuries, or diseases reduce the soldier's performance effectiveness. Increasingly, lethal weapons inflict severe multiple wounds. These may be inflicted by small arms, fragmentation ordnance and munitions, blast effects munitions, flame and incendiary weapons, and nuclear weapons. **Casualties with severe wounds, as well as chemical injuries, biological agent exposure, radiation exposure, or environmental injuries, must be anticipated.**

1-4. Operational Overview

The US Army CHS system is a continuum of care, beginning at the forward line of own troops and systematically progressing through five echelons (levels of care) with increasingly sophisticated treatment capabilities. Air and ground ambulances form the critical link between MTFs.

a. Echelons (Levels) I and II Health Care Modules. Six modules provide unit- and division-level (including separate brigades and ACRs) health care throughout the theater. The combat medic, treatment squad, ambulance squad, patient-holding squad, area support squad, and the FST are the basic building blocks that are combined where appropriate. The FST is organic to the airborne/air assault divisions and the ACR (light) and functions as an Echelon II asset. These health care modules form medical platoons, companies, and battalions. The modular design of Echelons I and II medical treatment assets allows for the

rapid tailoring of agile, mobile multifunctional, and easily reconstituted medical elements. Medical modules provide emergency medical treatment (EMT), advanced trauma management (ATM), sick call, emergency and sustaining dental support, essential laboratory and x-ray services, and holding for patients awaiting evacuation or return to duty (RTD) within 72 hours.

b. *Echelon III Hospitalization*. Echelon III hospitalization includes the 296-bed combat support hospital (CSH) with attached FSTs. The CSH manages all types of patients and is normally employed in the corps forward and rear areas. The corps FST is usually attached to a corps hospital unless it is operationally deployed forward. The FST provides urgent, initial surgery and continued postoperative care of patients for approximately 6 hours. The FST provides additional surgical capability when attached to a CSH; however, its primary function is to provide Echelon II CHS within a division.

c. *Echelon IV Hospitalization*. Echelon IV hospitalization includes the 476-bed general hospital (GH) and the 504-bed field hospital (FH). The GH provides additional specialty care and surgical treatment for patients who require further stabilization prior to evacuation out of the theater. The GH is employed at EAC. The FH provides reconditioning and rehabilitation for those patients who can RTD within the time frame specified by the theater evacuation policy; the hospital can be employed at EAC or in the combat zone (CZ). Echelon IV hospitalization also includes the medical company, holding (MCH) which provides 1,200 convalescent care cots for reconditioning and rehabilitation. The MCH is employed at EAC in support of the FH; it may be employed in the CZ in direct support of the CSH.

d. *Echelon V Hospitalization*. Echelon V hospitalization includes the continental United States (CONUS)- or outside continental United States (OCONUS)-based DOD medical centers, Department of Veterans Affairs hospitals, and the National Defense Medical System that is composed of civilian hospitals. The Echelon V hospitalization system completes the definitive medical treatment and surgical care, and provides rehabilitation and convalescence for those patients received from the theater.

1-5. Forward Surgery Concept

a. The forward surgery concept represents a change to the forward surgical CHS system, not an addition. The concept supports CHS requirements for versatility, expandability, and deployability, providing support where and when needed in peacetime, conflict, and war. The newly designed FST is structured to perform urgent initial surgery. When this modular-designed surgical capability is deemed necessary, the FST may augment other medical treatment units during stability operations and support operations.

b. History and lessons learned from World War II to current ongoing conflicts (Figure 1-2) has amply validated requirements for early surgical intervention.

(1) Historically, 10 to 15 percent of the wounded in action require surgical intervention to control hemorrhage and to provide stabilization sufficient for evacuation. A surgical capability as far forward as the brigade support area (BSA) is required to reduce mortality for these soldiers.

(2) The evolving, increasingly nonlinear battlefield requires proximate medical care (to include surgical capability) to ensure that stabilization of the casualty is sufficient for evacuation to a corps-level hospital. Hospitals are complex organizations that do not have the mobility of the units supported.

FORWARD SURGERY

★	WORLD WAR II	SURGICAL TEAM AUGMENTATION OF CLEARING STATIONS AND EVACUATION HOSPITALS .
★	KOREA	SMALL, LIGHT MOBILE ARMY SURGICAL HOSPITALS.
★	VIETNAM	RAPID EVACUATION BY AIR TO HOSPITALS.
★	FALKLAND ISLANDS	STABILIZATION FOR LONG EVACUATION ROUTE.
★	GRENADA	COMPACT SURGICAL TEAM INSERTION FOR EARLY ENTRY MISSION.
★	PANAMA	JOINT CASUALTY COLLECTION AND FORWARD SURGERY.
★	IRAQ	HIGH MOBILITY, LONG LINES OF COMMUNICATIONS.
★	CROATIA	FORWARD SURGERY BY FRENCH AND BRITISH; EVACUATION BY BRITISH; ECHELON III HOSPITALIZATION BY UNITED STATES.

Figure 1-2. History and lessons learned.

(3) The modernization and restructuring of the forward surgery capability has become the Army's top priority in order to ensure this capability is as mobile as the units to be supported.

(4) Units with combat surgery experience provide the expertise to ensure an efficient, sustainable forward surgical service for ground maneuver brigades, not only in the airborne division, air assault division, and light ACR, but for all other divisions as well.

c. The FST replaces the DA-approved L-Edition TOE 08407L00, Medical Detachment-Surgical; TOE 08407L200, Medical Detachment-Surgical Airborne; and TOE 08765L000, Mobile Army Surgical Hospital and its components. The FST enhances the surgical squad/detachment concept by adding a triage and patient recovery/holding capability; it includes two operating tables; it incorporates a blood holding capability; and it is self-sufficient for power generation.

d. The operational concept for the FST is based on the following two major tenets:

(1) Selectivity—selected patients must receive surgical care far forward (preferably in the BSA).

(2) Transportability/resuscitative surgery—patients who require major surgery may not be suitable for immediate evacuation over great distances. Resuscitative surgery is that surgery performed to make a patient transportable to the next level of care.

e. In the selection process, it must be considered that not every surgical condition is suitable to be treated by the FST. In the battalion aid station (BAS), patients are sorted into those who are unable to RTD

and those who can be returned to their combat duties almost immediately. At division level, evacuation becomes selective for medical and military reasons. It is undesirable to perform resuscitative surgery in a forward area on any casualty who could be moved out of the main battle area without detriment to his health or worsening of his condition. It is also essential to evacuate any patient with an urgent need for surgery to a surgical facility within a clearing station. Sorting patients who are suitable for treatment by the FST may occur at the BAS (unit level) and the clearing station (division level).

f. The criteria for transportability of critically ill or injured patients will be established at Echelons I and II MTFs. The attending physicians at these facilities determine patient transportability and select those that are suitable for treatment by the surgical team. As a rule, casualties with signs and symptoms of airway compromise, difficult breathing, and circulatory shock and who **DO NOT** respond to initial ATM intervention should go to the FST. Although not absolute, the following list provides an illustration of the type of patients handled by the FST. This list is expanded in Appendix A by the 57 patient conditions that may determine suitable candidates for the FST:

- Major chest and/or abdominal wounds.
- Continuing hemorrhage.
- Severe shock.
- Wounds causing airway compromise or respiratory distress.
- Acutely deteriorating level of consciousness with closed head wounds.

g. The FST receives a selected group of patients (see Appendixes A and B) and performs the surgery necessary to resuscitate and stabilize them for further evacuation as soon as possible.

NOTE

The term "nontransportable," in this instance, is defined as those patients whose physical conditions could deteriorate significantly if they were moved any substantial distance without the immediate intervention of surgically stabilizing procedures.

h. The treatment of transportable wounded and the treatment of lightly wounded for early RTD is not a function of the FST. Because the unit has limited patient recovery/holding capabilities and limited logistics, poorly sorted patients will impede its effectiveness.

i. The FST cannot effectively function forward of an efficient triage point. It is designed to receive and manage approximately 10 patients per day.

j. Forward surgery on the wounded who must be subsequently evacuated is not complete surgery—it is the initial effort required to save life or limb and to render the patient transportable; surgical

procedures not essential to wound management at that time are avoided, as they could make a transportable patient nontransportable. The patient may require further surgery once he is evacuated to the supporting hospital.

k. Another important aspect of the FST concept is the provision of postoperative care in the MTF in which the patient undergoes surgery. The emphasis should not be placed solely on the operative act. Complete postoperative care is equally important. This includes monitoring equipment and nursing personnel. Once critical initial surgery has been performed and the patient is stable enough for further evacuation, he will be evacuated to the CSH in the CZ or to a joint task force hospital (if employed in support of joint operation—Joint Chiefs of Staff Publication [JCS Pub] 4-02). The patient's length of stay in an FST facility is relatively short. Experiences in recent military operations have shown that most patients had sufficiently recovered from anesthesia and were sufficiently stabilized to withstand evacuation within 6 hours.

CHAPTER 2

ORGANIZATION AND FUNCTIONS

2-1. Organization

The FST (Corps), TOE 08518LA00, and the FST (Airborne/Air Assault Division/ACR [Light]), TOE 08518LB00, are clinically standardized modules regardless of their assignment. These 20-person units are organized into four functional areas: triage-trauma management (TTM), surgery, recovery, and administration/operations.

2-2. Mission

The mission of the FST is to provide a rapidly deployable immediate surgery capability, enabling patients to withstand further evacuation. It provides surgical support forward in division, separate brigade, and ACR operational areas. The requirement to project surgery forward increases as a result of the extended battlefield. This small, lightweight surgical team is designed to complement and augment emergency treatment capabilities for the brigade-sized task force.

2-3. Assignment

The FST is assigned to the corps medical brigade or medical group, the airborne/assault division, and the ACR (light).

2-4. Capabilities

a. At Echelon I (Level I), the FST is capable of continuous operations with a divisional or nondivisional medical company/troop for up to 72 hours; the ability to continue operations is limited by personnel fatigue/exhaustion and available supplies. The FST provides urgent, initial surgery for otherwise nontransportable patients. The nonforward deployed corps FST will reconstitute, replace, and reinforce the FST of the airborne/air assault division, the ACR, and any other forward deployed brigade combat team, as required.

b. The FST's surgical capability is based on two operating room (OR) tables with a surgical capacity of 24 OR table hours per day. Other capabilities include—

- Emergency medical treatment. Assets to receive, triage, and prepare incoming patients for surgery.

- Surgery. Initial surgery and continued postoperative care for up to 30 critically wounded or injured patients over a period of 72 hours with the FST's organic medical equipment sets (MESs) prior to resupply.

- Nursing care. Postoperative acute nursing care for up to eight patients, simultaneously, prior to further medical evacuation.

- Rapid strategic deployability. The team's personnel and equipment (less vehicles) capable of deploying in one C-130 aircraft for initial entry missions, when required. The FST is capable of subsequent movement by helicopter sling-load operations.

- Tactical mobility. The team is 100 percent mobile with organic vehicles (six high mobility multipurpose wheeled vehicles [HMMWVs]).

2-5. Dependency

The FST is dependent upon the unit to which it is attached or assigned for—

- Food service, water distribution, and security.

- Unit maintenance for vehicles and communications equipment, to include electrical power backup.

- Patient administration and coordination of medical evacuation.

- Appropriate aviation units of the corps for rigging when sling-load airdrop operations are required.

- Physical security and NBC decontamination support.

- Military police or combat arms escort for security when deploying into and moving through hostile areas.

2-6. Personnel and Unit Functions

a. Forward Surgical Team Commander. The FST commander, (area of concentration [AOC] 61J00 or 61M00) is a working surgeon, as well as team commander. He is knowledgeable in and has an understanding of CHS operations and planning. He also has a thorough knowledge of the tactical operations, the employment, and the clinical operations of the unit.

b. Triage-Trauma Management Element. This element is responsible for receiving, stabilizing, and triaging incoming patients in 57 categories (Appendix A). It also provides preoperative preparations for patients requiring immediate surgery. The TTM element is comprised of the personnel shown in Table 2-1. Surgeons depicted in this area assess patient conditions, move with the patient to the surgery area, and perform required operative procedures.

Table 2-1. Triage-Trauma Management Organization

TRIAGE-TRAUMA MANGEMENT				
PHYSICIAN STAFF				
*GENERAL SURGEON (FST COMMANDER)	LTC	61J00	MC	
*GENERAL SURGEON	MAJ	61J00	MC	(2)
*ORTHOPEDIC SURGEON	MAJ	61M00	MC	
NURSING STAFF				
CRITICAL CARE NURSE (FST HEAD NURSE)	MAJ	66H8A	AN	
EMERGENCY MEDICAL TREATMENT NCO	SGT	91B20	NC	
MEDICAL SPECIALIST	SPC	91B10		
MEDICAL SPECIALIST	PFC	91B10		

*Also part of surgery element—performs required surgery after triaging patient.

(1) *Surgeons*. The general surgeons (AOC 61J00) perform preoperative assessment, treatment, and surgery. These surgeons, along with the FST commander and the orthopedic surgeon (AOC 61M00), work as a two-physician team, and when required, perform two surgeries simultaneously.

(2) *Critical care nurse*. The critical care nurse (AOC 66H8A) serves as the FST head nurse. This officer—

- Provides overall direction and supervision of nursing care for incoming patients, preoperative and postoperative patients, and patient preparation for medical evacuation.

- Participates, as required, in preoperative assessment and preparation of the patient and in perioperative nursing care.

- Plans and organizes work schedules for the staff.

- Directs and performs cross-training of nursing personnel as applicable to the FST needs.

(3) *Emergency medical treatment noncommissioned officer*. This clinical noncommissioned officer (NCO) (military occupational specialty [MOS] 91B20) assists in the sorting and emergency medical-surgical care and treatment of critically injured or ill patients presented at the triage area. He performs preventive and therapeutic procedures, as required, to include NBC detection procedures. His duties also include—

- Performing ATM and routine patient care, as needed.

- Assisting senior patient care personnel in the performance of their duties.
- Ensuring that sterile supplies are provided in the treatment area.
- Maintaining MESs and general and medical supplies.

(4) *Medical specialists*. These patient care specialists (MOS 91B10) assists physicians, nurses, and EMT NCOs in performing emergency medical care for patients presented in the triage area. Their duties also include—

- Maintaining the MESs.
- Operating, maintaining, and performing preventive maintenance checks and services (PMCS) on assigned vehicles.
- Assisting in the assembly/disassembly of medical treatment shelters.
- Operating, maintaining, and performing PMCS on power-generation equipment.

c. *Surgery Element*. This element is comprised of the surgeons of the TTM element and the personnel shown in Table 2-2. It is designed to function on a 24-hour basis with the capability of performing two surgeries simultaneously, providing general and orthopedic surgery. (Refer to Appendix B for surgical guidelines and procedures.)

(1) *Orthopedic surgeon*. The orthopedic surgeon (AOC 61M00) performs preoperative assessment, treatment, and surgery for injuries of the musculoskeletal system. He provides specialized care/ consultation on the necessary limb-saving procedures in casualties with injuries to the spine and extremities.

(2) *Clinical nurse anesthetists*. These anesthetists (AOC 66F00) perform professional nursing duties of a specialized nature in the care of patients requiring general or regional anesthesia, respiratory care, resuscitation, and/or fluid therapy. They perform general and regional anesthesia, assist with initial and ongoing emergency resuscitation, and provide postanesthesia management of patients.

(3) *Operating room nurse*. The OR nurse (AOC 66E00) performs specialized nursing duties; supervises the surgical nursing staff; ensures that safe supplies and equipment are provided in the OR area; and establishes and executes OR nursing policies and procedures.

(4) *Senior operating room noncommissioned officer*. The senior OR NCO (MOS 91D30) performs circulator duties as required, supervises and/or performs rapid sterilization of surgical equipment and ensures technical resupply requirements are met. He also—

- Assists the OR nurse in ensuring the readiness of surgical equipment.
- Supervises the enlisted OR specialists and assists the OR nurse in cross-training in perioperative nursing care.

Table 2-2. Surgery Element Organization

SURGERY ELEMENT				
PHYSICIAN STAFF				
*GENERAL SURGEON (FST COMMANDER)	LTC	61J00	MC	
*GENERAL SURGEON	MAJ	61J00	MC	(2)
*ORTHOPEDIC SURGEON	MAJ	61M00	MC	
ANESTHETIST STAFF				
CLINICAL NURSE ANESTHETIST	CPT	66F00	AN	(2)
NURSING STAFF				
OPERATING ROOM NURSE (OR TEAM LEADER)	CPT	66E00	AN	
SENIOR OPERATING ROOM NCO	SSG	91D30	NC	
OPERATING ROOM NCO	SGT	91D20	NC	
OPERATING ROOM SPECIALIST	SPC	91D10		

*Also part of TTM element—performs required triage after completion of surgery.

- Performs specialized OR duties and assists the surgeons, as required.
- Supervises operator maintenance of vehicles assigned to the OR team.

(5) *Operating room noncommissioned officer*. This OR NCO (MOS 91D20) performs scrub duties and assists, as directed, in the anesthesia recovery of patients. He performs administrative and other specialized OR duties, as required.

(6) *Operating room specialist*. This specialist (MOS 91D10) performs scrub duties and assists, as directed, in the anesthesia recovery of patients. His duties also include—

- Preparing and maintaining sterile supplies, OR equipment, and MESs.
- Operating and maintaining the assigned vehicle.
- Operating, maintaining, and performing PMCS on power-generation equipment.

d. Recovery Element. The recovery element maintains eight postanesthesia cots and can provide for eight patients simultaneously; four of these cots are capable of providing extended postoperative care, specifically ventilation support. It provides preoperative care for incoming patients and postoperative nursing care for those who have undergone surgery. The element provides care for patients until they are

fully recovered from anesthesia and sufficiently stabilized for further evacuation (usually 1 to 6 hours). Further stabilization of patients with more definitive medical or surgical treatment is provided at an Echelon III MTF. The recovery element is normally staffed as shown in Table 2-3.

Table 2-3. Recovery Element Organization

NURSING				
MEDICAL-SURGERY NURSE (RECOVERY TEAM LEADER)	CPT	66H00	AN	
PRACTICAL NURSE	SSG	91C30	NC	(3)

(1) *Medical-surgical nurse*. This medical-surgical nurse (AOC 66H00)—

- Provides supervision of nursing care for incoming patients, preoperative and postoperative patients, and patient preparation for medical evacuation.

- Participates, as required, in preoperative assessment and preparation of the patient and in perioperative nursing care.

(2) *Practical nurses*.

(*a*) The practical nurses (PNs) (MOS 91C30) assist, as directed, in emergency care, preoperative preparation of the patient, perioperative nursing care, and instrument sterilization. Some of their specific duties include—

- Implementing physician orders and nursing care policies and procedures.

- Assisting, as directed, in patient care.

- Observing, evaluating, and reporting life-threatening symptoms; reporting death of patients; performing deceased patient procedures; preparing and processing (Field Medical Card) reports of deaths.

- Transporting or arranging for the evacuation of patients; maintaining ward MESs; operating and maintaining medical equipment; and operating and maintaining assigned vehicles.

(*b*) The senior of the three PNs ensures equipment readiness and assists the medical-surgical nurse in cross-training other enlisted personnel (MOSs 91B and 91D) in anesthesia recovery.

e. *Administration/Operations Element*. The administration/operations element is responsible for the operational and administrative support functions. This element assists the FST commander in planning and executing unit moves. It ensures and/or arranges for unit and personnel administration, organizational

and medical resupply, organizational maintenance of the unit's vehicles and equipment, small arms repair, physical security, and food service support. The element is typically staffed as shown in Table 2-4.

Table 2-4. Administrative/Operations Element Organization

OPERATIONS STAFF			
FIELD MEDICAL ASSISTANT (OPERATIONS OFFICER)	1LT	70B67	MS
EMERGENCY MEDICAL TREATMENT NCO (FST NCOIC)	SFC	91B40	NC

(1) *Field medical assistant*. The field medical assistant (AOC 70B67) is essentially the FST's operations officer. He assists the FST commander in providing for the administrative, logistical, and tactical operations of the team (see Appendixes D and E). This officer, assisted by the EMT NCO (operations sergeant), keeps abreast of current military operations and plans future operations and employment of the FST. During the preparation, planning, and execution phases, he coordinates combat support (CS) and CSS for the team. The operations officer remains abreast of administrative and tactical situations, freeing up the commander to pursue his clinical duties.

(2) *Emergency medical treatment noncommissioned officer (operations sergeant)*. The operations sergeant (MOS 91B40) serves as the principal enlisted assistant and advisor to the FST commander and the operations officer. As the senior noncommissioned officer in charge (NCOIC) in the FST, he provides guidance to enlisted members of the team and represents them to the commander. His duties are consistent with those of the operations officer. However, he is a working EMT specialist and is employed primarily in the TTM area.

CHAPTER 3

ASSIGNMENT, CONTROL, AND COMMUNICATIONS

3-1. Assignment and Attachment of Forward Surgical Teams

a. The Corps FST, TOE 08518LA00, is assigned to the Medical Brigade, TOE 08422L100, or the Medical Group, TOE 08432L000, and is normally attached to the CSH, TOE 08705L000, when not operationally employed forward. The medical brigade or medical group commander coordinates with supported divisions, separate brigades, and ACR commanders; he plans and directs the employment and support of the FST.

b. The FST, TOE 08518LB00, is organic to the following units:

(1) Medical Company, TOE 08267L000, main support battalion (MSB), division support command (DISCOM), airborne division.

(2) Medical Company, TOE 08277L000, MSB, DISCOM, air assault division.

NOTE

The commander of the airborne/air assault FST is assigned to headquarters and headquarters company (HHC), DISCOM with duty at the division medical operations center (DMOC).

(3) Medical Troop, TOE 08489L000, support squadron, ACR (light).

NOTE

The commander of the ACR FST is assigned to the headquarters and headquarters troop of the regimental headquarters.

3-2. Command, Control, and Organizational Linkage

a. The command, control, organizational linkage, and request for support of the corps FST is shown in Figure 3-1. The corps FST commander reports to the medical brigade or medical group commander. The unit is normally attached to a corps-level medical unit (corps hospital or an area support medical battalion [ASMB]) with capability to provide maintenance, personnel administration, and general support. When employed forward, it will be in direct support of the forward support battalion (FSB) medical company. The FSB medical company ensures general support to the FST while the unit is attached. The medical planners/DMOCs request forward surgical support through the division Assistant Chief of Staff, G3 (Operations and Plans); they request that FST support be provided from the medical brigade or medical group (senior medical command and control [C2] element in the corps). The commander of the medical brigade/group directs the deployment of the FST and ensures coordination for the unit's employment/further attachment to a supported medical company.

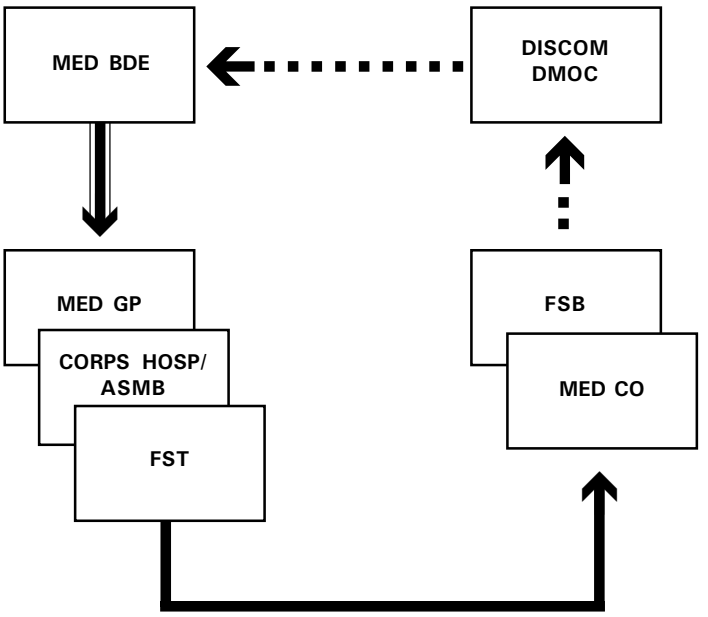
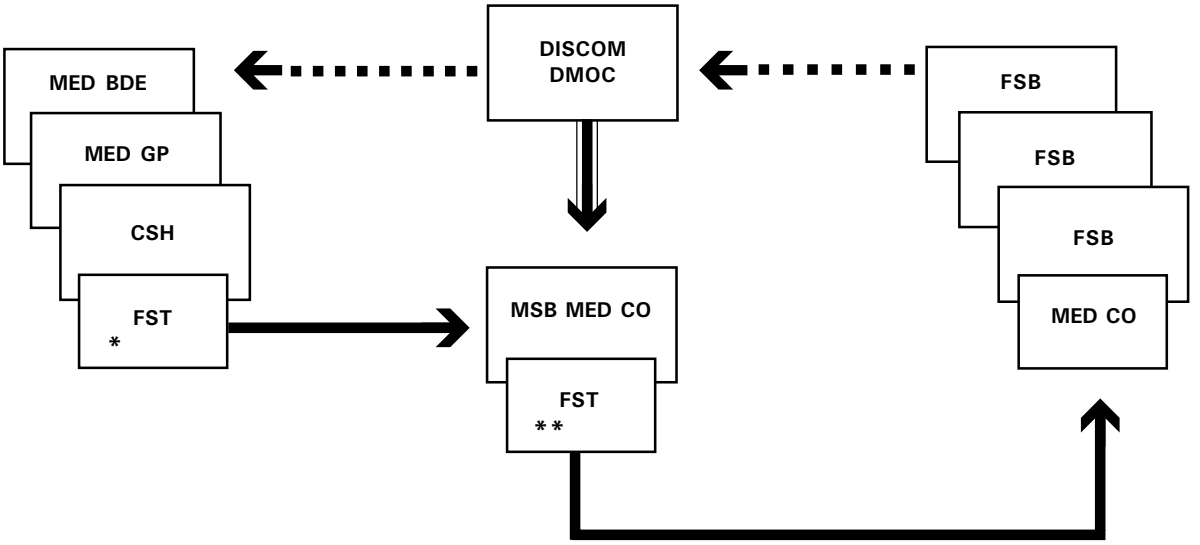


Figure 3-1. Corps forward surgical team command, control, and support linkage.

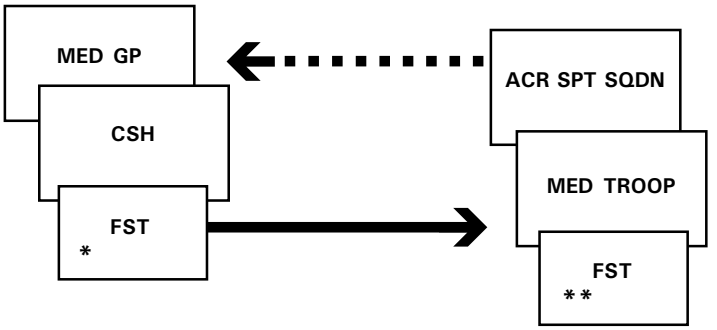
b. The FST of the airborne/air assault division and ACR (light) is an organic resource of these organizations. The control and support linkage for this team is illustrated in Figure 3-2. Organizationally, this unit is assigned to the main support medical company (MSMC), is normally under the operational control (OPCON) of the DMOC, and is employed with a forward support medical company (FSMC). The FST commander is assigned to the DMOC. Since there is only one FST embedded in the TOEs of the airborne and air assault divisions, each having three FSMCs, there may be occasions when additional forward surgical support will be required, particularly if several brigades are committed simultaneously and anticipate heavy casualties. Under such conditions, the FST may require augmentation from the corps. The request and support flow is also depicted in Figure 3-2.

c. The FST of the ACR (light) is embedded in the medical troop TOE. It will normally be sufficient to support the ACR's maneuver squadrons. However, if the regiment is committed out of sector and anticipates heavy casualties, it may become necessary to augment its medical troop with additional forward surgical capability from corps.

AIRBORNE/AIR ASSAULT DIVISION



ARMORED CAVALRY REGIMENT



LEGEND:

▪ ▪ ▪ ▪ ▪ ▪	REQUEST FOR FST SUPPORT
═══	DIRECTION TO PROVIDE SUPPORT
▬▬▬	SUPPORT PROVIDED
*	BACKUP UNIT
**	ORGANIC UNIT

Figure 3-2. Forward surgical team (airborne/air assault/ACR) control and support linkage.

3-3. Planning

Developing plans for the employment of the corps FST is the responsibility of the medical brigade/group commander. The operational and support estimates developed by the staff, with input from the FST commander, are used in the planning process to develop the CHS estimates for the corps or the forward deployed operational force. All factors must be considered during the initial developmental stages of the operation plan (OPLAN). The plan is updated, as necessary, to meet tactical and CHS operational requirements. Planning for the employment of the airborne/air assault FST is the responsibility of the DISCOM commander and is normally done by the DMOC with oversight provided by the division and brigade surgeons. Field Manuals 8-42 and 8-55 provide an in-depth discussion of medical planning.

a. The senior medical commander and his staff and the senior medical staff planner must consider the following general planning factors in developing the OPLAN for the employment of the FST:

- Mission, enemy, terrain, troops, and time available (METT-T) factors.
- The threat.
- Operational conditions.
- Sustainment.
- Operational constraints.
- Personnel status of the FST.
- Equipment status of the FST.
- Supply status—Class VIII/VIII(b) and nonmedical.
- Communications status.
- Training status.
- Patient estimates.
- Medical evacuation.
- Blood delivery requirements.
- Required CSS.
- Additional support requirements.
- Special operations requirements.

- Reporting requirements.
- Phases of the operation.
- Policy and procedure updates.
- Humanitarian assistance to local nationals when applicable/directed in stability operations and support operations.
- Support requirements for potential enemy prisoners of war (EPW), refugees, and/or displaced persons.

b. Table 3-1 provides a list of clinical planning factors that may be used in determining the full potential and limitations of the FST.

Table 3-1. Clinical Planning Factors

FORWARD SURGERY
MAXIMUM EFFICIENT TIME PER PATIENT = 135 MINUTES
MAXIMUM CASE LOAD PER 24 HOURS = 10 CASES
POSTOPERATIVE CARE— LIMITED TO A MAXIMUM OF 6 HOURS
TWO OPERATING ROOM TABLES PROVIDE FLEXIBILITY
FST PERSONNEL REPLACEMENT/REINFORCEMENT REQUIRED AFTER MAXIMUM OF 48 HOURS OF CONTINUOUS OPERATIONS

3-4. Available Means of Communications

There are several means of communications available to the FST commander. As appropriate, he should use each of these to complement each other. They are—

a. *Radio*. This is the most common means of communications. The radio is well suited for use when the team is on the move or in situations where mobile subscriber equipment (MSE) access is not available. The FST employs a Single-Channel Ground and Airborne Radio System (SINCGARS) frequency modulated (FM) radio (AN/VRC-90A) with the ability to transmit and receive in a secure mode. The FST must have the capability to communicate with its higher headquarters and related CSS units. The AN/VRC-90A radio allows the FST commander to operate in the medical group command net, the DMOC, or the supported medical company/troop operations net. A detailed discussion of radio nets is provided in Appendix D. When planning communications, the FST commander considers the following factors:

- Constant radio contact is not essential for all operations. Often due to terrain, radio limitation, and type of operation, radio contact will be lost. At other times, signal security will require radio listening silence. The commander must determine when and where communication will be critical during operations and ensure that long-range communications access is provided the FST through the supported unit.

- The commander must ensure that all operators know what to do in the event radio communications are lost. Redundant communications may be provided through use of the supporting hospital and/or the supported medical company's amplitude modulated (AM) medical operations net for communications with higher headquarters.

b. Wire and Mobile Subscriber Equipment. Wire and MSE usually provide better communication because the systems are not subject to interference from weather, terrain, and man-made obstacles. They are less subject to enemy electronic warfare (EW) action such as jamming and direction finding. They are, however, subject to breakage by direct fire and ground traffic.

c. Messenger. Apart from radio contact, messengers are the most reliable communications means. They are ideal for transmitting lengthy written messages. Their speed depends on mode of travel, the tactical situation, and terrain. The FST may use air and ground ambulances to transmit messages rearward to the DMOC, the medical group, or the medical logistics (MEDLOG) battalion.

3-5. Electronic Protection

Electronic protection (EP) is the action taken by a unit to defeat enemy EW efforts. Although the FST is not usually the focus of intercept, jamming, or direction-finding systems, proper communications security (COMSEC) procedures are required by all radio operators. At unit level, EP consists mainly of proper COMSEC and antijamming techniques. Although the SINCGARS has built-in EP features, units still must use proper COMSEC procedures.

*a. Communications Security***.** The use of COMSEC delays or stops the enemy from gaining information from radio transmissions. It includes the following:

- Authenticating.

- Using only approved codes.

- Changing frequencies and call signs, when specified.

- Designating periods for radio-listening silence. For the FST, this is usually done by the net control station (NCS) under which it is operating.

- Restricting use of radio.

- Using the lowest transmitting power possible.

- Enforcing net discipline and proper radiotelephone procedure.
- Using authorized call signs and prowords.
- Limiting transmissions to official traffic.
- Avoiding significant surges in traffic on single-channel radio nets.
- Keeping transmissions short.

b. *Antijamming Procedures*. Radio operators should use the following antijamming procedures to defeat enemy jamming efforts.

(1) *Recognition*. The first thing an operator must do when his radio receives interference is to find the cause. He should not immediately assume jamming. Some jamming is similar to other types of radio interference. To help identify the problem, the operator should remove the antenna. If the interference decreases with the antenna removed, then its cause is external and may be jamming. If the interference does not decrease, the problem is in the radio.

(2) *Continued operation*. An operator must continue normal radio operation even after jamming has been identified so that the enemy will not know that his jamming is working. During jamming, the rule is to continue operating unless ordered by the NCS to shut down or to change frequencies. An operator being jammed should never mention over nonsecure radio that he is being jammed. If the unit cannot continue to operate on the jammed net, it should switch to the antijamming frequency and continue to operate.

(3) *Reporting*. Report all jamming using the meaconing, intrusion, jamming, and interference (MIJI) report (see FM 24-33). The MIJI report should be sent by another secure means of communications; for example, wire or messenger. A MIJI report format is usually found in the signal operation instructions (SOI) or unit tactical standing operating procedure (TSOP) and contains the following:

- Date and time of jamming.
- Frequency jammed.
- Type and strength of jamming signal.
- Designation of the unit making the report.

3-6. Communications Nets

Communications access and nets for the FST are illustrated in Appendix D.

3-7. Signal Support

Signal support to the FST is normally provided by the signal unit operating in the area in which the unit is employed.

3-8. Communications and Position Navigation Equipment

The FST employs the following communications equipment and position/navigation (POS/NAV) device:

a. Combat net radio equipment, including the SINCGARS series FM radio (AN/VRC-90A). This radio uses a 16-element keypad for push-button tuning that allows for simple and quick operation. A more detailed discussion of this radio and associated equipment is provided in Appendix D.

b. Mobile subscriber equipment that is limited to the digital nonsecure voice telephone (TA-1035/U) and the tactical lightweight digital facsimile (AN/UXC-7). The MSE is the area common-user system (ACUS) within the corps and division. It provides a secure survivable communications system capable of passing voice, data, and facsimile throughout the corps. A discussion of this equipment is provided in Appendix D.

c. The precision lightweight global positioning system (GPS) receiver (PLGR) device that is applicable for individual and vehicle use. This POS/NAV device is not necessarily communications equipment but is primarily discussed under the communications title as a matter of convenience and continuity. A discussion of the PLGR device is provided in Appendix D.

CHAPTER 4

FORWARD SURGICAL TEAM OPERATIONS

Section I. DEPLOYMENT AND EMPLOYMENT

4-1. Deployment and Mobilization

a. Alert/Readiness Posture. In the event of an emergency situation, contingency plan, or general war, the DOD initiates appropriate action for the deployment of forces in response to the scenario. Based on the situation, selected AC and RC FSTs and other medical units will be alerted through command channels. For units located in the CONUS, and based on the theater commander's requirements and the available air/sea resources, the US Army Forces Command (FORSCOM) will normally use the Time-Phased Force Deployment List (TPFDL) to alert units for deployment. For deployable AC hospitals with attached FSTs, an increase in the readiness posture (defense readiness condition [DEFCON]) will be directed by the post/installation commander, or by higher headquarters. For RC hospitals with attached corps FSTs, mobilization notification constitutes an increase in readiness posture.

b. Control and Deployment. Deployment operations for unit readiness validation are controlled through the post/installation Emergency Operations Center (EOC) in accordance with established plans and directives. The EOC plans and coordinates all deployment preparation support that deploying FSTs/ hospitals require, and monitors and controls all facets of deployment operations.

(1) Hospitals and corps FSTs may deploy by land, sea, or air (or a combination of these means) from locations designated by their higher headquarters. Priority of effort will be given to those modes of movement outlined in current OPLANs.

(2) Active Component FSTs will maintain the capability of emergency deployment on short notice (3 to 5 days following DEFCON 3) to execute assigned missions.

(3) Reserve Component corps FSTs must attain and maintain the capability of mobilizing on short notice and arrive at their designated mobilization installation according to applicable plans.

(4) Once mobilization is validated, teams prepare for deployment on short notice, 72 hours or less. During validation, preparations are monitored by the EOC and appropriate status reports are submitted to higher headquarters.

4-2. Preparation for Overseas Movement

Preparation for oversea movement (POM) is more than just an exercise in moving from one place to another; it is also a test of how much attention has been given to readiness in the past. The FST may be alerted for overseas displacement from CONUS, from an overseas command, from an OCONUS command, and/or back to CONUS. Army Regulation 220-10 requires that all units deploying to an overseas location be POM qualified. Therefore, when alerted, the FST must become POM qualified; that is, the FST must prepare to displace and perform its mission in the programmed employment area. An alert will be initiated

by a warning order from the parent unit indicating that a movement directive will be issued. Procedures may be condensed or modified to permit rapid deployment if moving in support of OPLANs, urgent operational requirements, or exercises or maneuvers. All necessary training and POM requirements must be identified and accomplished prior to deployment.

a. *Active Component*. All AC FSTs maintain the capability necessary to achieve a deployment posture in the time required by any alert warning order or deployment instructions received. For planning purposes, the readiness posture maintained is consistent with the shortest notification period presented in the mobilization plan.

b. *Reserve Component*. Reserve Component FSTs maintain the readiness posture necessary to meet planned deployment dates contained in current FORSCOM and mobilization documents. Upon arrival at the designated mobilization site, units are placed in an increased or advanced deployability posture based on the published priorities of plans for which they are listed. The corps FSTs are managed through the RC chain of command, with input by the mobilization installation during the premobilization period.

c. *Deployment Schedule*. All FSTs are scheduled for deployment validation by unit line number based on the published validation schedule. Units can be expected to deploy within 72 hours following validation. Actual deployment dates/times will be as directed by higher headquarters.

d. *Embarkation/Debarkation*. When directed by the higher headquarters, the FST will normally move to the port of embarkation (POE) for deployment. Upon arrival at the theater point of entry, it is essential that contact with the medical brigade/group be made immediately. Normally, the medical brigade/group will have liaison personnel to meet and assist the units with coordination and movement to its area of operations (AO). As equipment and supplies are off-loaded, they are moved to a designated receiving area for consolidating and transitioning for movement. An inventory for accountability and damage assessment is conducted. Vehicles are serviced and necessary repairs are made, or coordination for repair is made with the supporting maintenance element. Documentation for replacement of unusable supplies or equipment damaged beyond repair is initiated through the medical brigade/group headquarters element. Vehicle loads are reconfigured for convoy operations. Once the units have been transported to their AO, the medical brigade/group staff elements conduct formal personnel in-processing and present an orientation on current operating policies and procedures. The orientation includes information on the following:

- Mission update, to include geographical support area.
- Combat health support issues.
- Host-nation support.
- Local laws and customs.
- Threat update, to include medical threat briefing.
- Security requirements.

- Personnel restrictions.
- Personnel replacements.
- Uniform requirements.
- Emergency warning signals.
- Vehicle/unit movement requirements.
- Geneva Conventions.
- Supply support activities/procedures (all classes).
- Rules of engagement.
- Status of forces agreements.

e. *Supply/Resupply*. Forward surgical teams deploy with 3 days of supply. In a maturing theater, medical resupply is accomplished by preconfigured resupply packages until the corps MEDLOG battalion (forward) has been established. These "push-packages" will be throughput directly to the hospital or the division medical supply office (DMSO)/brigade medical supply office (BMSO)/regimental medical supply office (RMSO) supporting the FST via the transportation system. Push-packages may be pre-positioned mobilization stocks, or may be built and shipped from the Defense Logistics Agency (DLA) depot system. Logistics personnel coordinate with their next higher command headquarters for all logistical support, to include resupply. Early deploying units that arrive prior to their higher medical C2 headquarters must coordinate with port transportation personnel for shipment and receipt of supplies and equipment. Once the MEDLOG battalion has been established, MEDLOG personnel will coordinate directly with the MEDLOG battalion for resupply of Class VIII materiel. All other resupply will be through the higher headquarters with the appropriate supporting organization. Effective coordination is the key to responsive logistical support. To be effective, it must be early and it must be often.

4-3. Employment in Theater

Upon arriving in theater, the FSTs and their supporting hospital may be employed by air or surface transportation, as necessary. Each element and its assemblages will deploy with 3 days of supply on hand and a reserve of 3 days of supply maintained by the DMSO/hospital logistics section. During the predeployment phase (upon receiving movement orders), FSTs make direct contact with supported units. The movement party, consisting of the FST's administrative/operations element, plans and coordinates movement to the AO.

4-4. Unit Movement

a. *Initial Employment*. The FST possesses a number of features designed to enhance its operational effectiveness; these include—

- Rapid strategic deployability.

- Capability for FST personnel and their palletized equipment to be transported in one C-130 aircraft for early entry mission.

- Capability for FST personnel to be transported by helicopter and their equipment sling-loaded on subsequent movement.

b. *Subsequent Employment*. The FST has sufficient organic transportation assets (100 percent tactical mobility [six HMMWV]) for road marching all of its assigned elements. (See Appendix F for information on unit loading plans.) During the initial employment phase, the FST is normally kept intact and the entire team deploys as one element. However, due to various METT-T driven situations, the team can configure into two separate modules, allowing *echeloned deployment and movement*.

NOTE

The brigade surgeon, division surgeon, and FST commander must ensure that the brigade combat team does not *operationally* divide the FST and that all personnel in each module have the training and resources to still perform necessary resuscitative surgery.

If necessary, the FST can be deployed by rotary-wing aircraft (refer to Appendix E).

c. *Unit Loading Plans*. Unit loading plans include all the individually prepared documentation that presents the detailed instructions for the arrangement of personnel and the loading of equipment. To ensure effective and expeditious movement of FST personnel and equipment, loading plans should be kept current. Loading plans should be based on authorized personnel and equipment. The plans should be prepared and maintained in anticipation of movement under contingency planning by the various modes of transportation; this is, vehicle or rotary-wing or fixed-wing aircraft.

(1) *Unit loading inventory checklist*. This list is prepared for each category of the team's equipment such as vehicles, ordnance items, and MESs. It is a numerical listing of all containers (express containers and boxes) and vehicles to be shipped.

(2) *Unit vehicle loading plan*. This plan is used when the unit moves to a terminal for overseas movement in organic transportation. It lists the personnel and equipment to be transported in organic vehicles. Common table(s) of allowance (CTA) equipment should be limited to that which is needed for the mission. Applicable CTA listings that may be used are CTA 8-100, Army Medical Department Expendable/Durable Items; CTA 50-900, Clothing and Individual Equipment; and CTA 50-970, Expendable Items (except: Medical, Class V, Repair Parts, and Heraldic Items). Refer to loading plans in Appendix F.

(3) *Unit air loading plan*. This plan is used when the unit moves by air. The specific type aircraft must be known before this plan can be prepared. It covers the type of cargo to be loaded in each

aircraft, loading start time, estimated time to load, special equipment requirements, and other data pertaining to the specific aircraft. For detailed information, see FM 55-9, FM 55-12, and TM 38-250.

(4) *Unit vessel loading plan*. This plan is used by units assigned to a mission that requires a lift by a TOE transportation boat unit. Direct contact should be made with the assigned boat unit for specific transport requirements.

d. *Orders*. When the corps FST is to move, the team commander will normally receive a warning order from the medical brigade/group headquarters alerting him of the pending move. In certain situations, the order may indicate the unit or element the team will join to form a convoy. Later he will receive an operation order (OPORD) telling him to move. The warning order should tell the commander the date and time (if possible) of the move, the destination, and the probable route. When the commander receives the warning order, he begins his preparation by—

- Reviewing loading and unloading procedures.
- Initiating road clearance procedures, if required
- Checking the route to be traveled, if possible, and the new operating area. If the situation does not permit a ground reconnaissance, review maps and aerial photographs (if they are available) to check the route. If time and conditions permit, send the administrative/operations element out to travel the route with a map to record the miles, to check the surrounding area, and to note important features and data on the map. Whether using a map or ground reconnaissance, the commander should answer as many of the following questions as possible:
    - Where are the major roads?
    - In what condition are they?
    - What kind of surface do they have?
    - How many lanes do they have?
    - What is the maximum grade?
    - Are there obstacles, mines, or contaminated areas?

e. *Operation Order*. The corps FST receives an OPORD from the medical brigade/group headquarters telling the unit when and where to move. The order and its attached annexes give the commander details on the convoy and usually include a strip map. When the commander receives this OPORD, he issues verbal orders telling his people the—

- Organization of soldiers and vehicles in the convoy.
- Checkpoint locations.

- Maintenance procedures.
- Communication methods.
- Vehicle loading and security.

Refer to FM 8-10-1, Appendix J, for convoy operations.

4-5. Employment in the Area of Operations

a. Corps FSTs are employed in the CZ on the basis of one per maneuver brigade. They are normally attached to a corps for general support. When operationally employed, FSTs are further attached to FSMCs. The teams may also be further attached to medical companies/troops of separate brigades/ ACRs. In addition, the corps FST may be attached to a special operations task force to provide surgical support for special operations missions.

(1) Generally, the support requirements of FSTs include food service, area security, maintenance of equipment, and all classes of supply.

(2) In stability operations and support operations, the corps FST may be considered for employment with a separate maneuver brigade or a joint task force. If required by the mission, emergency pediatric equipment is included in the MES, allowing for a humanitarian response. However, the FST is not designed for routine or definitive surgery, nor is it designed for use when acceptable civilian trauma facilities are available.

b. The airborne/air assault FST is organic to the MSMC. It is normally under the OPCON of the DMOC and placed in direct support of a FSMC requiring surgical augmentation. Movement of this element is directed by the DISCOM through warning orders and OPORDs initiated by the DMOC, with general oversight provided by the division surgeon. When forward deployed, the FST synchronizes and integrates its clinical operations with those of the FSMC's division clearing station.

c. The ACR (light) FST is organic to the medical troop, support squadron. It synchronizes and integrates its clinical operations with those of the regimental clearing station.

4-6. Operational Limitation

a. In a *continuous* operational environment, the FST can be inserted to operate effectively for up to 48 hours, after which time it must be "stood down" for team rest. This 48-hour period can be extended (not to exceed 72 hours) if situations permit team members to establish work-rest cycles. This limitation also applies to airborne/assault and ACR (light) teams.

b. Team rest procedures must be adopted for those teams front loaded to a brigade task force in early entry operations.

4-7. Displacement and Redeployment

a. The medical brigade/group commander attaches the corps FST to divisions/separate brigades in direct support of specific medical companies. Normally, the medical brigade/group commander will issue orders, either verbally or in writing, to the FST commander. Frequently, the time to respond to these orders is short; therefore, the FST must be prepared to rapidly respond to an order. Upon receiving the commander's guidance, the FST will conduct the mission analysis, incorporating changes based on the METT-T. The unit will save time by rehearsing moves, using knowledge from past experience, and maintaining a detailed TSOP. Once the FST collocates with a medical company, it will be subject to frequent displacements on order from the supported medical company.

b. A corps FST is normally attached to a maneuver brigade for up to 48 hours of support in *continuous operations* after which time it may be redeployed to its home-based corps hospital, or it may be reinforced by additional FSTs. A FST is normally not withdrawn from a supported unit until it is replaced by another.

Section II. UNIT OPERATIONS

4-8. Coordination

Upon arrival in the AO, the corps FST commander or his operations officer immediately makes contact and coordinates with the following elements:

a. The medical company/troop for—

- Briefing on the tactical situation.
- Security requirements.
- Communications tie-in (refer to Appendix D).
- X-ray and laboratory support.
- Food service, water, and refueling support.
- Electrical power support during generator downtime (refer to Appendix I).
- Medical equipment repair, when required.

NOTE

The FST will normally be integrated into the medical company's perimeter defense; the FST may be required to participate in that defense if situation and surgical work load permit. For the FST to perform optimally, the following minimal tactical requirements must be met:

1. Cannot be under direct fire.
2. Must have electrical light source.
3. Must stay stationary for at least two hours.

b. The DMSO, BMSO, or RMSO for medical resupply and blood (refer to Appendix E).

c. The DMOC support operations section of the support battalion (separate brigade) or support squadron (ACR) for redeployment instructions upon completion of mission.

4-9. Establishing the Surgical Facility

a. Currently, the FST deploys a general purpose (GP) tent shelter system. However, actions are ongoing to develop a lightweight Chemical/Biological Protection System that will serve as the standard shelter system for this unit. As a minimum, the FST requires a lightweight shelter system with an environmental control unit for clean air ventilation of the surgery area. A mechanism for heating is necessary for management of expected hypothermia in patients in both temperate and cold environments. Clean air ventilation in the surgical operating area is necessary for dispersal of anesthetic gases and to control contamination of surgical incisions and sterile supplies.

b. Operationally, the FST requires less than 1,000 square feet of space (equivalent to one GP large tent) to set up and operate in. However, for operating convenience and assured crew space, the unit may set up in two GP large tents or a combination of GP large and GP medium tents. Figures 4-1 (Page 4-10) and 4-2 (Page 4-10), depict two sample optional shelter configurations.

(1) The corps FST will layout adjacent to the medical company's clearing station in the area designated for the surgical augmentation element (preoperative and OR [see FM 8-10-1, Figure 3-1]). Once erected, the shelter system, along with the generator and vehicles, should be sandbagged-in. In static conditions, a bunkered shelter system should be built for recovering patients and FST personnel to protect against hostile artillery fires or air attacks.

(2) Airborne, air assault, and ACR (light) surgical teams are an integral part of the medical company/troop and are configured in the required tentage depicted in the area indicated in FM 8-10-1.

(3) Currently, the FST is incapable of operating in a chemical-contaminated environment. Refer to Appendix H for NBC operations.

c. The team may layout in a one or two tent configuration. This decision will normally be METT-T driven, based on the anticipated patient load and how frequent the facility is expected to displace.

NOTE

The FST will require 1 hour set-up time to become fully operational.

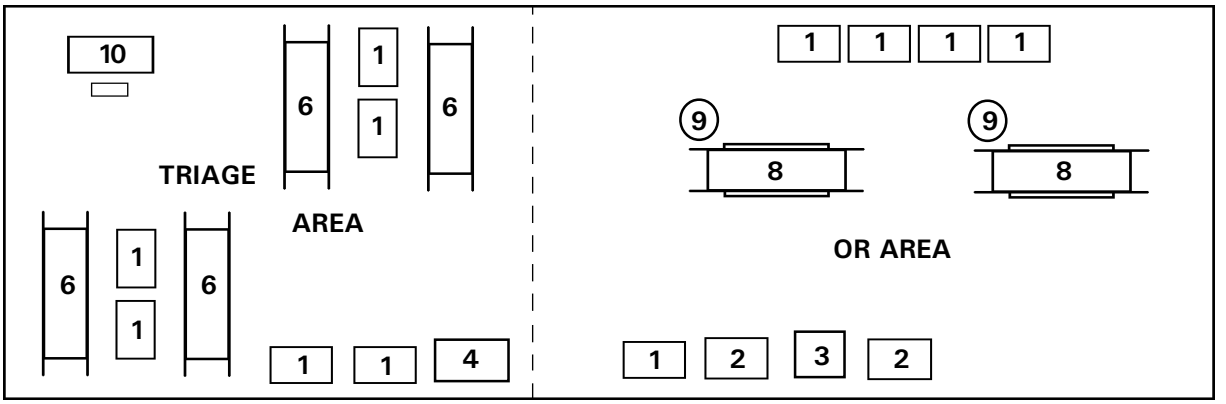
4-10. Operating Procedures

The FST commander is responsible for the development of unit standing operating procedures (SOPs) and TSOPs for daily operations and the employment of the team. He is assisted in this effort by his staff. The SOPs are based on the medical brigade/group SOPs. Standing operating procedures should be clear and concise. They must reflect procedural guidance that supports the current mission and doctrinal requirements. To assist the FST commander and team members, example SOPs and TSOPs for the unit are provided in following appendixes:

- Appendix A, Patient Conditions.
- Appendix B, Surgical Guidelines.
- Appendix C, Nursing Guidelines for Patient Care.
- Appendix D, Communications.
- Appendix E, Logistics.
- Appendix F, Loading Plans: Equipment and Cube-Weight Data.
- Appendix G, Safety and Force Protection.
- Appendix H, Nuclear, Biological, and Chemical Operations.
- Appendix I, Electrical Power Generation.

4-11. Triage and Trauma Management

a. The triage of the critically injured/wounded patient is initiated by the medical company's physicians/physician assistants (PAs) who, in turn, refer appropriate surgery candidates to the FST. To ensure maximum efficiency, FST surgeons will also assist in triaging candidates for surgery.



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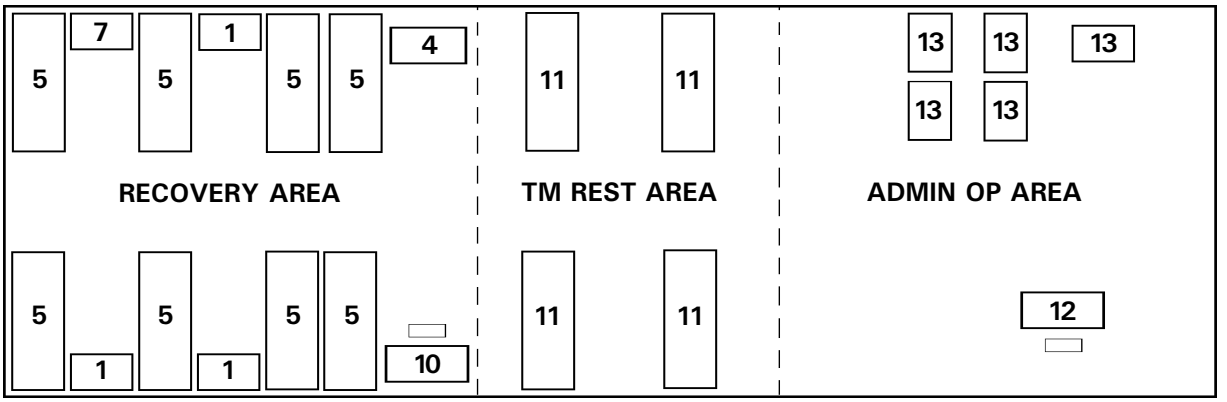


NOT TO SCALE

LEGEND:

1	#3 CHEST	8	OR TABLE W/LITTER
2	IMPACT CHEST	9	SURGICAL LAMP
3	REFRIGERATOR	10	FIELD TABLE W/TA-312 TELEPHONE AND FOLDING CHAIR
4	SINK	11	FOLDING COT
5	RECOVERY COT	12	FIELD TABLE W/TA-312 TELEPHONE, FAX MACHINE, AND FOLDING CHAIR
6	LITTER W/STAND	13	SUPPLIES AND EQUIPMENT
7	MEDICAL CHEST		

NOTE: GP LARGE TENTS MAY BE PLACED END-TO-END CONNECTING THE OR AND RECOVERY AREA. THIS CAN BE DONE BY USING A FABRICATED CONNECTIVE VESTIBULE, OR BY TYING THE END POLES OF THE TWO TENTS TOGETHER AND ROLLING UP THE END FLAPS.

Figure 4-1. Sample layout in two general purpose large tents.

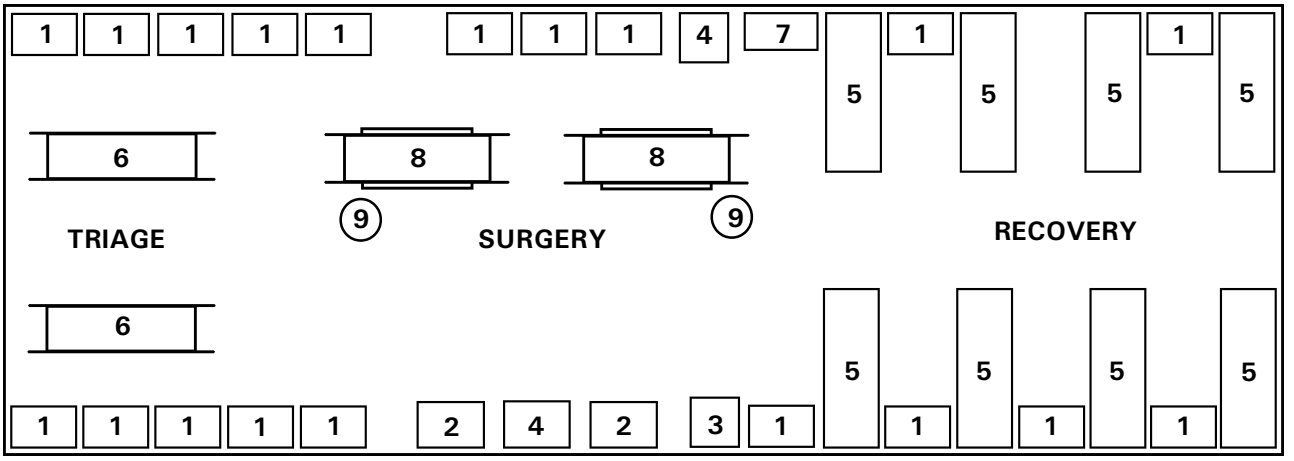


Figure 4-2. Sample layout in one general purpose large tent.

NOTE

As a rule, the FST surgeon will triage the first two to four casualties requiring emergency surgery. The medical company's physicians will continue triage and treatment after the FST surgeon has taken the first casualties to surgery.

b. In the TTM area, patients receive assessment and treatment, quickly followed by movement to surgery.

c. Patients undergoing preoperative care are normally held in the TTM area pending availability of a surgical table. However, they can be placed in the recovery area until a table becomes available.

4-12. Surgery

a. In surgery, two OR tables are established and maintained by the OR staff. Surgeons accompany their patients from the TTM area and perform the required surgery. The FST surgeons are capable of

performing surgery for up to 30 patients in 72 hours. They perform major, but relatively short (less than 2.5 hours), operative procedures. If necessary, two surgeries can be performed simultaneously.

b. Rest cycles should be established for FST members and consistently followed. Fatigue and sleep deprivation will cause team members to become ineffective.

c. Safety procedures should be established and followed in the surgery area, as well as in all other areas of the FST (refer to Appendix G).

4-13. Recovery

a. In the recovery area, eight postanesthesia cots are set up and maintained by the nursing staff. This staff is capable of providing intensive care on a 24-hour basis until patients recover from anesthesia and become sufficiently stabilized for further evacuation (usually within 1 to 6 hours).

b. There may be occasions when the recovery cot capacity of the FST is exceeded. When this happens, coordination should be made with the medical company's holding squad to transfer the patient overload. However, the FST's recovery team will continue to monitor and supervise the care of these patients until they are evacuated.

4-14. X-ray, Laboratory, and Blood Support Capabilities

a. Coordination can be made with the medical company to provide radiology service. The company deploys an x-ray MES with a low-capacity portable x-ray unit. The unit can be moved to where the patient is located to take the required exposures. Also, the x-ray MES contains a portable shielding screen which will be routinely employed for the protection of personnel near the exposure area.

b. The requirement for x-rays of patients (especially those requiring orthopedic surgery) is normally made during the assessment phase in the TTM area. However, x-ray follow-up may be required for postanesthesia patients.

c. Nursing personnel perform limited near-patient testing laboratory procedures for the FST, which in most cases is adequate for patients treated in its facility (refer to Appendix C for more detailed information). On certain occasions, the FST may call upon the medical company to provide some procedures it is unable to perform; these include—

- White cell count.
- White blood cell differential.
- Urinalysis (microscopic).
- Occult blood test.

- Thick and thin smear for malaria.
- Gram stains.

d. The FST has the capacity to store 50 units of Group O packed red blood cells (PRBCs) and the medical company/troop also stores 50 units. Between the FST and medical company/troop, a total of 100 units of PRBCs are available for the supported maneuver brigade/squadron. Refer to Appendix E for oxygen and blood planning factors and resupply procedures.

4-15. Disposition of Remains

In the event a patient dies while in the FST facility, a Field Medical Card (DD Form 1380) is completed on the deceased and signed by a physician. Coordination is made with the medical company and the deceased is immediately removed from the FST facility to the company's temporary morgue area.

4-16. Administrative Support

Unit personnel support for corps FST members will be provided by the associated CSH, under the purview of the medical brigade/group. Personnel matters pertaining to FST members will be handled during unit downtime. Other administrative procedures, such as finance support and courts-martial authority, are established by the brigade/group commander. For the organic FST (airborne/air assault/ACR [light]), administrative support is provided by the MSB/FSB. (For additional information, refer to Appendix E.)

4-17. Food and Water Support

The forward deployed FST totally relies on the supported unit for food service and water support. The medical company/troop maintains sufficient quantities of water for use by both the FST and the company/ troop. Refer to Appendix E for water consumption planning.

4-18. Individual Weapons

When the team is deployed, each member carries and maintains his individual weapons. The armorer of the medical company/troop (from hospital, FSB, or ACR [light]) will provide support and maintenance of the FST while the unit is attached.

4-19. Unit Security

Security for the FST is provided by tactical forces in the area in which the FST operates. The FST is included in the medical company's defense perimeter as established. The FST will contribute to medical company's perimeter defense when METT-T and surgical work load permit.

4-20. Training

a. Commanders will establish mission essential task lists (METL) for the FST and train team members, collectively, to proficiency. Refer to FM 25-100 for guidance in the development of the unit's METL.

b. Officer personnel, in addition to their accrediting AOC, should be afforded the opportunity to attend the courses shown in Table 4-1. Paraprofessional (enlisted) personnel assigned to an FST should also be afforded the opportunity to attend the professional development training indicated in Table 4-1.

NOTE

The Department of Joint Medical Readiness (DJMR), Academy of Health Sciences (AHS), offers a professional development course that may be attended by enlisted personnel as auditors.

These courses currently support the basic principles of combat surgery and the skills required by FST members.

c. Military occupational specialties and specific clinical skills of both enlisted and officer team members must be sustained. This is accomplished by regularly scheduling individuals to practice their skills at fixed MTFs on a rotational basis. This is done in accordance with the AMEDD's Systematic Approach to Realistic Training Program. It is required to enhance and sustain clinical skills. The focus of clinical rotations must be proficiency on those objectives directly related to the FST. Objectives will include the practice of MOS-specific skills and rotations to clinical areas for cross training and sustainment training in the skills related to the FST's tasks and functions. For example, the medical specialist (91B) should have focused, supervised rotations through the postanesthesia nursing care unit, the intensive care unit, the emergency room, and the operating room. The senior AN officer of the FST should review the clinical objectives of the Systematic Approach to Realistic Training Program manual for each MOS and focus the soldier on those objectives related to the skills required by the FST clinical function. Clinical objectives must be individualized and based on each soldier's MOS, current knowledge level, and experience. The importance of this cannot be overemphasized. Equally as important is the maintenance of the clinical skills of the FSTs' and FSMC's PAs, nurses, and physicians (including professional officer filler system [PROFIS] and assigned personnel). Resuscitative surgical skills can quickly atrophy, whether deployed or not. Training options are regular rotations through civilian trauma centers, animal laboratories, and virtual reality environments. Medical department activities/medical centers and unit commanders must cooperate in a partnership to make this happen.

d. All PROFIS personnel of the FSMC and organic airborne/air assault FSTs must make monthly contact with FSMC commander, FSB commander, brigade surgeon, and division surgeon.

Table 4-1. Professional Development Training

COURSE	COURSE SPONSOR
COMBAT CASUALTY CARE	DJMR, AHS, AMEDDC&S
PREHOSPITAL TRAUMA LIFE SUPPORT	DJMR, AHS, AMEDDC&S
ADVANCED TRAUMA LIFE SUPPORT	DJMR, AHS, AMEDDC&S; UNIFORMED UNIVERSITY OF HEALTH SCIENCES
COMBAT TRAUMA NURSING	DJMR, AHS, AMEDDC&S
ADVANCED BURN LIFE SUPPORT	DJMR, AHS, AMEDDC&S
ADVANCED CARDIAC LIFE SUPPORT	DJMR, AHS, AMEDDC&S; US ARMY MEDICAL CENTERS AND MEDICAL ACTIVITIES
COMBAT ANESTHESIA	DJMR, AHS, AMEDDC&S
MEDICAL MANAGEMENT OF CHEMICAL CASUALTIES	DJMR, AHS, AMEDDC&S
MEDICAL MANAGEMENT OF BIOLOGICAL CASUALTIES	DJMR, AHS, AMEDDC&S

APPENDIX A

PATIENT CONDITIONS

This appendix lists the 57 patient conditions, extracted from the DOD Deployable Medical Systems' clinical data base, that have been identified as suitable to be performed by FSTs.

PATIENT CONDITION NUMBER	DESCRIPTION OF PATIENT CONDITIONS
005	Cerebral contusion (closed) with intracranial hematoma, with or without nondepressed linear skull fracture—severe, large hematoma (including epidural hematoma) with rapid deterioration of comatose patient.
007	Cerebral contusion (closed) with depressed skull fracture, severe, with associated intracerebral hematoma and/or massive depression.
017	Wound (open), face, jaws, and neck lacerated with associated fractures (excluding spinal fractures). Severe, with airway obstruction.
019	Wound (open), face and neck lacerated, contused without fractures. Severe with airway obstructions and/or major vessel involvement.
045	Wound, upper arm, open, penetrating, lacerated without fracture, severe with nerve and/or vascular injury.
071	Amputation, full arm, traumatic—complete, all cases.
088	Wound (open), thorax (anterior or posterior), penetrating with associated rib fracture and pneumohemothorax, moderate respiratory distress.
098	Wound (closed), liver acute (crush, fracture)—major liver damage.
099	Wound (closed), liver acute (crush, fracture)—minor liver damage.
100	Wound (closed), spleen acute (crush, fracture)—all cases.
101	Wound (open), abdominal cavity with lacerated, penetrating, perforating wound to large bowel.
102	Wound (open), abdominal cavity with lacerated, penetrating, perforating wound to small bowel without major or multiple resuscitation.
103	Wound (open), abdominal cavity with penetrating, perforating wound of liver—major damage.

PATIENT CONDITION NUMBER	DESCRIPTION OF PATIENT CONDITIONS
104	Wound (open), abdominal cavity with penetrating perforating wound with lacerated liver.
105	Wound (open), abdominal cavity with penetrating, perforating wound—spleen. Severe, all cases.
106	Wound (open), abdominal cavity with lacerated, penetrating, perforating wound with shattered kidney.
107	Wound (open), abdominal cavity with lacerated, penetrating, perforating wound with lacerated kidney, initially repaired, but subsequent nephrectomy.
108	Wound (open), abdominal cavity with lacerated, penetrating, perforating wound with shattered bladder.
109	Wound (open) abdominal cavity with lacerated, penetrating, perforating wound with lacerated bladder.
114	Wound (open), abdomen with pelvic fracture and penetrating, perforating wounds to multiple pelvic structures (male or female).
115	Wound (open), abdomen with pelvic fracture and penetrating, perforating wounds to pelvic colon only (male or female).
124	Wound (open), thigh lacerated, penetrating, perforating with fracture and nerve/vascular injury—limb salvageable.
131	Wound (open), lower leg with lacerated, penetrating, perforating with fracture and nerve and/or vascular injury—limb salvageable.
137	Wound (open), ankle, foot, toes with penetrating/perforating with fractures and nerve and/or vascular injury—limb salvageable.
138	Crush injury, lower extremity—limb not salvageable.
139	Crush injury, lower extremity—limb salvageable.
146	Amputation above knee, traumatic, complete, requiring hip disarticulation.
147	Amputation above the knee, traumatic, complete.

PATIENT CONDITION NUMBER	DESCRIPTION OF PATIENT CONDITIONS
159	Multiple injury wound (MIW) of brain and chest with sucking chest wound and pneumohemothorax.
160	MIW of brain and abdomen with penetrating, perforating wound—colon.
161	MIW of brain and abdomen with penetrating, perforating wound—kidney involvement.
162	MIW of brain and abdomen with penetrating, perforating wound—bladder involvement.
163	MIW of brain and abdomen with shock and penetrating, perforating wound—spleen involvement.
164	MIW of brain and abdomen with shock and penetrating, perforating wound—liver.
165	MIW of brain and lower limbs requiring bilateral above-knee amputations.
166	MIW of chest with pneumohemothorax and abdomen with penetrating wound—colon.
167	MIW of chest with pneumohemothorax and abdomen with penetrating, perforating wound—kidney.
168	MIW of chest with pneumohemothorax and abdomen with perforating wound—bladder.
169	MIW of chest with pneumohemothorax and abdomen with penetrating, perforating wound—spleen.
170	MIW of chest with pneumohemothorax and abdomen with penetrating, perforating wound—liver.
171	MIW of chest (with pneumohemothorax and limbs with fracture and vascular injury).
172	MIW of abdomen with penetrating, perforating wound of colon and bladder.
173	MIW of abdomen with penetrating, perforating wound of colon and spleen.

PATIENT CONDITION NUMBER	DESCRIPTION OF PATIENT CONDITIONS
174	MIW of abdomen with penetrating, perforating wound of colon and liver.
175	MIW of abdomen and limbs with penetrating, perforating wound of colon and open fracture and neurovascular wound of salvageable lower limb.
176	MIW of abdomen and pelvis with penetrating, perforating wound of liver and kidney.
177	MIW of abdomen and pelvis with penetrating, perforating wound of spleen and bladder.
178	MIW of abdomen, pelvis, limbs with fracture and neurovascular injury, limb salvageable, and penetrating wound—kidney.
179	MIW of abdomen, pelvis, limbs without fracture or neurovascular injury, and penetrating perforating wound—bladder.
180	MIW of abdomen and lower limbs with fracture and nerve injury with penetrating wound of spleen with full thickness burns to greater than 20% of total body surface area.
181	MIW of abdomen and limbs without fracture or nerve injury to limbs, with penetrating wound of liver.
182	MIW, chest, with pneumohemothorax, soft tissue injury to upper limbs, and penetrating wound of brain.
183	MIW of chest, upper limbs, and abdomen, with simple pneumohemothorax, soft tissue injury to upper limbs, and wound of colon.
184	MIW of chest with pneumohemothorax, pelvis and abdomen, with wound of colon and bladder.
185	MIW of abdomen and chest with multiple organ damage.
313	Wound (open), abdominal cavity with lacerated, penetrating, perforating wound. Also moderate lacerated kidney—kidney salvageable.

This paragraph implements STANAG 2068.

APPENDIX B

SURGICAL GUIDELINES

The phased concept of combat casualty care, unique to war, permits the FST to do only what must be done to render casualties transportable for evacuation to a rear hospital for secondary surgery, if required, and continued treatment. This initial surgery at an FST is not complete surgery, but rather that initial effort required to save life and limb, prevent infection, and render the patient transportable. Surgical procedures not essential to resuscitation and stabilization at the time must be avoided. Instead, physicians concentrate their resuscitative efforts on those procedures that will make the patient stable for evacuation at the first window of opportunity. This concept of wound management allows the FST to maintain its intended mobility. The FST is equipped and staffed to stabilize patients for evacuation to a more secure base (a corps hospital) where deliberate and more definitive treatment is provided in a less rushed atmosphere. The sections that are outlined in this appendix are intended to serve as an overall working and planning guide for the clinical portion of the FST. The policies and procedures listed are meant as a guide and are implemented as applicable.

Section I. GENERAL SURGERY

B-1. Airway Management

a. The standards established by the ATM protocol are accepted for the establishment of the airway, and the technique is essential for resuscitation of traumatized patients.

b. Endotracheal intubation is used and/or cricothyrotomies are performed by medical personnel forward of the corps hospital.

c. Endotracheal tubes\cricothyrotomies will be used as adjuncts in assisted ventilation. Prophylactic intubation or cricothyrotomy should be considered prior to medical evacuation for patients with inhalation burns, severe head injuries, and cervical spine injuries.

d. Every patient being evacuated and requiring assisted ventilation will have his airway secured with an endotracheal tube or cricothyrotomy.

e. Cricothyrotomies should be sutured in place at the skin. The cannula should accompany the patient in order to facilitate replacement of the tube in case of displacement.

B-2. Medical Antishock Trousers

For patients admitted at the FST encapsulated in medical antishock trousers (MAST), the standard procedure is that such equipment will only be removed at the surgeon's direction.

B-3. General Policy Guidelines for Anesthesia

a. The anesthesia device used in FST is the Ohmeda PAC draw-over vaporizer. This device is well suited for anesthesia due to its size, weight, durability, and safety features. It also frees the anesthetist's hands for other tasks. Unlike other draw-over vaporizing devices, the Ohmeda PAC may be tilted or inverted without harm to the patient; however, tilting and inversion should be avoided. Spontaneous/ assisted ventilation should be maintained if consistent with the patient's condition, including depth of anesthesia. When possible, a low-flow oxygen source, such as an oxygen concentrator, is used to supplement the patient's fractional-inspired oxygen (FIO2). Remember that with the draw-over device, and given a set supplemental oxygen flow, FIO2 will actually decrease as minute ventilation increases.

b. A nonflammable, nonexplosive, halogenated agent (that is, halothane/isoflurane) is the inhalation agent of choice. Nitrous oxide is contraindicated with the draw-over vaporizer. Total inhalation anesthesia, balanced anesthesia, total intravenous (IV) anesthesia, and regional anesthesia are all appropriate anesthetic techniques in the FST.

c. The Propaq monitor is the standard anesthesia monitor in the FST. The Propaq monitor provides electrocardiogram, noninvasive blood pressure, pulse oximeter, capnograph, and temperature-monitoring capabilities. Other standard monitors in the FST include precordial and esophageal stethoscopes.

NOTE

The most important monitor is a vigilant nurse anesthetist.

d. The FST should assume all casualties have a full stomach and perform an aspiration prophylaxis, to include the appropriate airway management (that is, rapid sequence induction with cricoid pressure, awake intubation, as indicated).

e. The anesthetist should only attend to one anesthetized patient at a time unless the patient flow dictates otherwise. The attending anesthetist is responsible for giving an appropriate postoperative patient report to the recovery element prior to departing the recovery area. The anesthetist should follow the patient's postoperative progress until he is fully recovered from anesthetic effects.

f. The preanesthetic assessment, intraoperative anesthesia care and patient condition, and postanesthesia notes are recorded on the Anesthesia Clinical Record, SF 517. In accordance with AR 40-2, an account of controlled medication is maintained on DA Form 3949-1.

B-4. Wound Debridement Policies

a. Wound debridements are performed by the FST only in connection with major surgical procedures. The following principles apply:

(1) All readily accessible foreign bodies and blood clots are removed.

(2) Each tissue plane level should be carefully treated as it is encountered.

(3) All soft tissue wounds should be vigorously scrubbed in order to remove, if possible, all foreign bodies.

(4) Adequate irrigation of wounds is performed at every tissue plane level. The requirement for adequate amounts of irrigating fluids is recognized; however, emphasis should be placed on using the minimal amount necessary because of the tremendous impact upon the logistical system.

(5) Hemostasis must be meticulous.

(6) Ragged, traumatized skin edges should be excised with a scalpel, taking a few millimeters of normal-appearing skin.

(7) Longitudinal incisions of extremities are utilized for entrance and exit wounds. An S-shaped incision should be used around joint creases.

(8) Fascia should be opened widely, and all shredded tissue should be carefully excised.

(9) Tendons that are frayed should be carefully trimmed.

(10) The basic theater policy of "no repair of nerves" remains in effect with the exception of facial and digital nerves which may be freshened and primarily repaired, time permitting.

(11) Devitalized muscle is that muscle which is dark in color, soft in consistency, nonretractile, and when cut, displays minimal bleeding. All muscles with these characteristics should be resected.

(12) Bone fragments should be dealt with in the following manner:

(*a*) Small, unattached fragments should be removed.

(*b*) Any large bone fragment should be adequately cleaned and returned to its normal anatomical position.

(13) Immobilization of each injured body part in the correct position of function is essential to the healing process.

b. In the debridement process, most wounds will be left open for delayed primary closure at a rearward hospital.

B-5. Neurosurgical Policies

a. Deteriorating closed head injuries may be received by the FST. In general, the only neurosurgical procedures performed at this level will be burr holes and bone flaps to permit the evacuation of extradural and subdural hematoma.

b. Surgeons performing initial surgery on peripheral nerve injuries should exercise care to preserve and protect all peripheral nerves. As a rule, there will be no repairs of peripheral nerves in the CZ, but they should be tagged with Prolene sutures to facilitate future repair.

c. Operative procedures on the brain should minimize free air in the intracranial space so as not to compromise aeromedical evacuation of the patient.

B-6. Thoracic Surgery Policies

a. About 80 percent of thoracic wounds do not require a formal thoracotomy, but can be adequately treated by tube thoracostomy with a water seal, suction drainage, or Heimlich valve for evacuation.

b. Roughly, there are five indications for thoracotomy. These include—

- Continued hemorrhaging with greater than 1,000 cubic centimeters (cc) initial drainage or greater than 300 cc per hour.
- Massive air leak with inability to adequately ventilate.
- Mediastinal injury.
- Major chest wall injury.
- Extension of laparotomy for liver resection and the closure of the right hemidiaphragm.

B-7. Maxillofacial Trauma and Otolaryngology Policies

a. No maxillofacial repairs will be performed by the FST. Maxillofacial surgery should be limited to that necessary to control hemorrhage, to stabilize the patient, and to provide an adequate airway.

b. In general, closed facial fractures will **NOT** be reduced by the FST.

c. All wiring used to immobilize mandibular and maxillary fractures will be of the quick-release type to allow urgent control of the airway during aeromedical evacuation.

d. Penetrating wounds of the neck require thorough exploration to rule out esophageal, carotid artery, and tracheal injuries.

B-8. Ophthalmology Policies

a. Ophthalmological procedures in the CZ are performed to expedite RTD or to save the globe. Treatment by the FST will consist of "patch-and-evacuate."

b. Major soft tissue and ocular adnexal trauma is not closed by the FST.

c. The FST should remove embedded corneal foreign bodies, preferably by irrigation.

d. More extensive ophthalmological procedures are performed at a hospital with a collocated head and neck team.

B-9. Abdominal Surgery Policies

a. *General*. The goals of abdominal surgery by the FST are to stop hemorrhage and gastro-intestinal soilage. The following principles apply:

(1) All patients should be explored through generous midline incision.

(2) Do only what is necessary to save life and limb. Resources and time are limited at the FST and attempting to perform definitive surgery too far forward will result in increased loss of life and suffering.

(3) The abdomen is often the source for occult hemorrhage. Abdominal exploration may be lifesaving in patients with unexplained hypotension as the FST lacks less invasive mean for diagnosis of hemoperitoneum.

b. *Abbreviated Laparotomy*.

(1) There is no need to perform definitive surgery at the FST. Attempts to perform complicated repairs will exhaust resources such as blood.

(2) The goal of the abbreviated laparotomy is to take a critically injured patient and stop his bleeding and any fecal or intestinal soilage. It has to be performed rapidly to be effective. Surgeons should only perform those procedures which allow the patient to survive until he reaches the next echelon of care.

(3) Bleeding is controlled by ligation of bleeding vessels. It is not always necessary to restore the blood flow as this can be done at reoperation. Bleeding from the liver, retroperitoneum, or pelvis can be controlled with packing.

(4) Holes in the gastrointestinal tract are closed. If resection is necessary, the closed ends are not reanastomosed, but are left in the abdomen. These may be tagged to facilitate later anastomosis. There should be no attempt to restore intestinal continuity or to perform a colostomy during the abbreviated laparotomy.

(5) The closure is abbreviated. This can be a single-layer, running closure of either fascia or skin, or the skin can be closed with towel clamps.

(6) Patients requiring abbreviated laparotomy should be evacuated as soon as possible to the next echelon of care for more definitive treatment.

c. Solid Organ Injuries.

(1) Most liver injuries will stop bleeding on their own. Major hepatic procedures should not be attempted by the FST. If a patient requires more than cautery, topical hemostatic agents, or a few simple sutures for hemostasis, the liver should be packed and the patient evacuated. It is crucial to pack these wounds early to avoid a cold coagulopathic patient with no hope of survival.

(2) Splenic injuries that are bleeding at the time of the laparotomy require a splenectomy. The FST does not have the blood products nor the observation capabilities to perform splenic salvage.

d. Diaphragm Injury. The diaphragm is closed primarily with nonabsorbable sutures. This will prevent the late complications of chronic herniation.

e. Pancreas and Duodenum.

(1) Isolated duodenum injuries can be repaired primarily after debridement of the wound edges. This is adequate in most cases of duodenal injury. In more severe cases, a duodenostomy tube, jejunal patch, or even duodenal diverticularization may be necessary.

(2) Small injuries to the pancreas can be treated with drainage only. Severe injuries can be treated with resection. Patients with severe pancreatic injuries should be packed to control hemorrhage and evacuated to higher echelons of care for more definitive surgery. The FST is no place to perform a Whipple. This applies also to combined pancreaticoduodenal injuries.

f. Small Intestine, Colon, and Rectal Injuries.

(1) Small intestinal injuries can be treated with simple closure after debridement, or with resection for more extensive injuries. If the patient has other critical injuries, the holes can be simply closed and the patient evacuated for planned restoration of intestinal continuity and reexploration.

(2) Colon injuries have traditionally been treated with a colostomy. In some patients, primary repair of colon injuries is safe. This decision must be based on the patient's other injuries and overall surgical condition.

(3) Rectal injuries should be closed whenever possible. They should have a protecting colostomy, presacral drainage, and distal washout of the rectal stump. Any devitalized tissue must be debrided. There may be some cases where a colostomy is not necessary (for example, small wounds without fecal soilage).

Section II. ORTHOPEDIC SURGERY

B-10. General Orthopedic Policies and Procedures

a. Tissue protection and immobilization by means of a plaster cast have proven their efficacy under such stressful circumstances as in World War II and the Korean and Vietnam wars. Plaster casts should remain the mainstay of initial combat injury management. Full circular plaster casts are almost always tolerated better than splints during movement through the medical evacuation system. Full plaster casts, adequately padded and bivalved, should be used for both fractures and soft-tissue support. The cast must be strong enough at the joints to withstand bivalving which must extend through all the padding along the length of the cast. Casts should be marked with the date of injury, date of any surgery, and a sketch of the location and type of injuries and repairs, to include vascular injuries and repairs. All casts must be able to fit within the length and width of a standard litter. They must be of such shape as to allow placement within the confines of a multilevel litter configured for ground or air (rotary- or fixed-wing) ambulance.

b. The vast majority of vascular repairs can be immobilized using plaster casts without jeopardizing the vascular repair. Casts used in this manner should be bivalved with a ″-inch gap on each side. They should have a window over the repair area to allow access should bleeding occur. They should also have a window to allow distal pulse checks. A rubber tourniquet should be loosely placed around the limb, proximal to the repair site, to allow rapid tightening in case of blow-out hemorrhage.

c. Free-hanging weights are not acceptable for patients being evacuated. Traction for these patients may be maintained by a self-contained cast with outrigger devices equipped with rubber tubing, or with Collins spring-loaded devices.

d. Open fractures do not have open reduction and internal fixation except where stabilization for vascular repairs is absolutely necessary.

e. External fixation is used in suitable cases in order to stabilize fractures for evacuation. In all open fractures of the extremities and unstable pelvic fractures, either external fixators or plaster casting material will be used, depending upon the surgeon's preference.

f. There will be no repair of profundus tendons at the time of initial wound surgery. Reconstruction of major tendon injuries is not performed by the FST.

g. Stumps of amputated extremities are to be left open except in crush injuries that result in a clean wound. Those stumps requiring traction should be managed with stockinettes adhered to the skin and the extremity casted. Wire ladder splints can be used as outriggers with traction provided by rubber tubing. Hip spica casts are best for thigh amputations. Stumps not requiring traction generally travel best in bivalved casts.

h. Parenteral antibiotics are used in all major open extremity wound cases. The use of impregnated antibiotic beads is encouraged.

i. All extremity injuries should be immediately and continuously elevated to decrease edema. Exceptions are those injuries with marginal vascular perfusion and those fresh arterial repairs where perfusion pressures may be overcome by compression dressings and *elevation*.

j. If the possibility exists that a joint has been violated by a foreign body, the joint should be aggressively irrigated and immobilized and the patient evacuated as soon as possible.

k. Cervical spine fractures and/or dislocations may be stabilized by Minerva plaster jackets, or prepackaged, self-contained, low-profile halos and body jackets, and transported on litters.

l. No extremity musculoskeletal system debridement of a major nature is conducted using local anesthetics. Only a few minor debridements lend themselves to the use of such agents. Frequently, it is very difficult to predict the extent of tissue damage beneath what may appear to be a minor injury.

B-11. Fasciotomy Policies

a. There are six indications for performing a fasciotomy. These include—

- Greater than a 6-hour delay between injury and treatment.
- Prolonged hypotension and shock.
- Massive swelling, either preoperatively or intraoperatively.
- Combined major artery and venous injury.
- Massive, associated soft tissue injury.
- Treatment of arterial injury by ligation.

b. Fasciotomies should be considered in any patient where there is risk of significant swelling and the patient cannot be closely followed for the development of compartmental syndrome.

B-12. Orthopedic Policies (Distal Extremities)

a. In all open fractures of extremities, a combination of external fixators and/or plaster casting material may be used.

b. The object of wound debridement in hand and foot injuries is to clean the wound, remove indrawn debris, and prevent tissue tension which would kill the intrinsic musculature.

c. Hand injuries have a low priority as they seldom threaten life.

(1) The severely crushed injury of the hand should be left open.

(2) Tourniquets should be placed and inflated for not more than 90 minutes for anatomic orientation and severe hemorrhage control.

(3) Initial debridement should follow the principles of soft tissue injury, particularly in the control of hemorrhage. The surgeon should—

- X-ray from two planes.
- Adequately irrigate wounds.
- Not amputate a digit; only debride.
- Not remove bone attached to soft tissue.
- Not use Kirschner wires at the time of initial surgery unless stabilization of dislocations and unstable fractures is required and spacing of metacarpal defects is necessary.
- Not undermine soft tissue.

d. In addition to the previously described procedures for hand injuries, similar techniques are also applicable for foot injuries, but differ somewhat (obviously because of the anatomical position). Surgeons are encouraged to use the following as a guide:

(1) An x-ray should be obtained from two planes.

(2) Extensive exposure is an indication for proper debridement.

(3) Soft tissue should not be undermined unless there is a requirement to expose the wound for debridement.

(4) In severely mangled or crushed foot injuries, adequate fascial decompression and debridement of the small muscles must be accomplished from the plantar and dorsal surfaces simultaneously.

(5) Incisions over prominent metatarsal heads should be avoided.

(6) Incisions in the long axis are desirable except under the metatarsal heads where a transverse incision, distal to the ball of the foot, will provide the required exposure.

(7) Heel splitting incisions are valuable to debride a severely comminuted and contaminated posterior foot and calcaneus injury.

(8) Kirschner wires will not be used at the time of the initial surgery, unless stabilization of dislocations or unstable fractures is required for spacing of the tarsal and metatarsal bones.

(9) Injuries where large bony defects are present should be left open.

(10) Wounds should be immobilized in a circular bivalved cast.

(11) The orthopedic surgeon must remember **NOT** to—

- Repair nerves in the foot.
- Primarily repair tendons.
- Repair arteries distal to the ankle.
- Use pedicle skin flaps.

Section III. BURN POLICIES

B-13. Burn Management

a. The first priority in the management of the burn patient is to maintain the airway, control hemorrhage, and provide prompt resuscitative therapy. The presence of associated traumatic wounds in patients with burn injuries may complicate the management of their burns and vice versa. The essence of the successful treatment of burn patients, with or without other traumatic injuries, is effective triage, timely diagnosis, accurate assessment of surgical priority, and appropriate resuscitation.

b. The FST physicians ensure that all patients with burns around the face or nose have an airway established, preferably with an oral endotracheal tube.

B-14. Burn Resuscitation Guidelines

a. Fluid replacement and monitoring of the burn casualty will be in accordance with established ATM guidelines.

(1) The burn patient usually requires 2 to 4 milliliters (ml) of normal saline or Ringer's lactate administered per kilogram of body weight/percent body surface burned. The solution should be administered at a sustained rate in the first 24 hours to maintain an adequate circulating blood volume and to provide renal output. The estimated first 24-hour fluid volume intake is administered proportionately; for example, one-half of the total estimated fluid is provided in the first 8 hours postburn, and the remaining one-half is administered in the next 16 hours. The physician has to adjust the amount of fluid given according to the individual patient's response; that is, adjustments are made in accordance with the patient's urinary output, vital signs, and general condition.

(2) An in-dwelling urethral catheter is used in resuscitating burn patients to ensure measurement of urinary output which should be greater than 30 ml per hour.

b. Burns will be treated closed. Generally, all burns will be treated by occlusive dressing. Silver sulfadiazine may be used as the topical antimicrobial agent of choice.

c. Escharotomies may be performed, as necessary, on all *full-thickness* circumferential burns.

d. Burn patients should be evacuated promptly from the forward area.

Section IV. UROLOGICAL SURGERY POLICIES

B-15. Genitourinary

a. Genitourinary tract injuries in a CZ constitute approximately 5 percent of the total injuries generated. With the exception of the external genitalia, these wounds invariably are associated with serious visceral injury and, as a result, are better managed in areas where there are major surgical and x-ray capabilities. The treatment of urological injuries does not vary from established surgical principles: hemostasis, debridement, and drainage. The only genitourinary injuries handled by the FST will be those with life-threatening hemorrhaging.

b. In triaging genitourinary tract injuries, inject contrast material so that a pyelogram can be obtained with initial x-ray examination.

B-16. General Considerations

a. Genitourinary injuries are frequently associated with other injuries. It is important to ensure that the patient is fluid resuscitated to maintain adequate urine output.

b. All splints and catheters should be securely taped and/or sutured in place near the point of exit. The urethral catheter should be taped in place on the lower abdominal wall. In male patients, this prevents pressure at the penoscrotal angle and reduces the incidence of urethral stricture, pressure, necrosis, and fissure.

c. All catheters should be connected to closed sterile drainage systems.

d. Use absorbable sutures on all urinary tract repairs, placing sutures external to urothelium, if possible.

e. Suprapubic cystostomy tubes should be placed in the dome of the bladder and angled in a cephalad direction, emerging from the skin 5 to 10 centimeters above the symphysis pubis. Suprapubic

tubes should be at least a number 28 French (Foley catheter) to facilitate irrigation of clots. They should be replaced immediately if accidentally removed.

f. All urinary tract wounds should be generously drained. Drains should be secured by sutures at the skin edge and by a safety pin to prevent accidental extraction from the wound.

g. Urethral catheters should be large enough to drain urine and small enough to permit drainage of normal urethral secretions that are external to the catheter. A Foley catheter, no larger than a number 16 French, is routinely advised. A larger size, up to number 24 French, may be needed during episodes of bleeding to enhance irrigation and clot removal.

NOTE

The foreskin must be kept in the reduced position to prevent paraphimosis.

B-17. Renal Injuries

a. Renal injuries, except for renal pedicle injuries, are usually not life threatening. Most can be managed nonoperatively. The FST will evacuate most renal injuries back to higher echelons of care. Those that are hemodynamically unstable will be diagnosed at laparotomy. Surgical intervention is required for those that have—

- Expanding flank or abdominal mass.
- Continuing hemorrhage requiring two or more units of blood.
- Significant extravasation of urine.
- Gross hematuria and hypotension.

b. Improper exploration of renal injuries markedly increases the nephrectomy rate. This rate can be lessened by applying the following principles:

(1) Assure that a contralateral kidney is present if nephrectomy is required on the side of injury; however, bilateral injuries are rare.

(2) Assess the damaged kidney and determine relation of foreign bodies to the urinary tract.

(3) Use a midline laparotomy.

(4) Control the renal vessels before opening the Gerota's fascia.

(5) Debride necrotic tissue, ligate bleeders with absorbable suture, and drain the injury.

B-18. Ureteral Injuries

a. Ureteral injuries are rare and usually will not be treated by the FST as they are not life-threatening. Small defects can be closed with fine absorbable suture. If this is not possible, place a nephrostomy tube and evacuate the patient. No attempts should be made to use intestinal conduits or transuretero-ureterostomies in the initial treatment of abdominal trauma.

b. Bladder wounds are common and should always be considered in patients with lower abdominal wounds, gross hematuria, or an inability to void following abdominal or pelvic trauma. The following treatment guidelines are provided:

(1) The ureteral catheter may be left in place until repair is accomplished.

(2) Close a laceration with one or two layers of absorbable suture and perform a midline suprapubic cystostomy.

(3) Liberally drain the space of Retzius.

(4) Irrigate, as necessary, for postoperative bleeding.

(5) Sump drainage and coccygectomy are usually necessary in massive bladder trauma to allow adequate drainage.

c. Ureteral injuries should be treated with suprapubic cystostomy. No attempt should be made to repair them at the FST.

d. Injuries to the external genitalia are rarely life-threatening. Bleeding should be controlled and the patient evacuated.

Section V. INFECTION CONTROL POLICIES

B-19. Aseptic Techniques

Aseptic techniques (with each hand gloved) are maintained when the patient requires any procedure which is invasive in nature or provides an avenue of infection; this includes operative procedures, dressing changes, endotracheal tube/tracheostomy care, and so forth.

B-20. Handwashing

Handwashing is essential before and after each patient contact. This should be accomplished with water, an antimicrobial soap, and mechanical cleansing.

B-21. General Procedures

a. Intravascular access therapy will follow the guidelines listed below:

(1) Change all IV fluid containers every 24 hours.

(2) Handle all intravascular therapy devices with aseptic technique.

(3) At the earliest opportunity, change all IVs started under nonaseptic conditions. It is assumed that all IVs started at Echelon II were started under aseptic conditions.

b. All open containers of sterile fluid are changed/discarded after 24 hours (IV, irrigation, respiratory therapy, and so forth).

c. All laboratory specimens, blood, tissues, and body fluids are potentially infectious and should be handled as infectious medical waste.

d. Reusable equipment must be cleaned and disinfected after use on a patient.

APPENDIX C

NURSING GUIDELINES FOR PATIENT CARE

Section I. NURSING POLICIES AND PROCEDURES

C-1. General Policies

The goal of the nursing staff is to provide safe nursing care in a limited resource environment.

a. Patients requiring x-rays will usually have them taken by the collocated medical company x-ray personnel within the FST's shelter. However, nursing personnel may transport patients to and from the medical company's x-ray area, when required.

b. Laboratory procedures deemed essential for far forward surgery will be performed by the FST's nursing personnel. Assistance of the area support squad's laboratory specialist will be required for selected laboratory tests and for quality control.

c. The nature of the FST's operations requires maximum emphasis on cross-training for team members. The senior critical care nurse provides overall supervision of the nursing care provided by the team and ensures training of team members on mission-essential tasks of the unit.

d. Responsibility for patient accountability remains with the medical company. However, the FST's operations officer ensures that all patients received and treated at the surgical facility are properly logged in and out on the FST patient's registry (Daily Disposition Log). Minimum documentation should include patient identification, diagnosis and treatment, and disposition (date and time).

C-2. Nursing Supervision

a. Nursing practice incorporates the activities of data collecting and assessing, implementing a plan of care, and evaluating patient care outcomes. Military nursing personnel must continually adjust priorities to meet the dynamic requirements of patient care, ancillary support, administrative tasks, and staff management.

b. The clinical, cognitive, and managerial skills of the nurse are of paramount importance to effectively function under the vigorous demands of a wartime scenario. This environment includes limited staffing, constrained facilities, equipment of limited capability, and a large percentage of patients suffering from acute traumatic injuries. In addition, the influx of casualties and the mission of the FST necessitate a shortened length of stay within its recovery area. Under normal circumstances, patients will be recovered from anesthesia and prepared for aeromedical evacuation within 6 hours, during the window of opportunity and prior to the occurrence of posttraumatic complications. If evacuation is delayed, it may be necessary to place patient overflow into the medical company's holding squad area with continued supervision by the FST's nursing staff and assistance by holding squad personnel.

c. In primary nursing assessments, admission procedures include a patient-specific systems review based on the diagnosis. Emphasis is placed on the traumatized system(s) with minimal review of noninvolved areas such as—

- Assessment of dressings, tubes, IVs, and other support equipment.
- Administrative paperwork.

d. Although assessment, evaluation, and documentation are continuous processes, patients of the FST's postoperative area require additional assessment and evaluation every hour, as a minimum, or as indicated by the patient's condition and/or anticipated disposition. Tables C-1 and C-2 depict the forms that comprise both the standard patient chart and the patient postoperative management packet.

Table C-1. Standard Patient Chart

FORM NUMBER	FORM TITLE
DA 4256	DOCTORS ORDERS
DD 1380	US FIELD MEDICAL CARD
SF 509	MEDICAL RECORD—PROGRESS NOTES
SF 531	MEDICAL RECORD—ANATOMICAL FIGURE
SF 539	MEDICAL RECORD—ABBREVIATED MEDICAL RECORD
SF 558	EMERGENCY CARE AND TREATMENT

Table C-2. Patient Postoperative Management Pack

FORM NUMBER	FORM TITLE
DA 3894	HOSPITAL REPORT OF DEATH
DA 5179	MEDICAL RECORD—PREOPERATIVE/POSTOPERATIVE NURSING DOCUMENT
DD 602	PATIENT EVACUATION TAG
DD 1924	SURGICAL CHECKLIST
SF 517	CLINICAL RECORD—ANESTHESIA
SF 518	MEDICAL RECORD—BLOOD OR BLOOD COMPONENT TRANSFUSION
SF 519-B	RADIOLOGIC CONSULTATION REQUEST/REPORT
SF 549	HEMATOLOGY
SF 550	URINALYSIS

Note: Refer to AR 40-66 and FM 8-10-6 for preparation of forms.

C-3. Nursing Care of the Patient in Surgery

a. Circulator duties are performed under the supervision of the OR nurse (AOC 66E) as outlined. They include responsibilities for readiness of all equipment and supplies, safe patient care during

surgery, and continued patient care until postanesthesia recovery personnel assume responsibility for the patient.

(1) Both OR tables should be fully prepared for surgical procedures. The two OR tables may be employed simultaneously to provide surge capability and to avoid surgical backlogs.

(2) Basic sterile/aseptic techniques, as outlined in FM 8-73 and FM 8-74, should be followed at all times. Unit clinical standing operating procedures (CSOPs) should clearly delineate all responsibilities of the circulator and scrub nurse.

(3) Dependent upon patient flow and work-rest cycles, one circulator, which may be either a member of the professional nursing staff or an OR NCO, circulates for both OR tables.

(4) The collection and disposal of all body fluids is accomplished in accordance with infection control protocols and local preventive medicine (PVNTMED) guidelines. If a body part is to accompany a patient, it is placed in an appropriate container and labeled with the patient's name, social security number (SSN), and unit.

(5) The patient identification process is completed and the medical record annotated—minimal information should include name, grade, SSN, and unit.

(6) All clothing and personal gear should be removed from the patient, labeled and secured.

(7) All sponges, needles, and instruments with each surgical operation **MUST** be accounted for (refer to FM 8-74).

(8) Additional circulator duties include—

- Assisting in the preparation of IV medications and blood.
- Assisting with and directing the placement of splints and casts.
- Assisting the anesthetist with monitoring the patient's vital signs and status.
- Assisting with cardiopulmonary resuscitation as required.

b. Scrub duties are performed under the supervision of the OR nurse and the OR NCO and include—

- Following sterile technique and draping procedures, taking steps to correct breaks in sterile technique whenever possible.
- Completing surgical hand and arm scrub prior to gowning and gloving.
- Assisting surgeons with their personal gowning, gloving, and draping procedure.

- Preparing (in advance) sutures, blades, instruments, and drapes needed for anticipated procedures.

- Assisting surgeons throughout a surgical procedure, anticipating all instrument and supply needs.

- Assisting surgeons with sterile dressings; remaining sterile until instructed to "break scrub" by the anesthetist.

- Ensuring that all medical records accompany the patient into postanesthesia recovery area.

C-4. Indirect Patient Care

Indirect patient care time is increased for an FST facility compared to hospital facilities because of the limited resource environment; that is, facility design, location of oxygen, water, sanitation, removal of waste, and location of support services. Indirect care tasks include, but are not limited to—

- Obtaining and preparing medications.
- Collecting equipment for procedures.
- Emptying bedpans, urinals, and drainage bottles.
- Disposing of contaminated wastes.
- Resupplying the FST patient care areas.
- Transporting patients (litters).
- Obtaining and disposing of water.

C-5. Intravenous Standards

a. Intravenous-push medications are to be given by a member of the professional nursing staff or physician.

b. Intermittent medications administered through saline locks are to be given by the professional nursing staff and PNs because of the requirement to flush the tubing before and after giving the medication.

c. Paraprofessionals may administer blood products and IV piggyback medications if these items have been verified by a professional nursing staff member.

d. All IV additives are to be accomplished by a professional nursing staff member.

C-6. Heparin Locks

Heparin locks are used in those patients who require IV access only for the administration of parenteral medications; they are also used to avoid multiple venous punctures.

C-7. Medications

Under the supervision of a professional nursing staff member, paraprofessional nursing personnel may administer intramuscular, subcutaneous, IV drip, oral, sublingual, topical, inhaled, and rectal medications.

C-8. Vital Signs

Unless otherwise indicated, vital signs are taken and recorded every hour for all FST patients.

C-9. Intake and Output

a. Fluid intake and output is measured and recorded every hour at a minimum. A DD Form 792 is used as a work sheet with a summary of total intake and output documented on SF 539 prior to medical evacuation.

b. Intake and output measurements are done routinely on all FST patients.

C-10. Foley Catheters

a. Since Foley catheters are to be changed every 7 days (to include catheter, tubing, and bag), this procedure is not generally done by the FST.

b. Urine specimens are obtained on patients at the time they are catheterized.

c. Catheter care is provided daily, or as needed, on all patients with Foley catheters.

C-11. Hyperthermia/Hypothermia

a. Management of hyperthermia is accomplished using tepid water sponges and/or anti-pyretics.

b. Postoperative hypothermia is managed by using blood and fluid warmers, area space heaters, or total body rewarming.

C-12. Patient Hygiene

a. Patients entering the FST's facilities are to receive sufficient cleaning to permit a basic assessment.

b. Postoperative patients are evacuated as rapidly as possible. Few patients are expected to remain beyond 6 hours. Only that hygiene required to prevent skin breakdown, to ensure infection control, and to satisfy patient comfort is performed.

C-13. Dressings

a. Because of short stays in the FST area, it is not anticipated that dressings will be changed on burns, or on IV or chest tube emplacements.

b. Tracheostomy dressings will be changed when needed or every 12 hours as a minimum.

c. On all surgical patients, a "no peek" dressing policy will apply. This means that dressings will not normally be changed until the patients return to the OR for reevaluation or delayed primary closure at an Echelon III MTF. Dressings are reinforced by the nursing staff as needed.

C-14. Nasogastric Tubes

a. Unless otherwise indicated by patient condition, nasogastric (NG) tubes are irrigated once every 12-hour shift, or as often as required to ensure proper and continuous function. Unless otherwise ordered, NG tubes are placed to low suction or to dependent drainage during the postoperative phase.

b. Nasogastric tubes are essential in the management of many patients during aeromedical evacuation. The NG tubes are to be left open to air and may be placed to straight drainage. They must not be clamped during aeromedical evacuation.

c. All patients diagnosed as having an ileus are required to have a functioning NG tube in place before and during aeromedical evacuation.

d. Patients with stomach, intestinal, or colonic wounds should have a functioning NG tube in place before and during aeromedical evacuation.

C-15. Oxygen Administration

a. Oxygen is administered to all patients who exhibit signs and symptoms of moderate to severe respiratory distress, hypoxia, and moderate-to-severe cardiovascular compromise; for example, shock, Classes III and IV hemorrhages, or penetrating chest wounds.

b. The primary oxygen delivery device in the FST is the bedside oxygen concentrator. The rate of oxygen administration is 4-5 liters per minute, depending on the delivery system. A limited number of "D" cylinders are provided as emergency backup in the event of power failure or to provide higher oxygen flow rates and concentration as required.

c. Head injuries are to receive hyperventilation with at least 40 percent oxygen to decrease the risk and extent of cerebral edema.

C-16. Disposable Linen

a. Due to the limited weight and cube of the FST and the shortened length of stay, all patient care linen is disposable.

b. Refer to Table C-3 for disposable linen stockage and requirements.

Table C-3. Disposable Linen Stockage Level

I. ASSUMPTIONS:

A. INITIAL STOCKAGE LEVEL WILL BE ENOUGH TO SUPPORT THE FST FOR 72 HOURS.
B. DISPOSABLE SHEETS AND TOWELS WILL BE USED.
C. DISPOSABLE SURGICAL MASKS, DRAPES, CAPS, AND GOWNS WILL BE USED.
D. REUSABLE WOOL BLANKETS AND ALUMINIZED BLANKETS WILL BE USED.

II. PATIENT REQUIREMENTS:

A. 6 DISPOSABLE WASHCLOTHS.
B. 2 DISPOSABLE SHEETS.
C. 7 PROTECTIVE BED LINEN PADS.
D. *EVACUATION SET (2 WOOL BLANKETS, ALUMINIZED BLANKET, AND 3 LITTER STRAPS).

* Equipment listed in the set are direct exchange items and must be recovered for the losing facility in accordance with command SOP. However, there is no direct exchange of equipment when evacuation is by United States Air Force (USAF) assets.

C-17. Bedpan and Urinal Wash Point Procedures

a. Patients are to have their human waste receptacles (urinal or bedpan) disinfected after each use. Since the supporting medical company will also have the potential requirement for urinal/bedpan disinfection, one designated area for sanitizing receptacles can be used by both the holding squad of the medical company and the FST. The area should be clearly marked "for use in cleaning bedpans and urinals only" and should be placed in accordance with guidelines in FM 21-10, FM 21-10-1, and FM 8-10-1.

b. Alternative procedures using impermeable disposable bags may be used to collect and dispose of urine and feces in accordance with PVNTMED guidance or as established by the supported medical company.

C-18. Sterile Instrument and Supply Procedures

a. Forward surgical team personnel steam sterilize and plastic wrap surgical instruments and sets prior to deployment, or when they are stored for any length of time at the completion of a mission. Steam sterilization support is received from fixed MTFs or corps-level hospitals. All equipment and supplies should be stored presterilized (autoclaved) with appropriate SOPs for stock rotation.

b. Lack of quartermaster laundry support in the FST area dictates the exclusive use of disposable cloth products. These include bed linens and surgical drapes, gowns, and sponges.

c. Under FST operational conditions, low-temperature sterilization allows for maximum high-level disinfection and sterilization for the greatest number of instruments. A detailed unit SOP should be developed to allow cross-training of nonoperating room personnel on the low-temperature sterilization system.

d. The following procedures may be used in the preparation for low-temperature sterilization:

- Establish a specific area for soiled instruments. Discard disposable blades, needles, and syringes in a sharps disposal container. The container should be marked, "SHARP ITEMS FOR DISPOSAL."
- Wash instruments, glassware, and rubber and thermoplastic goods in the appropriate solution by hand. Rinse well in potable water.
- Place instruments in a chemical sterilant in accordance with manufacturer's instructions.
- Rinse instruments in sterile water and dry.
- Repackage instruments as outlined in FM 8-73.

C-19. Clinical Laboratory Procedures

a. Clinical laboratory capabilities at the level at which the FST operates are limited only to those procedures determined to be essential for far forward surgery. These include—

- Blood holding capability: 50 units of Group O PRBC.
- Electrolyte level (sodium [Na]; potassium [K]; chloride [Cl]; and carbon dioxide [CO2]), using hand-held determinator.

- Hematocrit determination using microhematocrit capillary tubes and battery powered centrifuge.

- Urinalysis using dipsticks.

- Blood gas analysis using sensor-based module.

b. Nursing personnel perform near-patient testing (NPT) and operator maintenance on laboratory equipment in accordance with appropriate technical manuals (TMs) and/or manufacturer's instructions. Quality control is done by personnel operating the equipment assisted by laboratory personnel of the supported medical company.

NOTE

Near-patient testing is the performance of laboratory tests, procedures, or measures at the extra laboratory site in immediate proximity to a patient to assess severity of injury, influence care, diagnose disease, or monitor pharmaceutical treatment. Testing in an NPT mode may be performed by either laboratory personnel or other appropriately trained health care providers.

c. Emergency transfusion of Type O low titer blood is used at this echelon of care. Subsequent requirements for type-specific blood requires coordination with the supporting medical company's area support squad for blood typing. Crossmatching is not available at this level.

d. On rapid deployment missions, the basic load of PRBCs should be ensured for both the FST and the supporting medical company. The subsequent resupply mechanism is coordinated in advance with the DMSO or supporting MEDLOG battalion.

Section II. POSTOPERATIVE RECOVERY OPERATIONS

C-20. Postoperative Recovery Techniques and Procedures

a. The scope of postoperative recovery activities encompasses those nursing practices, techniques, and procedures implemented to provide for the care of a patient after surgery.

b. Postoperative care of the critically ill patient is inclusive of the execution of the physician's orders. It involves the recovery of patients from anesthesia and continues through the time that they are medically evacuated. This care is supervised by the medical-surgical nurse and entails the following procedures:

(1) Recovery area personnel monitor the OR area to determined the estimated time of case completion. They set up the recovery area to include all equipment required for immediate intensive care procedures.

(2) An initial evaluation of the postoperative patient is completed prior to movement from the OR table to the anesthesia recovery area which includes, at minimum:

- Assisted ventilation intact with endotracheal and tracheostomy tubes secured.
- Circulatory status assessed.
- Drainage devices and IV catheters in place and secured.
- Splints intact.
- Safety straps in place.

(3) Upon taking charge of the patient from the OR, his personal effects bag is secured from the circulator and an inventory of the contents is performed as soon as possible (if not already completed).

(4) Once in the recovery area, the nursing evaluation can proceed in a deliberate manner to ensure review and management of the primary system of involvement, as well as detection and appropriate treatment of less severe injuries. The medical record and the anesthetist report is reviewed to determine the—

- Diagnosis, location, and nature of injuries.
- Surgical procedure and application of any drainage devices.
- Anesthesia, analgesia, and/or reversal agent used and time of last dose.
- Special requirements.

(5) Initial vital signs are taken immediately upon arrival of patient in the recovery area and as indicated by condition or change in condition. The patient's temperature is measured via the rectal route. The axillary route is used if the rectal route is not available.

(6) The pulse oximeter is set up and operated. The patient is placed on a cardiac monitor if an irregular pulse or a pulse greater than 100 beats per minute is noted. The following common electrocardiogram abnormalities are recognized and reported to the recovery team leader:

- Premature ventricular depolarization.
- Ventricular fibrillation.

- Tachycardia.
- Asystole.
- Atrial fibrillation.

(7) Additional assessment parameters include—

- Inspecting the injury/operative site and noting any bleeding or abnormal drainage.
- Evaluating distal circulation of injured extremities.
- Performing neurological assessment, to include level of consciousness, gross motor strength, gross sensation, and emotional status.
- Checking all skin surfaces for abnormal conditions.
- Monitoring patient's intake and output according to CSOP.

(8) Guided by the principles of combat surgery, recovery area nursing personnel perform nursing care and treatment procedures under the supervision of a professional nursing staff member and in accordance with established CSOPs. These procedures include, but are not limited to, the following:

- Performing airway management and extubation per CSOP.
- Performing continued fluid therapy and blood replacement via autotransfuser (type specific or uncrossmatched blood per surgeon's order or CSOP).
- Instituting postoperative rewarming as indicated.
- Administering medication per surgeon's order or CSOP; for example, analgesia, reversal agent, or antibiotics.
- Ensuring proper identification of patient before administering medications.
- Performing nursing measures to control pain and anxiety.
- Providing proper positioning and maintenance of cervical spine immobilization.
- Securing and positioning splints and casts.
- Performing special skin care and minor wound care, as required.
- Providing a safe environment for patients by ensuring that all equipment is grounded and that no drugs, sharp objects, or weapons are left within their reach.

- Communicating fire evacuation plan and emergency procedures in the event of hostilities.

- Providing patient instructions, as required.

(9) Controlled substances are managed in accordance with Chapter 8 of AR 40-2. Narcotics and other controlled substances are stored in a locked box that is under the surveillance of the recovery team. Accountability for controlled substances is maintained and the use, destruction, or additions are recorded on DA Form 3949-1.

C-21. Standing Operating Procedures and Orders

Tables C-4 and C-5 provide a sample outline of CSOPs and standing orders. These samples, though not all-inclusive, are a guide for developing the postoperative recovery area SOPs and physicians' standing orders.

Table C-4. Example SOP for Postoperative Recovery

POSTOPERATIVE RECOVERY STANDING OPERATING PROCEDURE
A. PURPOSE: TO DELINEATE CARE OF THE POSTOPERATIVE PATIENT AND THE PREPARATION OF THE PATIENT FOR MEDICAL EVACUATION. B. PROCEDURE: 1. ENVIRONMENTAL STANDARDS: A. PULSE OXIMETER. B. OXYGEN CONCENTRATOR, 3 TO 5 LITERS PER MINUTE. C. OXYGEN DELIVERY SYSTEM (OXYGEN MASK, HUMIDIFIERS, AND VENTILATOR WITH DISPOSABLE PATIENT CIRCUIT AND IN-LINE HUMIDIFICATION EXCHANGE DEVICE). D. CONTINUOUS AND INTERMITTENT SUCTION DEVICES. E. AMBU BAG WITH MASK AND TRACHEAL ADAPTER. F. DRESSINGS. G. INTRAVENOUS FLUIDS. H. PLEURAL DRAINAGE WITH AUTOTRANSFUSION DEVICE AND REPLACEMENT BAGS. 2. PATIENT CARE STANDARDS: A. PRIOR TO TRANSFER FROM OR TABLE, THE RECOVERY AREA LEADER IDENTIFIES PATIENT INJURIES, VITAL SIGNS, SURGICAL PROCEDURE, ANESTHESIA, REVERSAL AGENTS, AND NARCOTICS USED WITH LAST DOSE. B. RECOVERY AREA PERSONNEL PERFORM AND ACCOMPANY THE TRANSFER OF PATIENT FROM THE OR TABLE TO THE RECOVERY AREA. C. UPON ARRIVAL OF PATIENT, COMPLETE A NURSING ASSESSMENT TO INCLUDE PATIENT AIRWAY PATENCY. PLACE THE PATIENT ON OXYGEN VIA MASK AT 5 LITERS PER MINUTE UNLESS INTUBATED. (1) IF PATIENT IS INTUBATED, ENSURE THE ENDOTRACHEAL TUBE IS SECURED. (2) PLACE THE PATIENT ON THE VENTILATOR PER STANDING PHYSICIAN'S ORDERS OR ANESTHETIST DIRECTION. INITIAL OXYGEN SUPPLEMENTATION SHOULD BE 5 LITERS PER MINUTE FROM THE OXYGEN CONCENTRATOR IN-LINE TO THE VENTILATOR. SUBSEQUENT ADJUSTMENTS ARE MADE BASED ON ARTERIAL BLOOD GAS MEASUREMENTS, PULSE OXIMETER, AND PATIENT CONDITION.

Table C-4. Example SOP for Postoperative Recovery (Continued)

POSTOPERATIVE RECOVERY STANDING OPERATING PROCEDURE (CONTINUED)

D. ASSESS FOR ADEQUATE FLUID RESUSCITATION AND SHOCK. SIGNS AND SYMPTOMS OF SHOCK INCLUDE TACHYPNEA, HYPOTENSION, LOW URINE OUTPUT, PALENESS, DIAPHORESIS, AND DELAYED CAPILLARY REFILL (>3 SECONDS).

(1) INTERVENE PER STANDING ORDERS.

(2) CONTROL BLEEDING. NOTE AMOUNT. USE PRESSURE DRESSINGS AS NEEDED. NOTIFY SURGEON IF BLEEDING PERSISTS OR CHEST TUBE OUTPUT IS GREATER THAN 150 cc PER 30 MINUTES.

(3) ENSURE ADEQUATE FLUID RESUSCITATION.

(A) BLOOD REPLACEMENT FOR THE PATIENT IN PROFOUND HYPOVOLEMIC SHOCK CAN BE DONE WITH UNCROSSMATCHED TYPE O NEGATIVE BLOOD.

(B) CRYSTALLOID REPLACEMENT WITH LACTATED RINGER'S SOLUTION IS USUALLY DONE WITH 3 cc OF CRYSTALLOID FOR EACH 1 cc OF ESTIMATED BLOOD LOSS.

(C) PERSISTENT HYPOTENSION OR URINE OUTPUT LESS THAN 30 cc PER HOUR IS REPORTED TO THE ANESTHETIST FOR POTENTIAL USE OF COLLOID.

(D) MONITOR PATIENT'S RESPONSE TO FLUID RESUSCITATION TO INCLUDE PULSE, BLOOD PRESSURE, URINE OUTPUT, LEVEL OF CONSCIOUSNESS, CAPILLARY REFILL, AND PULSE OXIMETRY.

(4) EVALUATE DISTAL CIRCULATION AND INJURED EXTREMITIES, AND ENSURE FRACTURES ARE STABILIZED WITH APPROPRIATE SPLINTS OR CASTS.

(A) ELEVATE INJURED EXTREMITIES UNLESS CONTRAINDICATED.

(B) ASSESS PULSES AND CAPILLARY REFILL. ENSURE CIRCULATION IS NOT IMPAIRED BY DRESSINGS, SPLINTS, CASTS, OR IMPROPER POSITIONING.

(5) PERFORM GROSS MOTOR AND NEUROLOGICAL ASSESSMENT FOR LEVEL OF CONSCIOUSNESS, GROSS MOTOR STRENGTH, MOVEMENT, AND SENSATION. DOCUMENT DEFICIENCIES, MONITOR IMPROVEMENT OR DETERIORATION OF STATUS, AND NOTIFY SURGEON AS REQUIRED.

(6) MONITOR FOR CARDIAC ABNORMALITIES AS A RESULT OF CHEST INJURIES, ELECTROLYTE DISTURBANCES, AND SHOCK.

(A) RECOGNIZE PREMATURE VENTRICULAR CONTRACTIONS (PVCs), ASYSTOLE, VENTRICULAR FIBRILLATION, AND ATRIAL FIBRILLATION.

(B) NOTIFY SURGEON AND ANESTHETIST, AND INITIATE ADVANCED CARDIAC LIFE SUPPORT PROTOCOLS, AS INDICATED.

(7) PROVIDE CONTINUED AIRWAY MANAGEMENT, SUPPORTIVE CARE, AND MONITOR VITAL SIGNS EVERY 5 TO 10 MINUTES UNTIL THE PATIENT IS STABLE.

(8) PREPARE PATIENT FOR AND RELEASE TO MEDICAL EVACUATION CHANNELS.

(A) ASCERTAIN MEDICAL EVACUATION TRAVEL TIME OF PATIENT TO THE NEXT ECHELON MTF.

(B) ENSURE THAT PATIENT WILL RECEIVE REQUIRED CARE DURING TRANSIT TO DESTINATION MTF.

(C) ENSURE ADEQUATE AIRWAY. SECURE ENDOTRACHEAL OR TRACHEOSTOMY TUBE IF INTUBATED. REQUEST AMBU BAG, OXYGEN SUPPORT, AND OTHER EQUIPMENT AS REQUIRED.

(D) SECURE IV LINES. ENSURE LARGE BORE IV SITES AND TUBINGS ARE IN PLACE AND SECURE. PROVIDE IV FLUIDS IF THE NEED FOR BAG REPLACEMENT DURING FLIGHT IS ANTICIPATED.

(E) SECURE FOLEY CATHETER AND OTHER DRAINAGE TUBES. DO NOT CLAMP FOLEY OR NG TUBES. THE FOLEY IS CONNECTED TO THE DRAINAGE BAG. THE NG TUBE IS PLACED TO STRAIGHT DRAINAGE BAG.

(F) DISCONTINUE CHEST SUCTION AND ENSURE HEIMLICH VALVE IS FUNCTIONING ON ALL CHEST TUBES.

(G) WRAP PATIENT SECURELY IN APPROPRIATE BLANKETS AND SECURE LITTER WITH A MINIMUM OF 3 LITTER STRAPS. ENSURE THAT NO BLANKETS OR SUPPLIES ARE LEFT LOOSE ON THE LITTER BEFORE TRANSPORT OF PATIENT.

(H) COMPLETE THE PATIENT RECORD AND SEND ALL MEDICAL RECORDS WITH THE PATIENT. TOTAL AND RECORD FLUID INTAKE AND OUTPUT PRIOR TO RELEASE FOR MEDICAL EVACUATION.

Table C-4. Example SOP for Postoperative Recovery (Continued)

POSTOPERATIVE RECOVERY STANDING OPERATING PROCEDURE (CONTINUED)

CONCISELY RECORD THE PATIENT'S CONDITION IMMEDIATELY PRIOR TO DEPARTURE. PROVIDE THE FLIGHT MEDIC/NURSE WITH A BRIEF REPORT ON THE PATIENT'S STATUS AND IN-FLIGHT NEEDS. ENSURE THAT ALL SUPPLIES REQUIRED DURING TRANSPORT AND PERSONAL EFFECTS ARE WITH THE PATIENT.

NOTE

WEAPONS AND PERSONAL EFFECTS OF PATIENTS ARE NOT TRANSPORTED BY MEDICAL EVACUATION PLATFORMS. THE SUPPORTED MEDICAL COMPANY ENSURES THAT SUCH ITEMS ARE RETURNED TO THE SOLDIER'S UNIT.

(l) RELEASE PATIENT TO MEDICAL EVACUATING ELEMENT PER STANDING (OR SURGEON'S) ORDER.

Table C-5. Example Standing Order

COPY NO. 1 OF 3 COPIES
218TH FST, 2 MED GP
250900Z SEP 1994

STANDING ORDER NO. 3: FOR THE EXECUTION OF CLINICAL PROCEDURES

EXECUTING PERSONNEL: POSTOPERATIVE RECOVERY

IMPLEMENT THE FOLLOWING STANDING ORDERS FOR RECOVERING POSTOPERATIVE PATIENTS:

1. VITAL SIGNS: TAKE EVERY (q.) 5 TO 10 MINUTES UNTIL STABLE, THEN TAKE q. 30 MINUTES DEPENDING ON PATIENT'S STATUS.

2. OXYGEN: ADMINISTER 2 TO 5 LITERS PER MINUTE VIA MASK.

3. INTRAVENOUS INFUSION: ADMINISTER RINGER'S LACTATE 150 cc PER HOUR—BOLUS 500 TO 1,000 cc—THEN INCREASE FLUID RATE TO 200 cc TO ACHIEVE A BLOOD PRESSURE OF EQUAL TO OR GREATER THAN ($\geq$) 100 MILLIMETERS OF MERCURY (mm Hg) AND/OR URINE OUTPUT OF $>$30 cc PER HOUR.

CAUTION

NOTIFY SURGEON FOR PERSISTENT URINE OUTPUT OF $<$30 cc PER HOUR AND/OR WHEN THERE IS EVIDENCE OF REBLEEDING.

4. CHEST TUBE:
   - CONNECT CHEST TUBE TO PLEURAL DRAINAGE AT 20 CENTIMETERS SUCTION.
   - AUTOTRANSFUSE CHEST DRAINAGE q. 15 TO 20 MINUTES AND AS CIRCUMSTANCES REQUIRE (p.r.n.) FOR VOLUME OVER 200 cc.

Table C-5. Example Standing Order (Continued)

CAUTION
NOTIFY SURGEON FOR CHEST DRAINAGE OF >150 cc PER 30 MINUTES.

5. VENTILATOR: INITIATE THE FOLLOWING SETTINGS FOR VENTILATOR ASSISTANCE:
- SYNCHRONIZED INTERMITTENT MANDATORY VENTILATION (SIMV), 12/MINUTE; TIDAL VOLUME (TV), 12 cc/KILOGRAM.
- OXYGEN FLOW TO MAINTAIN OXYGEN SATURATION >90 PERCENT POSITIVE END-EXPIRATORY PRESSURE (PEEP) 5 CENTIMETERS.
- PEAK FLOW 45 LITERS PER MINUTE AND ADJUST AS NEEDED.

6. EXTUBATION CRITERIA:
- PATIENT'S SPONTANEOUS RESPIRATION IS 14 TO 20 INHALATIONS PER MINUTE.
- PATIENT IS ABLE TO COUGH AND BREATHE.
- PULSE OXIMETER SETTING MUST BE NO LESS THAN 92 PERCENT.
- PATIENT AROUSES SPONTANEOUSLY AND CAN LIFT HEAD OFF BED.

CAUTION
DO NOT EXTUBATE PATIENT WITH INHALATION INJURY, SURGICAL SPINE INJURY OR REQUIREMENT FOR CONTINUED ASSISTED VENTILATION.

7. NASOGASTRIC SUCTION: REGULATE NG TUBE TO LOW SUCTION OR STRAIGHT DRAINAGE.

8. ANALGESIA: ADMINISTER MORPHINE SULFATE 2 TO 10 MILLIGRAMS IV q. 2 HOURS p.r.n.

9. ANTIBIOTICS (CHECK ONE):
- ____ CEFAZOLIN SODIUM, 1 GRAM IV q. 8 HOURS.
- ____ CEFOXITIN SODIUM, 1 TO 2 GRAMS IV q. 6 TO 8 HOURS.
- ____ GENTAMICIN SULFATE, ____MILLIGRAMS q.__HOURS.

10. PATIENT RELEASE.
A. RELEASE FOR MEDICAL EVACUATION WHEN PATIENT AROUSES SPONTANEOUSLY, CAN LIFT HEAD OFF BED, WHEN BLOOD PRESSURE IS EQUAL TO OR GREATER THAN 100 mm Hg (SYSTOLIC) AND STABLE, AND WHEN THERE IS NO EVIDENCE OF REBLEEDING.
B. DISCONTINUE CHEST SUCTION AND PLACE HEIMLICH VALVES ON ALL CHEST TUBES.
C. DISCONTINUE NG TUBE SUCTION AND ENSURE THAT TUBE IS OPEN TO AIR OR TO STRAIGHT DRAINAGE.

(SIGNATURE) _____
TEAM COMMANDER
LTC, MC

C-22. Procedures for Medical Evacuation of Patients

a. The FST recovery area has the responsibility of preparing patients for release to the medical evacuation chain. The evacuation of a patient is initiated by the surgeon in accordance with established unit

SOP. The recovery area coordinates with the supporting medical company for the movement of the patient and ensures that the—

- Medical evacuation request includes requirement for surgical equipment and/or providers.
- Patient is sufficiently stabilized for the anticipated mode and duration of travel.
- Patient's airway and breathing is adequate for movement.
- Patient's IV lines, drainage devices, and tubes are fully secured and patent.
- Heimlich valves on chest tubes are functioning.
- Foley catheters are placed to straight drainage and that the NG tubes are open to air and straight drainage.
- Patient is securely covered in a woolen/aluminum blanket for air transport, cold environment, and/or postoperative hypothermia.
- Three litter straps are in place and that the patient is secured to litter in the proper position according to condition/injuries.
- Personal effects and all medical records accompany the patient.

b. Patients stabilized at the FST will be routinely evacuated by Army medical evacuation platforms to the supporting Echelon III (corps or joint task force) hospital. The Echelon III MTF then assumes responsibility for the patient as the originating MTF for Tactical Aeromedical Evacuation System (TAES) requirements and completes the necessary documents. However, in joint or split-based operations where a brigade is deployed separate of a contiguous corps, and the USAF is required to evacuate from the BSA, then the supporting medical company will assume the TAES administrative requirement.

NOTE

Due to other patients awaiting medical evacuation at the medical company, the brigade surgeon or designee determines the evacuation precedence for all patients. This is done in consultation with the FST's chief surgeon and/or senior nurse.

c. Personal effects (money, documents, pictures, jewelry, and the like) will be documented by the supporting medical company and accompany patients when they are evacuated from the FST.

APPENDIX D

COMMUNICATIONS

D-1. Communications Requirements

a. Forward surgical teams require redundancy in external communications capabilities to communicate with their higher headquarters, intermediate OPCON headquarters, and supporting/supported units. Effective management of FSTs, especially during insertion and extraction operations, depends on adequate communications to keep abreast of changing situations and requirements.

b. Organic communications capability for the FST is currently limited to the FM combat net radio, AN/VRC 90A, and the digital nonsecure voice telephone (DNVT) TA-1035/U, along with the AN/UXC-7 lightweight digital facsimile (LDF) machine. While this equipment is currently considered adequate communications for FST operations, when the corps team deploys it relies on the supporting/supported unit to assure its communications capability. For example, the FST will require—

- Access to the CSH/FSB/support squadron MSE terminal to operate its DNVT, TA-1035/U, and its tactical LDF, AN/UXC-7.

- Access to the CSH/FSB/support squadron medical company/troop SB-22 switchboard to operate its wire telephone sets (TA-312/PT).

- Signal operating instructions, with designated call sign to enter and operate in the DMOC\support squadron medical operations net.

D-2. Mobile Subscriber Equipment Subscriber Terminal (Fixed)

The MSE telephone, mobile radiotelephone, facsimile, and data terminals (as part of the ACUS) are user owned and operated. The using unit is responsible for running wire to the designated distribution boxes. Those boxes tie the medical company/troop and FST MSE telephones into the extension switches that access the system. The subscriber terminals used by the unit are digital, four-wire voice as well as data ports (of TA-1035 DNVTs) for interfacing the LDF AN/UXC-7. Refer to FM 8-10-1 (Appendix L) and FM 63-20 (Chapter 4).

D-3. Mobile Subscriber Equipment Wire Subscriber Access

a. Wire subscriber access points provide the entry points (interface) between fixed subscriber terminal equipment and the MSE area system operated by the supporting signal unit. The two types of interface equipment are—

- The signal distribution panel, J-1077 (each panel provides up to 13 subscriber access points).

- Remote multiplexer combiners which provide access for eight subscriber access points.

b. The FST, CSH, and medical companies/troops are responsible for installing and operating fixed subscriber terminal instruments (DNVT TA-1035). They must also install and maintain the WF 16 field wire from the instruments to the interface point (J-1077 distribution panel [refer to Chapter 3 of FM 8-10-14]).

D-4. Digital Nonsecure Voice Telephone and Lightweight Digital Facsimile

a. The DNVT TA-1035/U (Figure D-1) is a prime subscriber terminal that provides full-duplex digital voice communications and a voltage reference signal for data subscribers in the MSE system. It is also equipped with a data port that allows the team to use its LDF AN/UXC-7 in accessing the MSE network.

Figure D-1. Digital nonsecure voice telephone, TA-1035/U.

b. The LDF AN/UXC-7 set (Figure D-2) is a rugged, waterproof, low-power system capable of operating from standard alternating current and vehicle direct current power. It enables electronic transmission/reception of typed or handwritten record traffic, view graphs, map overlays, transparencies, and hand-drawn copies up to 8 1/2 by 11 inches in black and white format (two shades of gray). The LDF will operate over existing and proposed voice radios and wire circuits and has full digital or analog data/voice capability. Its brief transmission (burst) reduces the chance of detection by the enemy. The critical advantages are made possible by the LDF set's ability to store data in memory and then send it in short, high-speed transmission requiring 7 to 15 seconds to transmit a full page. The AN/UXC-7 is primarily used by the FST to send and receive hard copy detailed clinical data upon demand.

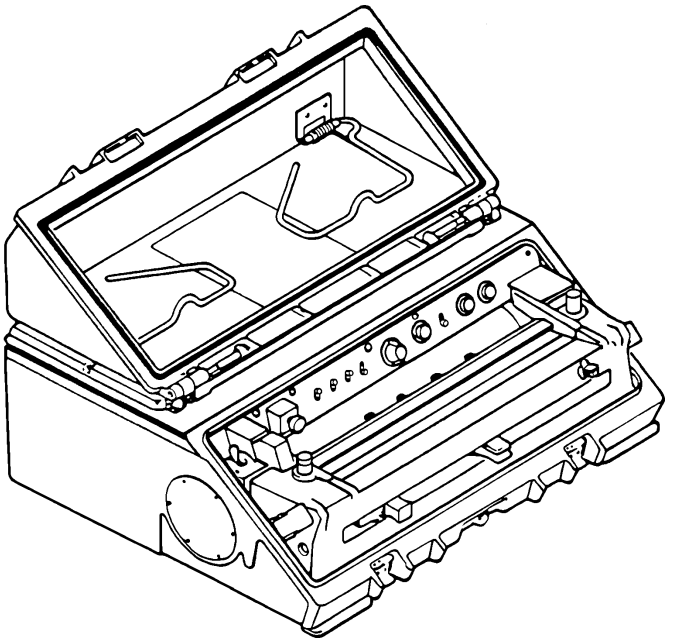


Figure D-2. Tactical lightweight digital facsimile, AN/UXC-7.

D-5. Radio Nets and Equipment

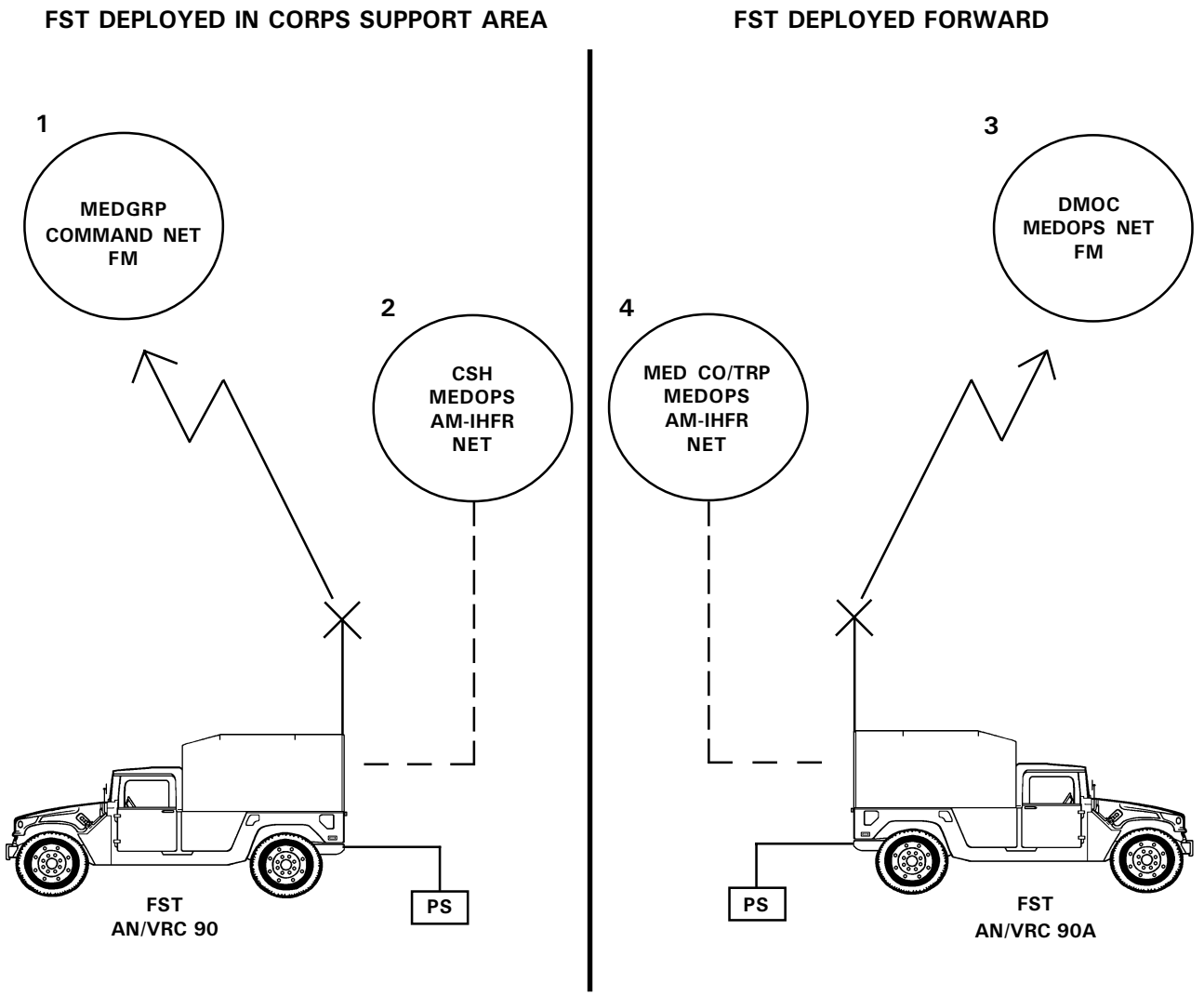
a. The FST is normally deployed in the medical operations net of the area in which it is employed (Figure D-3). The corps FST, when not deployed forward, will operate in the medical group or its designated headquarters command net.

b. Forward deployed surgical teams normally operate in the DMOC FM medical operations net and/or the medical company/troop command net of the separate brigade and ACR.

c. While FSTs are not provided organic AM improved high-frequency radio (IHFR) capability, they should be allowed access to this radio, when required. The availability of the AN/VRC 193A and AN/VRC 213 AM-IHFRs in the CSH and/or medical company\troop ensures radio communications redundancy for this element.

d. The headquarters deploying the FST and the commander to which the unit is placed OPCON ensures that it is provided appropriate SOIs.

e. The FST employs an AN/VRC-90A radio illustrated in Figure D-4 (Page D-5). It is actually a vehicular-mounted AN/VRC-87 radio with a power amplifier added for long-range capability. The AN/VRC-90A is used where the communications range must normally operate over long distances (up to 35 kilometers [km]). It also has the capability to transmit and receive in a secure mode.



NOTES:

1. **Operates in medical group command FM net.**
2. **Provided SOI and access to CSH AM-IHFR AN/193A when required.**
3. **Provided SOI to operate in DMOC FM net.**
4. **Provided SOI and access to medical company/troop AM-IHFR net.**

Figure D-3. Forward surgical team's radio net capability.

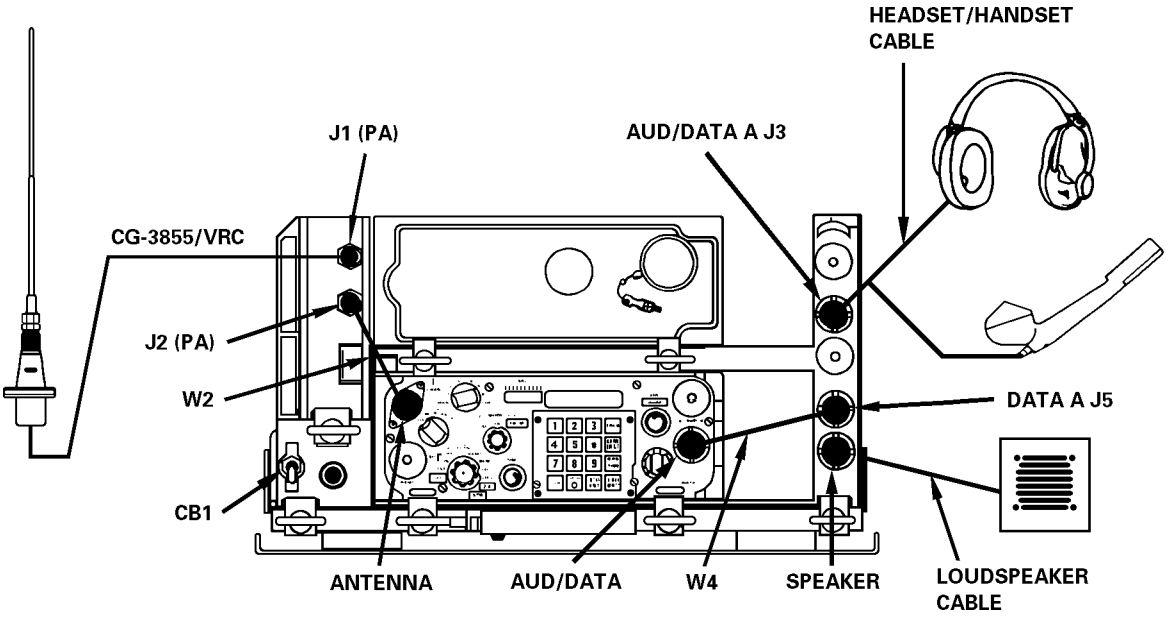


Figure D-4. Vehicular long-range radio, AN/VRC-90A.

D-6. Internal Wire Communications

While the FST employs DNVT MSE, the unit will retain its conventional wire communications equipment, the TA-312 wire telephones, for alternate external communications. The unit will be provided access to the corps hospital's and medical company's/troop's SB-22 switchboard and will operate in their wire communications net. See FM 8-10-1, Appendix L.

D-7. Navigational System Tracking and Range Global Positioning System/Precision Lightweight Global Positioning System Receiver

a. The navigational system tracking and range (NAVSTAR) GPS is a space-based, radio-positioning navigation and timing system that operates on two low-band channels, 1575.42 megahertz (MHz) and 1227.6 MHz (L2). There are three major segments that comprise the GPS: satellite, ground control, and user. The satellite segment, when fully operational, will have 24 satellites in six orbital rings. The ground control segment includes the number of control stations and antennas located throughout the world. A user segment consists of NAVSTAR GPS user equipment and associated support equipment.

b. The AN/PSN-11, PLGR, is a small lightweight device (Figure D-5) consisting of a receiver/processor unit, control display, and antenna. The PLGR is designed for hand-held operation, but can be

mounted in a variety of ground vehicles. Components are configured in a contained unit. Accessories include a helmet-mounted antenna for use by airborne units during high altitude/high operating mission, a remote antenna with cable, generic installation kit, and a power cable for vehicle use.

c. The PLGR provides passive, three-dimensional position, velocity, and time derived from signals of the satellite constellation. The device provides precise positioning service to users requiring that capability. The circle error probable is 10 meters. The spherical error probable is 16 meters.

d. The FSTs employ the PLGR device in deploying and redeploying operations.

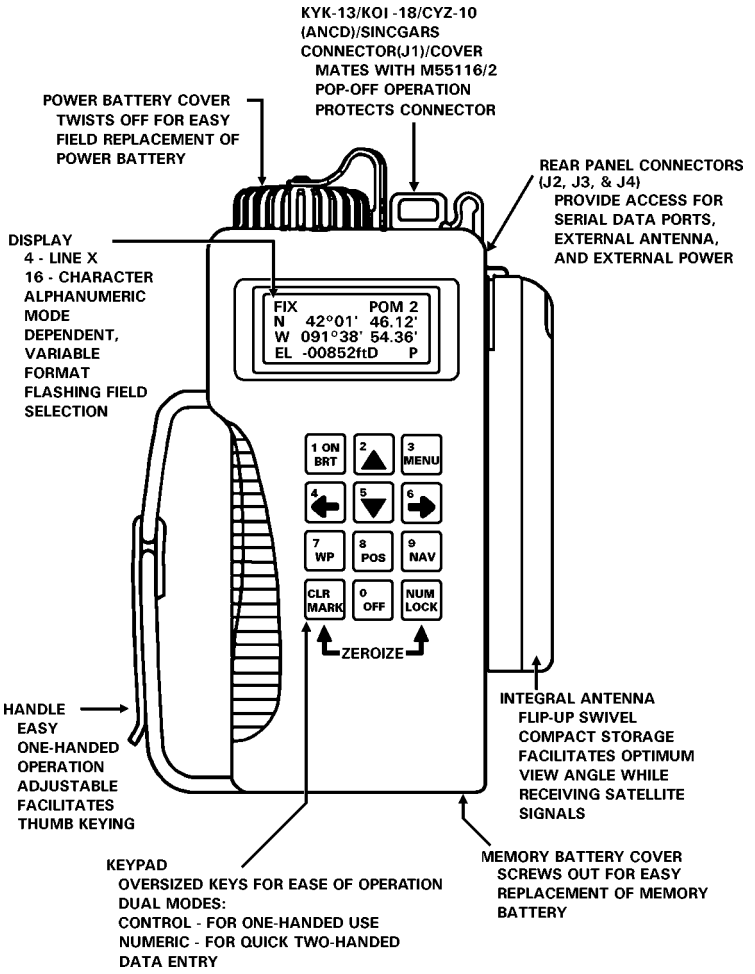


Figure D-5. Precision lightweight global positioning system receiver, AN/PSN-11

APPENDIX E

LOGISTICS

Logistics is an integral part of any operation. Without adequate planning for supply and services, maintenance, and transportation, the health care delivery mission cannot be successfully executed. Commanders and staffs at all levels must ensure that a viable support base is established and maintained. The primary provider of CSS within the corps is the corps support command (COSCOM). The multifunctional organization within the COSCOM that normally provides supply, services, and maintenance is the corps support group (CSG). The CSG, as the name implies, ordinarily provides CSS to units within a given geographical area of responsibility. The task organization of a CSG will depend on the number and type of units supported. The primary provider of CSS within the division is the DISCOM. The functional organizations within the DISCOM that normally provide supply, services, and maintenance support are the MSB and the FSB. Within the separate infantry brigade and ACR, CSS identical to that of the MSB/FSB is provided by the support battalion and the support squadron.

E-1. Supply

a. Supply usage varies with the type and duration of the operation. Historical records of previous operations are the best sources of planning data. Lacking these records, gross planning factors may be found in FM 101-10-1/2. Starting figures may need to be adjusted up or down based on the geographical location of the operation and the proximity of supply support activities (SSAs). As a minimum, the organization should deploy with a unit basic load (UBL) in all classes of supply, plus a safety level based on when supporting units are expected to be fully operational.

b. The best rule of thumb is to plan for the worst case and then back off those estimates as support relationships firm up. Once a demand history has been established, actual data should be used to determine resupply requirements. However, historical and demand factors should be balanced with the realities of maintaining maximum unit mobility.

c. Requisition and issue procedures for general supplies may vary from SSA to SSA and, if time permits, these procedures should be determined well in advance of the operation. As a minimum, the SSA will require a signature card (DA Form 1687) and assumption of command or appointment orders prior to establishing an account for the unit. Department of the Army Pamphlet 710-2-1 provides guidance for establishing an account with an SSA.

d. Supplies will normally be delivered by one of the three following methods:

- Unit distribution—a process whereby the supplier delivers to the requesting unit.

- Supply point distribution—a more common method, where the user must pick up supplies from the SSA's supply distribution point using organic assets. The CSH must be prepared to receive practically all of its supplies through the supply point distribution method to support the FSTs.

- Throughput—a process in which critical items in short supply may be delivered directly from the item manager to the requesting unit, bypassing intermediate supply activities.

e. The general supply category normally includes—

- Subsistence items (Class I).
- Clothing and organizational equipment (Class II).
- Packaged petroleum, oils, and lubricants (POL) and industrial gases (Class III).
- Construction materials (Class IV).
- Personal demand items (Class VI).
- Major end items (Class VII).

General supplies are normally obtained from a supporting COSCOM supply and service company by supply point distribution. General supply requirements depend entirely upon the theater and intensity of the operation and must be forecast on a case-by-case basis.

f. The remaining classes of supply fall outside the general supply category and are individually managed by class. These are—

- Bulk fuels (Class III/POL).
- Ammunition (Class V).
- Medical materiel, to include medical-unique repair parts (Class VIII).
- Repair parts (Class IX).

Other classes of supply are normally obtained from units designed specifically to handle a single class of supply, such as an ammunition company, a maintenance company, or a MEDLOG battalion.

E-2. Logistics Planning for Specific Classes of Supplies

For the operation and employment of the FST, Table E-1 shows planning factors for specific classes of supplies. These planning factors are provided to assist medical planners in determining logistical sustainment requirements for corps FSTs.

Table E-1. Planning Factors for Supply Classes I, II, IV, VI, VII, and IX

LOGISTICS PLANNING FACTORS			
	POUNDS/MAN/DAY	**POUNDS/UNIT/DAY**	**SHORT TONS/UNIT/DAY**
CLASS I, RATIONS 1 MRE AND 2 UGR RATIONS/DAY	6.72	132.4	0.0622
CLASS II, SUPPLIES	3.67	73.4	0.0367
CLASS IV, BARRIER	4	80	0.04
CLASS VI, PERSONAL	3.2	64	0.32
CLASS VII, MAJOR END ITEMS	15	300	0.15
CLASS IX, NONMEDICAL REPAIR	2.5	50	0.025
TOTALS: (RATION-DEPENDENT)		699.8	0.6339

NOTE: No Medical B Rations are required for FST patients

E-3. Maintenance

a. Maintenance is defined as the sustainment of materiel in, or its return to, an operational ready state. There are four levels of maintenance in the Army: unit, direct support, general support, and depot. The focus of direct support maintenance is to repair and return equipment to the user as far forward as possible, while general support maintenance is performed at the EAC in support of the theater supply system. A detailed discussion of maintenance may be found in AR 750-1 and FM 9-43-1.

b. The two maintenance levels of concern to the FST/CSH are unit (operator and organizational) maintenance and direct support maintenance. Evacuation of material to any other level normally results in the permanent loss of that piece of equipment to the team. A replacement will then have to be ordered through the theater supply system.

c. A vigorous training program is required to maintain the proficiency of unit maintenance personnel. Maximum emphasis will be on operator- and organizational-level maintenance to ensure that all equipment, to include medical and communications, remains in a combat-ready state.

d. When the CSH deploys, it does so with all of the available maintenance assets required to support the FST. A complete prescribed load list (PLL), as well as any reparable management (formerly reparable/exchangeable) parts authorized for unique pieces of equipment, should also be deployed. If no reparable/exchangeable items have been authorized, an attempt must be made to identify critical items and seek their authorization. When possible, all equipment should be repaired on-site, either by organizational maintenance personnel or a direct support maintenance support team (MST).

e. The CSH or unit to which the FST is attached/assigned provides maintenance of vehicles and communications and power-generation equipment. When the FST is attached to a medical company/troop, it will require support from the supporting support battalion/squadron.

f. When FSTs deploy to supported medical companies, they are dependent upon those units for support maintenance. The units should be capable of providing (or arranging for) automotive support, but may be capable of providing only limited medical maintenance support. The medical brigade/group should be prepared to ensure any support beyond the capabilities of the forward supported unit is provided. For example, consideration may be given to direct support through either organic maintenance personnel of the CSH or coordination with MEDLOG battalion for a contact MST.

g. Operator maintenance of medical equipment is a critical aspect of medical readiness. An aggressive training program for assigned operators helps to reduce equipment downtime and allow for more effective utilization of organizational maintenance personnel. Operators must be aware of the condition of their equipment at all times. Deficiencies must be reported as they occur in order to prevent excessive backlogs. A good operator maintenance program ensures that the medical equipment is fully mission capable when needed, such as when a patient is on the OR table.

h. Organizational medical equipment maintenance for the FST is performed by unit medical equipment repairers of the CSH, the medical company, and the medical troop. Sufficient PLL of medical repair parts as authorized by the Supply Bulletin (SB) 8-75 series should be maintained by these units for the FST. The PLL should include a bench stock of miscellaneous hoses, fittings, tubing, and clamps for quick repairs as well.

i. Direct and general support medical equipment maintenance for FSTs is provided on an area basis by the MEDLOG battalion. A medical equipment density listing by manufacturer and model number should be provided to the supporting MEDLOG battalion medical maintenance element to facilitate direct support maintenance for those pieces of equipment. The MEDLOG battalion and separate detachments have the capability of providing an MST forward when situations warrant.

j. Table E-2 depicts the FST's annual maintenance man-hour (MMH) organizational and direct support requirements. It also shows the specific MOSs that are required to provide maintenance support to the unit.

E-4. Food Service

a. The FST is dependent on supporting/supported units to provide food service support. However, the unit will normally draw and maintain a basic 3-day supply of meals, ready to eat (MRE).

b. The team will be fed under the standard Army policy which states that individuals will be fed one MRE and two B Rations per day, or a standard variation of one MRE and two hot T Ration meals per day. Table E-1 depicts the Class I ration planning factor for an FST.

c. The current operational ration is the T Ration, consisting primarily of nonperishable items. This ration is normally enhanced or supplemented with fresh fruits, milk, bread, and dry cereal, when available.

Table E-2. Organizational and Direct Support MMH Requirements

MAINTENANCE			
COMMUNICATIONS	**TRANSPORT**	**POWER GENERATION**	**MEDICAL EQUIPMENT REPAIR**
INSTALL KIT: MK-1 LTWT DIG FAX REELING MACH CBL AN/VRC-90A TA-1035/U TA-312 POWER SUPPLY	HMMWV (6) TRL CGO: HIMOB (6)	DISTR SYS EL (2) 5 KW GEN SET (2) UTIL RECEPT	ELECTROSURG AP (2) MED EQUIP SET REFRIG BIOL SINK UNIT, SURG (2)
92 TOTAL MMH	461 TOTAL MMH	570 TOTAL MMH	160 TOTAL MMH
MOS 31U	**MOS** 63B 63W	**MOS** 52D	**MOS** 91A

NOTES: 1. The corps hospital or unit to which attached provides maintenance of communications equipment, vehicles, and power generation equipment. When attached to a medical company, the FST requires maintenance support from the FSB, the MSB, or the ASMB.
2. The corps hospital or the MEDLOG Bn (FWD) provides medical equipment repair.

E-5. Water Supply

a. Water supply is provided on an area basis by CSS quartermaster (QM) units using supply point distribution. Water points are established in the AO by the supporting unit. When water support is required, water points are established in the AO, then a dry water point is set up for supply point distribution at a location convenient to consumers. This is usually done by QM-employed, semitrailer-mounted, fabric tanks or forward area water point supply systems. Armored cavalry regiments and separate brigades have organic water supply sections that supply water support. Water support for brigades within a division is normally provided by the division's supply and transportation battalion or the MSB, depending on the type of division. The forward deployed FST provides its daily water requirement to the supported unit. These requirements are sent to the supporting water point.

b. Potable water is defined as water which is sufficiently pure in mineral content and free of microbiological contamination to be suitable for drinking or other consumption without producing adverse health effects. Treated water is defined as nonpotable water which has been disinfected or otherwise processed to remove undesirable contaminants and made safe for showers or other nonconsumptive uses.

c. Detailed water consumption planning factors may be found in FM 101-10-1/2. Table E-3 provides water consumption planning factors for normal environmental conditions in planning the employment of the FST.

Table E-3. Water Consumption Planning Factors, Class I

LOGISTICS PLANNING FACTORS				
	WATER REQUIREMENTS			
STAFF	3.4—6.7	GAL/PERSON/DAY	68—134	GAL/DAY
SURGERY	13	GAL/PATIENT/DAY	130	GAL/DAY
PATIENT CARE	3	GAL/PATIENT/DAY	30	GAL/DAY
VEHICLE MAINTENANCE	0.5—1	GAL/VEHICLE/DAY	1.5—3	GAL/DAY
LOSS/WASTE	10%		23.1—30	GAL/DAY
TOTAL			254.1—330	GAL/DAY

NOTES: 1. Planning factors for water consumption indicate that the medical company water storage capability is sufficient for both the medical company requirements and one FST.
2. Under hot, arid conditions, the medical company and FST will require additional water distribution from the DISCOM assets.

E-6. Fuel, Petroleum, Oils, and Lubricants

a. Class III supplies include bulk fuels, packaged POL, and industrial gases. Coordination can be made for unit distribution of fuel when required quantities exceed organic haul capabilities of the requesting unit.

b. Packaged POL are normally drawn from the supporting QM supply company. The OPLAN should indicate where POL is to be drawn.

c. Of paramount importance is the maintenance of sufficient bulk fuel levels for the continuous operation of power-generation equipment. Vehicles should be maintained in a "topped-off" condition at all times to facilitate rapid movement on short notice. On-hand quantities of bulk fuel should be maintained at a sufficient level to permit 36 to 48 hours of operation without resupply when possible.

E-7. Fuel Consumption Planning

a. Fuel consumption planning factors for the FST are provided in Table E-4. These factors can be used to forecast unit fuel requirements for any type of operation.

b. The fuel consumption rate for power-generation equipment may vary with the load on the generator, but the variation should not be so significant as to cause a shortfall. The corps FST will be dependent upon the supported unit for fuel support when it is forward deployed and, as such, it should be provided with bulk fuel requirements prior to deployment.

Table E-4. Consumption Planning Factors, Class III (Petroleum, Oils, and Lubricants)

LOGISTICS PLANNING FACTORS						
LIN	**CLASS III (BULK)**	**CONSUMPTION RATE**	**USAGE FACTOR**	**CONSUMED GAL/DAY**	**WEIGHT**	**CUBE**
G11966	5 KW GENERATOR	0.57 GAL/HR	24 HRS/DAY	13.68	95.76	1.824912
T61494	TRK CGO 1L TON (X-6)	0.0621 GAL/KM	25KM/2 DAYS	4.6575	28.8765	.623172
			TOTAL	18.34	124.64	2.45

NOTES: 1. When operating within the FSB area, the FST moves 25 KM every 2 days, average.
2. Class III (packaged) not included.

E-8. Small Arms Ammunition

The unit should deploy with a UBL of small arms ammunition. Ammunition is drawn from the ammunition supply point which is operated by the ammunition company of the forward corps support battalion, divisional MSB/FSB, and support squadron of the ACR. Table E-5 provides ammunition usage planning factor for the employment of all FSTs.

Table E-5. Class V Planning Factors

LOGISTICS PLANNING FACTORS					
LIN	**QTY**	**DODIC**	**NOMENCLATURE**	**USED**	**LBS**
P98152	4		PISTOL 9MM AUTO		
		A363	CTG 9MM x M882 2000/BX	4	
R95035	16		RIFLE 5.56MM M16A2		
		A059	CTG 5.56MM BALL 10/CLIP	672	20
		A063	CTG 5.56 TRACER SGL RD	156	6
			TOTAL POUNDS		26
			TOTAL PERSONNEL		20

NOTES: 1. Profile: Light Division Europe, 1 day of combat, defense, first day, light.
2. FST personnel are provided weapons for personal defense and for the protection of the sick and wounded in their care.

E-9. Supply and Services

a. Laundry. Laundry and shower services are provided to the FST by the supporting field service company in its operational area.

b. Mortuary. The forward mortuary affairs collection points receive, identify, and arrange for evacuation of remains to a main collecting point. Arrangement for mortuary collection from the FST will be handled by the supported medical company or supporting CSH (if the FST is collocated).

c. Clothing and Post Exchange. Clothing and Post Exchange sales/service is provided in the theater by sales detachments BA, BB, and BC. The sales detachments are attached as required to the corps support battalions (or companies) and are capable of providing both mobile and static facilities in the corps support areas and the DSAs. The hospital may be required to provide power to these facilities when collocated. Personal-demand items (soap, razors, feminine hygiene items, and so forth) are normally provided through these sales detachments. In an immature or austere theater, Class VI items may be issued as sundry packs at the ration breakdown point. The types and contents of these sundry packs are listed in FM 101-10-1/2.

E-10. Medical Supplies

a. Class VIII. Medical supplies consist of Class VIII materiel which also includes medical-unique repair parts used to sustain the health care system. The unit should deploy with all expendable supplies authorized by the unit assemblage listing, as well as any supplies deemed necessary for patient care in accordance with AR 40-61.

b. Resupply. Resupply of medical supplies and medical-unique repair parts is accomplished by the MEDLOG battalion (forward). Initial resupply may consist of preconfigured medical supply packages developed at the MEDLOG battalion. These preconfigured packages are designed to meet gross resupply requirements until line-item requisitioning can be established. The use of preconfigured packages may continue on an exception basis as dictated by the operation. Normally, resupply of the corps FSTs is through the CSH distribution point. Forward deployed FSTs may receive resupply through DMSO/BMSO/RMSO at medical company/troop distribution points. Resupply of the FST may be expedited by the use of air ambulance direct support or by the backhaul method.

c. Patient Equipment. In the process of patient evacuation, litters, litter straps, blankets, and like items accompany the patient. To ensure that such items are always available, an exchange system will be established. When possible, this should be a direct item-for-item exchange. The system should provide for stockpiling such items in probable areas of use. There is, however, no exchange of medical materiel with USAF evacuation assets.

d. Class VIIIb. When the FST is located with the medical company/troop in the brigade/squadron area, blood will be obtained through the DMSO, RMSO, or BMSO (in the separate brigade). Blood is provided through supply point distribution from the blood platoon of the MEDLOG battalion. When the FST is deployed away from the medical company/troop, blood will be requested from and

provided by the MEDLOG battalion. In joint operations, the FST will obtain blood from a blood supply unit designated by the theater/area joint blood program officer. Tables E-6 and E-7 provide blood and oxygen planning factors for FST deployment.

Table E-6. Planning Factors for Supply of Blood (Class VIIIb)

LOGISTICS PLANNING FACTORS	
57 FORWARD SURGERY PATIENT CONDITIONS DAILY AVERAGE PRBC REQUIRED PER DIVISION	61 UNITS PRBC
61 PER 3 FORWARD SURGICAL TEAMS/DIVISION	20 UNITS PRBC/FST/DAY
BASIC LOAD PRBC/FST = 3 DOS	60 UNITS PRBC/FST
STORAGE CAPACITY:	
FST = 50 UNITS PRBC MEDICAL COMPANY = 50 UNITS PRBC	
TOTAL: 100 UNITS PRBC	

SOURCE: Blood usage per 57 patient conditions, DEPMEDS policy and guidelines.

NOTE:
1. For early entry operations, the basic load of Class VIIIb should be deployed with the FST and the Medical Company.
2. Subsequent distribution must be planned throught the Blood Program Office.

LEGEND:
DEPMEDS Deployable Medical Systems
DOS days of supply
PRBC packed red blood cells

E-11. Geneva Conventions Considerations for Medical Materiel

Medical supplies are protected under the Geneva Conventions and should be maintained separately from other supplies. The Geneva Conventions preclude the willful destruction of medical materiel. When a commander, because of operational necessity, must leave patients behind, it is essential that sufficient medical materiel and personnel be left for the care of those patients. Under every other condition, medical materiel and equipment should be evacuated.

Table E-7. Planning Factors for Supply of Oxygen (Class VIII)

LOGISTICS PLANNING FACTORS		
REQUIREMENTS:		
OR TABLE (24 OPERATING TABLE HOURS)	2.8 LITERS/MINUTE	4,032 LITERS/DAY
RECOVERY COTS	4.5 LITERS/MINUTE (50% PATIENTS)	8,100 LITERS/DAY
(RECOVERY TIME/PATIENT = 6 HOURS)	3.1 LITERS/MINUTE (50% PATIENTS)	5,580 LITERS/DAY
TOTAL:		**17,712 LITERS/DAY**
OXYGEN CAPACITY:		
EIGHT OXYGEN CYLINDERS D SIZE (INTERMITTENT USE)	359.63 LITERS/TANK	2,877.04 LITERS TOTAL
EIGHT OXYGEN CONCENTRATORS	7200 LITERS/DAY/CONCENTRATORS	57,600 LITERS TOTAL
TOTAL:		**60,477 LITERS/DAY**

NOTE: Oxygen concentrators provide a compact, oxygen generating capability for far forward use.

E-12. Transportation Planning and Movement

a. Transportation planning is the process of determining what is to be moved, its destination, and when it must be there. The payoff in transportation planning is the timely delivery of personnel, supplies, and equipment to the planned destination.

b. The transportation planning process is virtually identical regardless of the mode of transport or the level at which the planning occurs. Steps in this process are to—

(1) Determine what must be moved.

(2) Determine what assets are available.

(3) Balance requirements against resources.

(4) Determine shortfalls and establish priorities.

(5) Coordinate the movement with all those involved and request additional resources, if necessary.

Detailed information on Army transportation and transportation planning can be found in the FM 55-Series.

c. Movement planning can be divided into strategic and tactical planning. Strategic planning normally occurs at the home station prior to deployment, or redeployment, and involves the preparation of personnel and materiel for overseas movement. Strategic planning involves extensive coordination with the installation transportation officer or the Military Traffic Management Command in CONUS or the movement control center (MCC) in the corps/CZ.

d. Tactical planning refers to movement within the CZ. These actions can range from simple pick up or delivery of supplies to the relocation site of the unit. The focal point for all movement within the corps is the MCC. The mode of movement will dictate how much advance coordination is required in order to execute the movement.

e. The FST has the capability to move all of its assigned personnel and equipment by road with organic assets in one lift. Movement of five or more vehicles constitutes a convoy and requires a march clearance from the MCC. Road movements are categorized with regard to the likelihood of enemy contact into administrative and tactical moves. Administrative road moves do not have a high probability of enemy contact and emphasize the efficient use of transportation assets. Tactical road moves have a high probability of enemy contact and emphasize security over efficiency. When the FST moves by road, it will normally convoy with other vehicles (refer to FM 8-10-1 [Appendix J] for convoy operations).

E-13. Consideration for Movement by Fixed-Wing Aircraft

a. Consideration for movement by fixed-wing aircraft is planned with the assistance of USAF representatives. The USAF provides strategic lift for the FST. The unit may be transported in C-130, C-141, or C5 aircraft.

b. The FST can be palletized on six standard 463L (2500 pound) pallets for transport without vehicles on one C-130. With vehicles for 100 percent subsequent mobility, the FST requires either four C-130 sorties or two C-141 sorties. The unit can also be configured for air-drop or sling-load operation. Table E-8 is a sample of air mobility alternatives for movement of the FST.

c. Unit air movement planning is the first and most important step in deploying a unit with the least possible difficulty. The FST commander, based on contingency planning guidance from higher headquarters should establish aircraft loading plans and SOPs. Coordination with appropriate USAF representatives for air movement planning guidance is necessary in the development of such plans. Field Manual 55-9 provides detailed information on unit air movement planning.

E-14. Consideration for Movement by Rotary-Wing Aircraft

a. *Capability of Helicopters*. Helicopters are capable of rapidly moving the FST to the place where it is needed. There are two ways of moving equipment and/or cargo by helicopter: inside the aircraft or below the aircraft on a cargo hook.

Table E-8. Fixed-Wing Alternative Deployment

MOBILITY ALTERNATIVES WITH APPROPRIATE WEIGHT AND CUBE OF FST TOE AND CTA EQUIPMENT	
TOE WEIGHT: 33,393 (VEHICLE WEIGHT: 24,000)	CUBE: 2,488 (VEHICLE CUBE: 1,674)
CTA WEIGHT: 9,373	CUBE: 1,663
TOTAL WEIGHT: 42,766	**TOTAL CUBE:** 4,151
6 EACH—463L (2,500 LB) PALLET	**OR** 6 EACH—HMMWV (LOADED) WITH 6 EACH—TRAILERS (LOADED) AND 1 EACH—463L (2,500 LB) PALLET
1 EACH—C-130	4 EACH—C-130

b. Employment Considerations. The FST should be considered for employment via helicopter external load operations to areas where the surgical elements are urgently needed—the DSA or the BSA. Movement by rotary wing is an option to consider when—

- Friendly controlled roads and/or mountain passes are interdicted by enemy fire.
- Highways are damaged or too congested to be passable.
- Bridges are destroyed.
- Distance is too far to travel by road.

(1) Air ambulance companies with UH-1 Iroquois (Huey) and UH-60A Black Hawk helicopters are the most expedient resources to move small medical units (less their vehicles), such as the 20-man FST.

(2) Medical aviation units have the mission of moving medical equipment and personnel which are under medical C2. However, should there be a need to move units along with their vehicles and other heavy equipment, then consideration may be given to request that aerial support be provided by corps heavy-lift aviation assets. Such assets include CH-47 Chinook and CH-54 Tarhe (Skycrane) cargo helicopters.

c. Request for Helicopter Support Procedures.

(1) Aerial support request procedures for corps medical units are prescribed by the medical brigade or medical group commander. The medical brigade or group commander determines what will

work best for a particular unit. The medical evacuation battalion commander is responsible for controlling and committing all aeromedical assets in the CZ.

(2) If aerial support requirements for a particular mission exceed the capabilities of the medical evacuation battalion, consideration may be given to requesting support from the corps aviation brigade. In requesting aerial support in corps, the controlling headquarters (medical brigade/group) submits the support request through command channels to the corps MCC. If approved, the corps MCC would then coordinate and arrange for the required aerial support.

d. Planning, Coordinating, Training, and Equipment Requirements.

(1) The most important part of airlifting personnel and equipment to accomplish a particular mission is prior planning. Prior planning, along with coordinating plans with the medical brigade or medical group aeromedical evacuation officer, is essential for a smooth, safe operation. During the planning phase, the entire operation is reviewed and all limitations and problem areas resolved before the execution of the movement.

(2) Coordination is made with supporting Army aviation units to train selected FST personnel as a unit ground crew to move the team by rotary-wing aircraft. Each member of the ground crew must be trained to rig all equipment assigned to the FST, such as the A-22 bag, cargo nets, and the 10,000- and 25,000-pound capacity sling sets. After the FST ground crews have been trained, they should give classes to vehicle operators to train them in preparing their equipment for sling-load operations.

(3) The FST commander makes arrangements to secure sling-load and rigging equipment necessary for the elements contemplated to be transported by rotary-wing aircraft.

(4) Procedures for conducting movement by rotary-wing aircraft should be standardized in the FST's TSOP. To begin these procedures, refer to Table E-9 below.

Table E-9. Movement Guidance for Helicopter Support

TYPE TRANSPORTATION	COMMANDER'S REFERENCE AND CHECKLIST
ROTARY WING	( ) PLAN AND COORDINATE AVIATION SUPPORT. ( ) TRAIN UNIT GROUND CREWS. ( ) REQUISITION SLING-LOAD EQUIPMENT. ( ) TRAINED GROUND CREWS TO GUIDE AIRCRAFT, RIG AND HOOK UP LOADS, AND CLEAR AIRCRAFT FOR DEPARTURE.

NOTE: See FMs 55-450-3, 55-450-4, 55-450-5 for additional information.

E-15. Power Generation

a. Power generation may be one of the most critical aspects of surgical support as few critical patient care functions within the FST can be performed without some form of electricity. The unit should establish a flexible power support plan that can be modified to conform to any expected layout. The plan should also address how periodic services will be performed during sustained operations, as well as contingency plans in the event of equipment failures. Careful planning in this area helps to prevent unexpected power losses and may save a life.

b. The FST has sufficient organic assets to power itself for sustained operations. However, this unit must rely on the supported medical company/troop for power-generation backup in the event of equipment failure. It is important to note that if proper preventive maintenance procedures are not followed, the unit can easily lose that capability. It is critical that the power distribution plan provides for pulling equipment off-line to perform PMCS without interrupting clinical operations.

c. Because of the inherent impedance in power cables, electricity can only be "pushed" a certain distance before becoming ineffectual. This distance varies with the type of equipment and the diameter of the cable and should be spelled out in the TM for that piece of equipment.

d. The team employs one 5 kilowatt (kw), 3-phase, diesel-powered generator. For backup support when forward deployed, the FST should be allowed to tie into the medical company's 30 kw power plant, when required. Appendix I provides a discussion on power-generation requirements.

E-16. Personnel Service Support

a. The corps FSTs are attached to CSHs for personnel service support (PSS). Personnel service support includes the functions of strength accounting, replacement operations, casualty reporting, personnel actions, personnel records, and personnel management. Personnel service support is provided on an area basis to nondivisional units by personnel service companies assigned to the corps personnel and administration battalion. Replacement regulating detachments and replacement detachments are assigned on an area basis to process individual replacements, small unit and crew replacements, personnel returned to duty within the theater, or personnel rotating from the theater.

b. The administrative service detachment of the personnel and administrative battalion provides PSS to all nondivisional units in the corps area. This detachment provides centralized automation capabilities for records management, to include forms management and files disposition. The detachment also provides reproduction services when the page quantity exceeds the capacity of reproduction equipment within the supported unit. The administrative service detachment is ordinarily collocated with a PSS company.

c. Finance support is provided on an area basis to all units in the corps support area by a network of finance support centers. Each finance support center is designed to provide financial services to approximately 20,000 soldiers through the use of mobile pay teams. Services provided by the mobile pay teams include casual payments, pay inquiry services, currency conversion, and personal check cashing up to the amount specified by the theater commander. The mobile pay team is also responsible for reimbursing impress fund cashiers and/or Class A Agents.

d. Postal detachments assigned to the corps provide direct support and general support services to supported units. These services may include limited stamp sales and postal money order service. Incoming mail is picked up by corps postal personnel at a theater general support postal detachment and sorted for pick up by direct support postal elements or mail clerks of supported units. Outgoing mail is handled in the reverse. The CSH provides unit mail service for the FST.

e. Religious services are provided the FST by the CSH and/or support battalion/squadron unit ministry team.

f. Legal services are provided the FST by the Staff Judge Advocate of the medical brigade. Also, legal services are provided to commanders and soldiers on an area basis by Staff Judge Advocate officers at corps and subordinate echelons. Services provided include legal advice and assistance, administration of military justice, and claims processing. All matters involving military, domestic, foreign, and international law and regulations may be brought to the supporting Staff Judge Advocate for advice and resolution.

g. Public affairs aspects of command and public information are coordinated through the medical brigade or medical group public affairs officer (PAO). The PAO disseminates information to the appropriate media, conducts public relations programs, and prepares public information and command information annexes to OPLANs and OPORDs. All subordinate units are required to coordinate public affairs matters with the designated PAO of their respective higher headquarters.

APPENDIX F

LOADING PLANS: EQUIPMENT AND CUBE-WEIGHT DATA

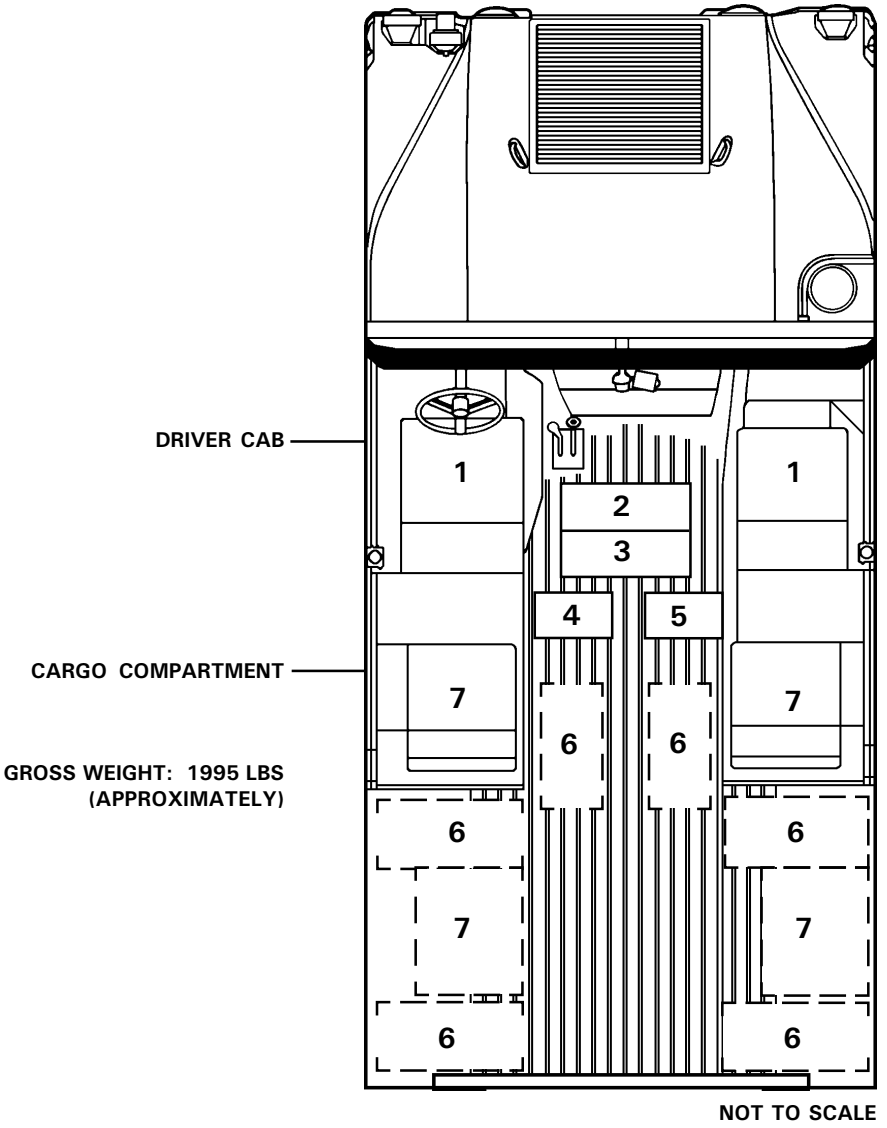
This appendix is provided as a guide for the development of vehicle loading plans for both the corps and organic airborne/air assault FSTs. It also lists the base TOE, suggested CTAs, and the cube-weight data for the unit's equipment. The items of equipment indicated in the base TOE do not include the incremental change packages (ICPs) currently programmed for the FST. However, the ICPs scheduled for this unit are primarily replacements for older items of equipment. They will not significantly impact on the unit's current vehicular capabilities as outlined in the loading plans indicated below.

F-1. Vehicle Loading Plans

The vehicle loading plans provided in Figures F-1 through F-12 (Pages F-2 through F-13) represent both the passengers and equipment required to be transported by organic vehicles. The loading plans are divided into "A" and "B" loads configured for air transportability in airborne operations. These configurations are designed so that the FST can load-out on two separate aircraft, enabling a split-mode operation. For example, if for some reason one of the two aircraft does not arrive at the FST's destination at the time intended, then the portion of the team that does arrive on time can become operational. Personnel should load-out into two capable functional elements ("A" and "B"). The rationale being that one element can setup and initiate mission activity until the arrival of the other. These loading plans are intended as a guide to assist in the development of the unit's TSOPs. They may be altered to fit unit requirements.

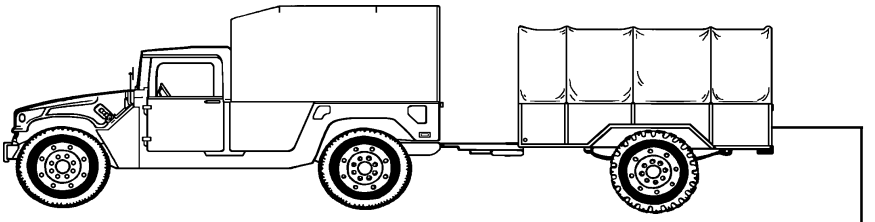
F-2. Organizational Equipment List

The organizational equipment lists provided in Tables F-1 and F-2 (Pages F-14 and F-15) may be used to develop the unit's loading plan in determining the weight and cube of the items of equipment authorized.

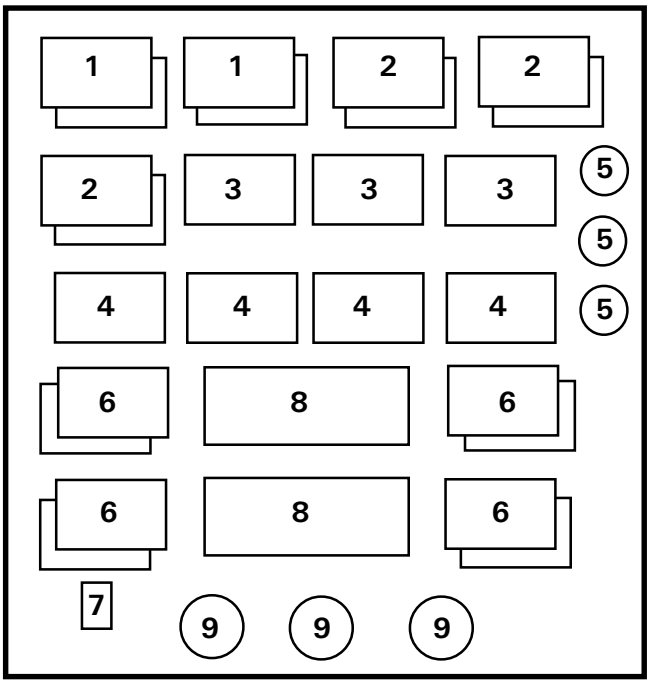


TEMPLATE	NOMENCLATURE
1	DRIVER/ASSISTANT DRIVER
2	SET, RADIO, AN/VRC-90A
3	PLGR: AN/PSN-11
4	SET, RADIAC
5	EQUIPMENT, ON VEHICLE MAINTENANCE (OVM)
6	EQUIPMENT, PERSONAL
7	PASSENGER

Figure F-1. Vehicle #1 "A" load—truck, utility, cargo/troop carrier, 1¼-ton, 4 x 4.



GROSS WEIGHT: 1361 LBS
(APPROXIMATELY)

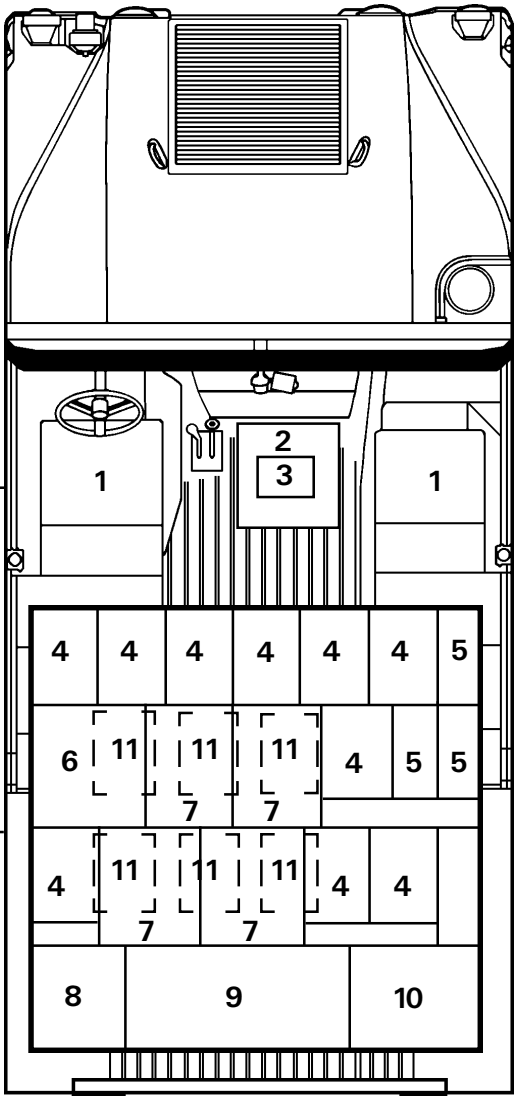


CARGO COMPARTMENT

NOT TO SCALE

TEMPLATE	NOMENCLATURE
1	EQUIPMENT, PERSONAL
2	COT, FOLDING
3	SET, BLANKET
4	HEATER, SPACE
5	LANTERN, GASOLINE
6	TRUNK/LOCKER
7	KIT, REPAIR, TENT
8	CONTAINER, ENVIRONMENT
9	EXTINGUISHER, FIRE (15 LBS)

Figure F-2. Trailer/vehicle #1 "A" load—trailer, cargo, l'-ton, M101A2.



WEIGHT DATA

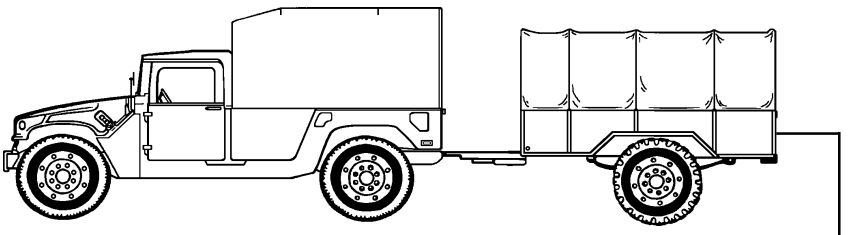
FAW: 3280 LBS
RAW: 4160 LBS
GW: 7440 LBS
CB: 99 IN

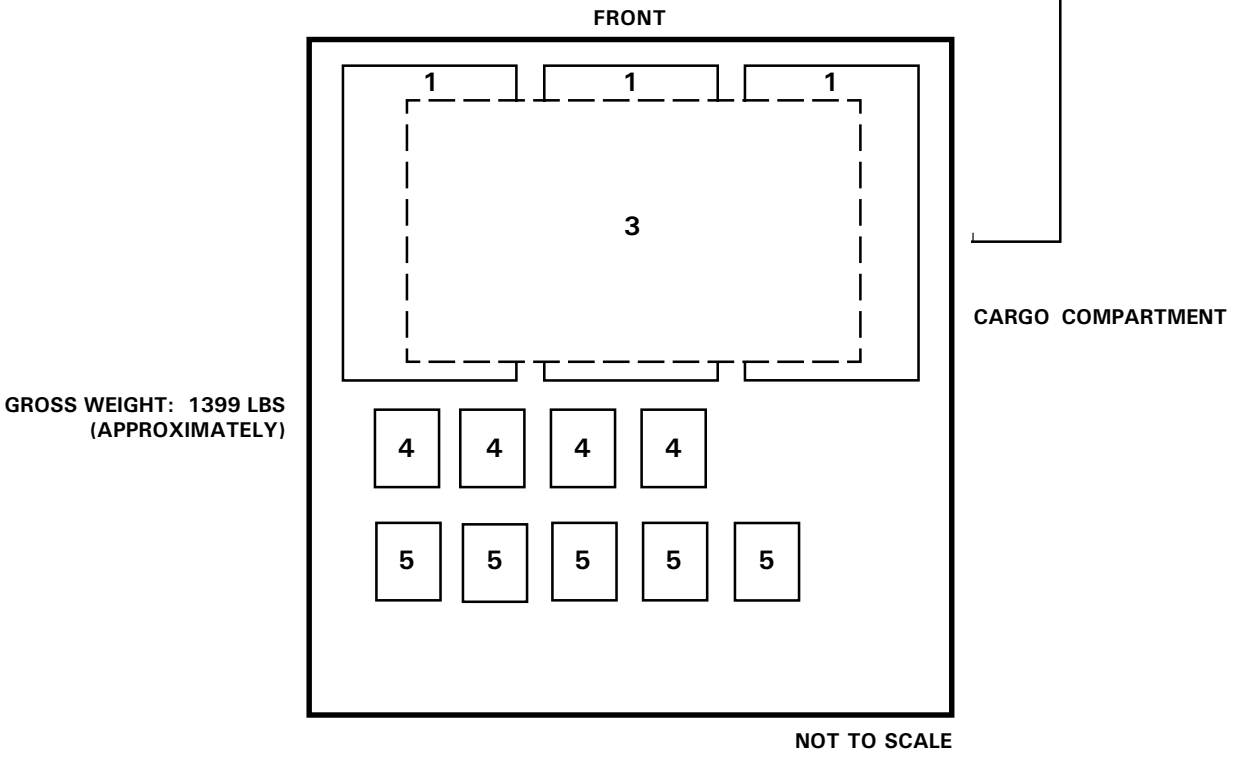
LEGEND

FAW — FRONT AXLE WEIGHT
RAW — REAR AXLE WEIGHT
GW — GROSS WEIGHT
CB — CENTER OF BALANCE

TEMPLATE	NOMENCLATURE
1	DRIVER/ASSISTANT DRIVER
2	SINK, FIELD (LOADED IN DRIVER'S CAB)
3	DRAWOVER ANESTHESIA (LOADED IN DRIVER'S CAB)
4	CHEST, MEDICAL, SIZE #3
5	CASES, MEALS, READY TO EAT (MRE)
6	MONITOR, PROPAQ
7	CHEST, MEDICAL, SIZE #5
8	OVM
9	OXYGEN CONCENTRATOR
10	SET, BLANKET
11	COT, PATIENT

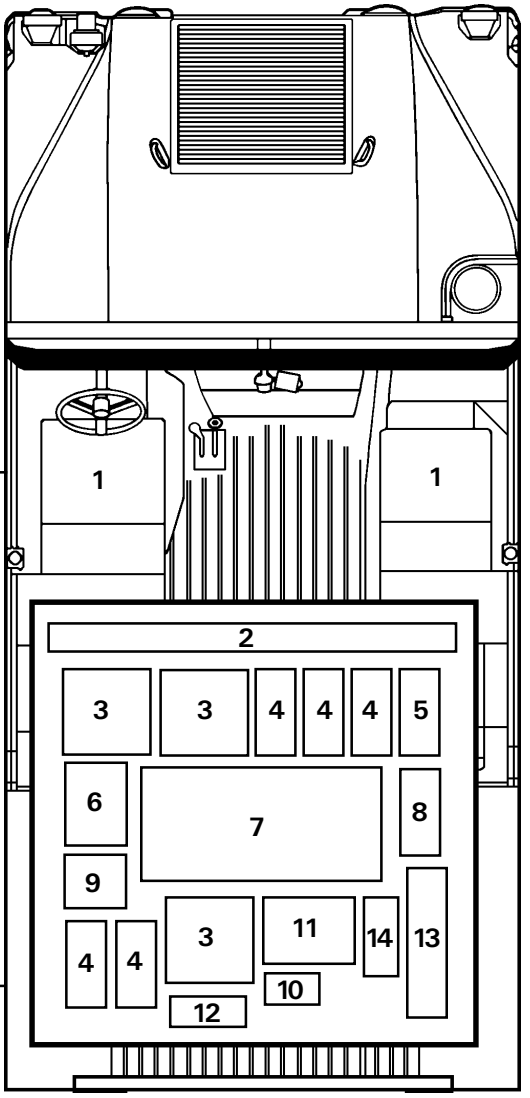
Figure F-3. Vehicle #2 "A" load—truck, utility, cargo/troop carrier, 1L-ton, 4 x 4.





TEMPLATE	NOMENCLATURE
1	SCREEN SYSTEM, CAMOUFLAGE
2	SUPPORT SYSTEM, CAMOUFLAGE
3	TENT, GP LARGE
4	CAN, WATER
5	CAN, FUEL

Figure F-4. Trailer/vehicle #2 "A" load—trailer, cargo, l'-ton, M101A2.



WEIGHT DATA

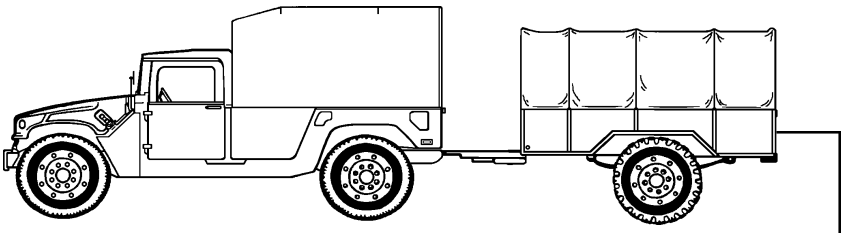
FAW: 3280 LBS
RAW: 4160 LBS
GW: 7440 LBS
CB: 99 IN

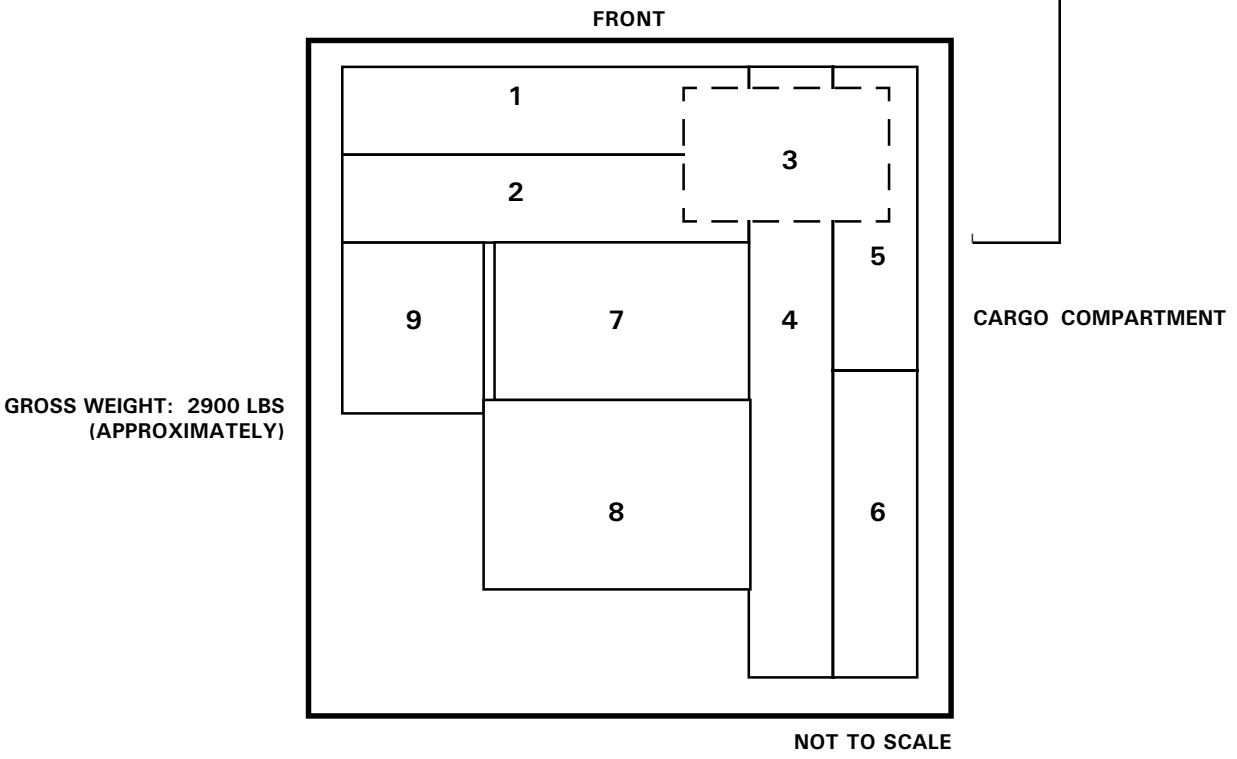
LEGEND

FAW—FRONT AXLE WEIGHT
RAW—REAR AXLE WEIGHT
GW—GROSS WEIGHT
CB—CENTER OF BALANCE

TEMPLATE	NOMENCLATURE
1	DRIVER/ASSISTANT DRIVER
2	BACKBOARD
3	CHEST, MEDICAL, SIZE #3
4	CHEST, MEDICAL, SIZE #5
5	VENTILATOR
6	MONITOR, PROPAQ
7	TABLE, OR
8	CASE, MRE
9	SET, HEADLIGHT, SURGICAL
10	OXYGEN CONCENTRATOR
11	REFRIGERATOR
12	DEFIBRILLATOR
13	LITTERS
14	OVM

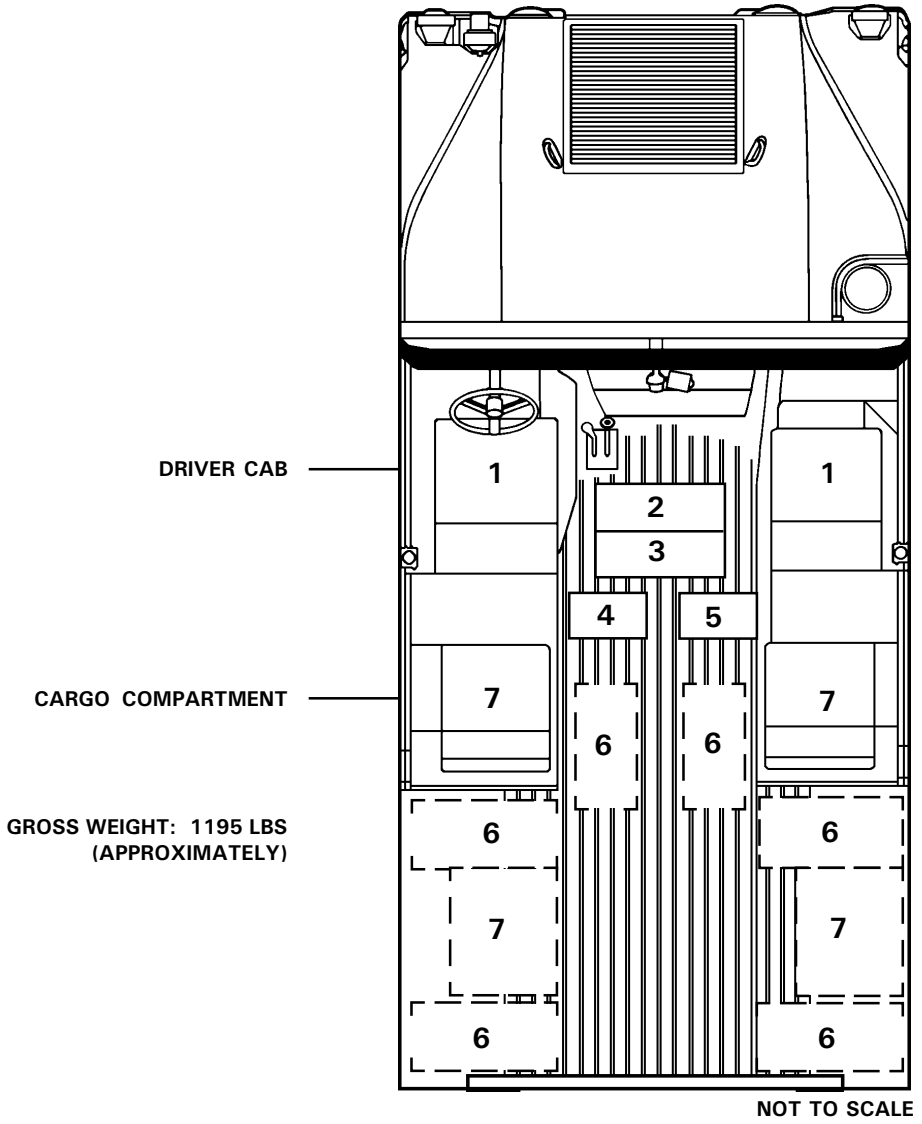
Figure F-5. Vehicle #3 "A" load—truck, utility, cargo/troop carrier, 1L-ton, 4 x 4.





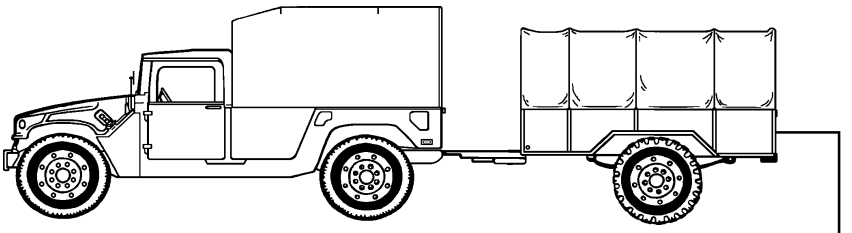
TEMPLATE	NOMENCLATURE	TEMPLATE	NOMENCLATURE
1	TENT, GP LARGE	6	POLES, TENT
2	LINER, TENT, GP LARGE	7	FLOOR, TENT , GP LARGE
3	POWER DISTRIBUTION SYSTEM	8	POWER GENERATOR
4	POLES, TENT	9	PEGS, TENT
5	RED CROSS EMBLEM		

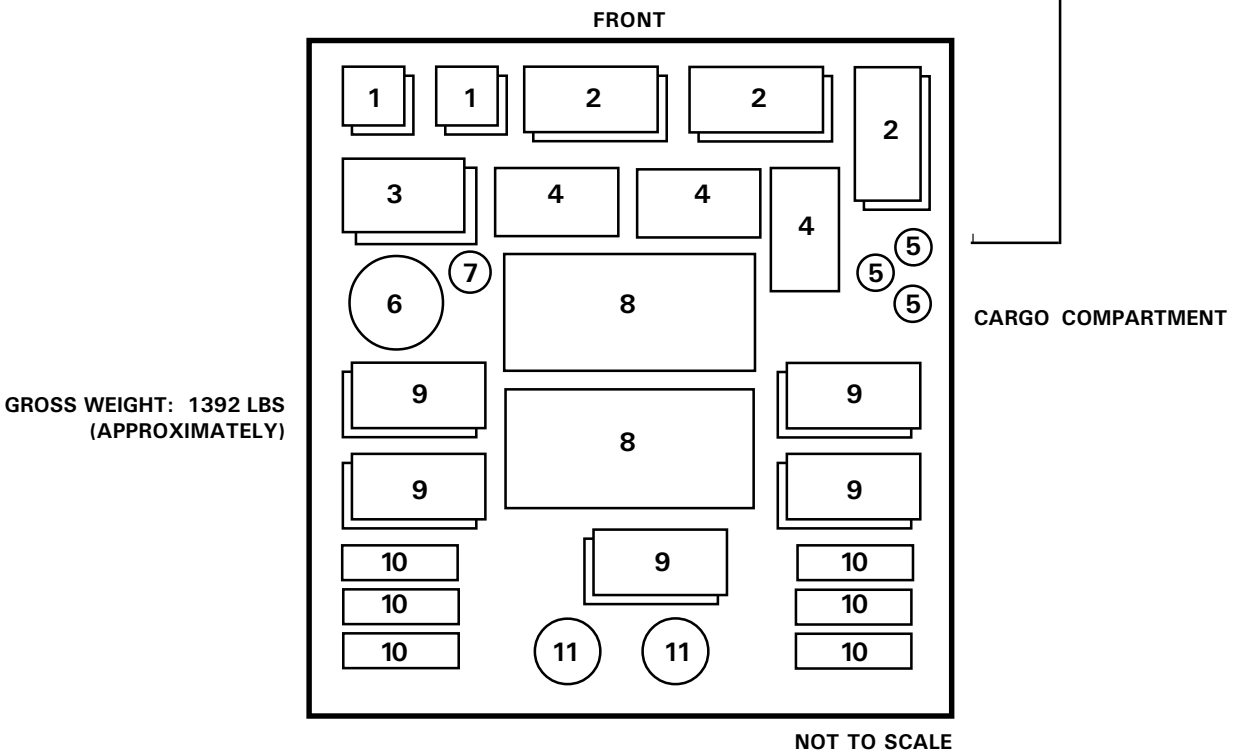
Figure F-6. Trailer/vehicle #3 "A" load—trailer, cargo, l'-ton, M101A2.



TEMPLATE	NOMENCLATURE
1	DRIVER/ASSISTANT DRIVER
2	TELEPHONE: TA-1035/U
3	TELEPHONE: TA-312/PT
4	FACSIMILE SET: AN/UXC-7
5	EQUIPMENT, ON VEHICLE MAINTENANCE (OVM)
6	EQUIPMENT, PERSONAL
7	PASSENGER

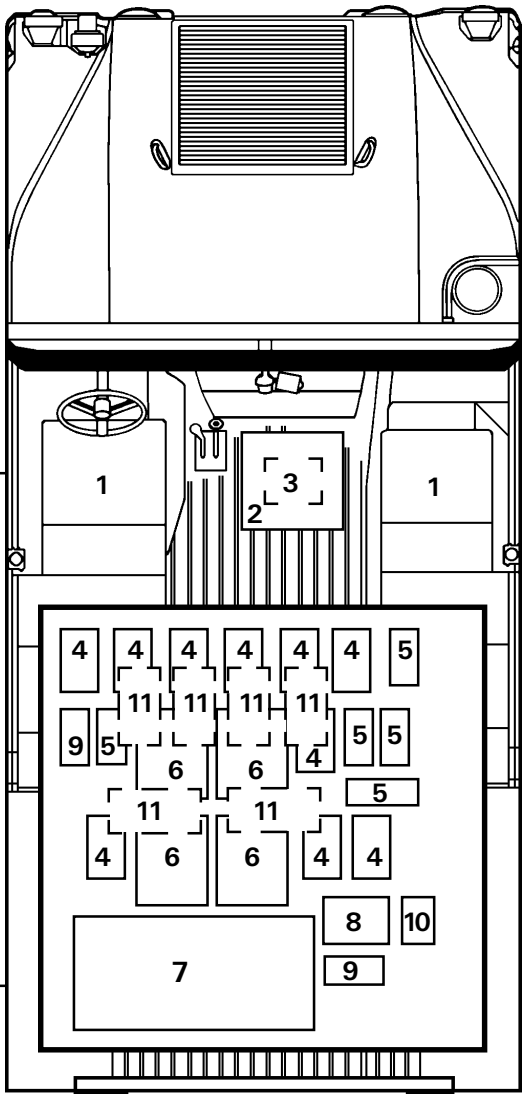
Figure F-7. Vehicle #4 "B" load—truck, utility, cargo/troop carrier, 1L-ton, 4 x 4.





TEMPLATE	NOMENCLATURE	TEMPLATE	NOMENCLATURE
1	PERSONAL EQUIPMENT	7	BAG, LYSTER
2	COT, FOLDING	8	CONTAINER, ENVIRONMENTAL
3	BLANKET SET	9	TRUNK/LOCKER
4	SPACE HEATER	10	CHAIR, FOLDING
5	LANTERN, GASOLINE	11	CAN, GARBAGE
6	HEATER, IMMERSION		

Figure F-8. Trailer/Vehicle #4 "B" load—trailer, cargo, l'-ton, M101A2.



WEIGHT DATA

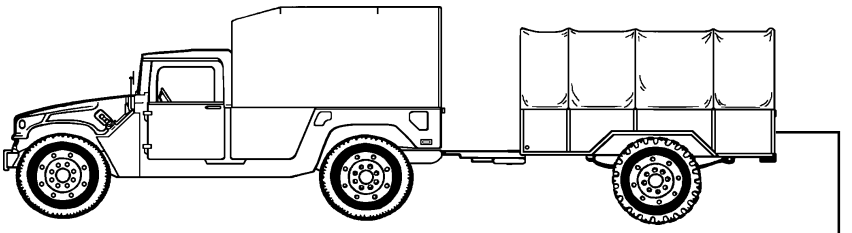
FAW: 3140 LBS
RAW: 3980 LBS
GW: 7120 LBS
CB: 100 IN

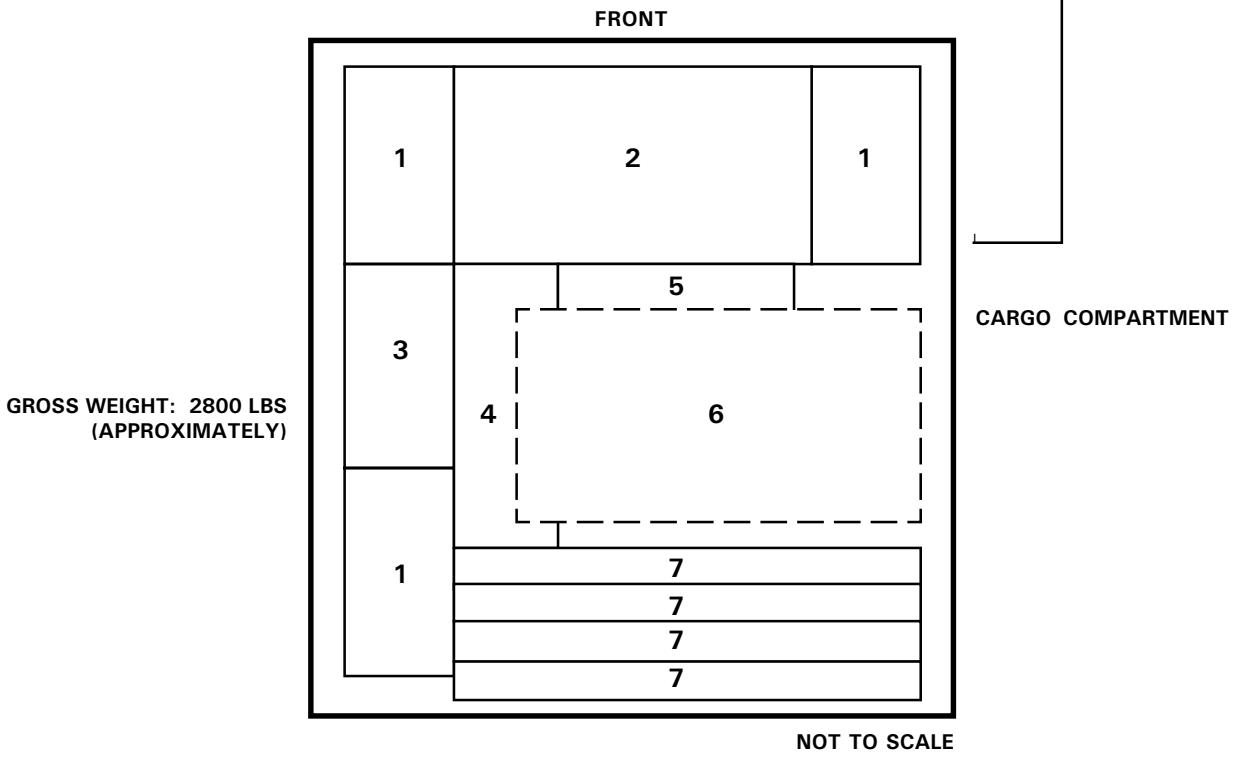
LEGEND

FAW—FRONT AXLE WEIGHT
RAW—REAR AXLE WEIGHT
GW—GROSS WEIGHT
CB—CENTER OF BALANCE

TEMPLATE	NOMENCLATURE
1	DRIVER/ASSISTANT DRIVER
2	SINK, FIELD (LOADED IN DRIVER'S CAB)
3	DRAWOVER ANESTHESIA (LOADED IN DRIVER'S CAB)
4	CHEST, MEDICAL, SIZE #3
5	CASES, MRE
6	CHEST, MEDICAL, SIZE #5
7	OXYGEN CONCENTRATOR
8	SET, BLANKET
9	CAN, WATER
10	OVM
11	COT, PATIENT

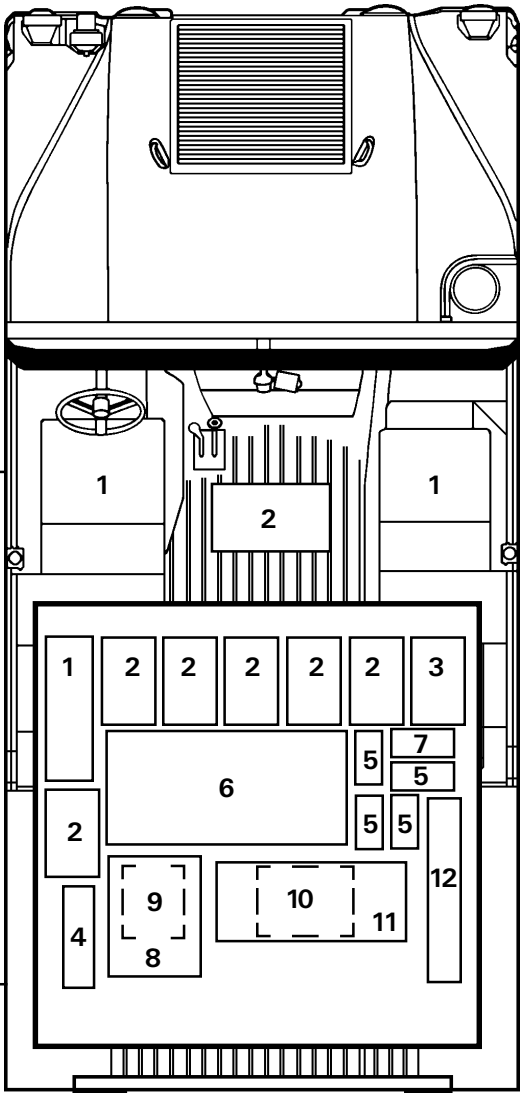
Figure F-9. Vehicle #5 "B" load—truck, utility, cargo/troop carrier, 1¼-ton, 4 x 4.





TEMPLATE	NOMENCLATURE	TEMPLATE	NOMENCLATURE
1	CHEST, MEDICAL, SIZE #3	5	FLOOR, TENT, GP LARGE
2	HEATER	6	TENT, GP LARGE
3	POWER DISTRIBUTION SYSTEM	7	POLES, TENT
4	LINER, TENT, GP LARGE		

Figure F-10. Trailer/vehicle #5 "B" load—trailer, cargo, l'-ton, M101A2.



WEIGHT DATA

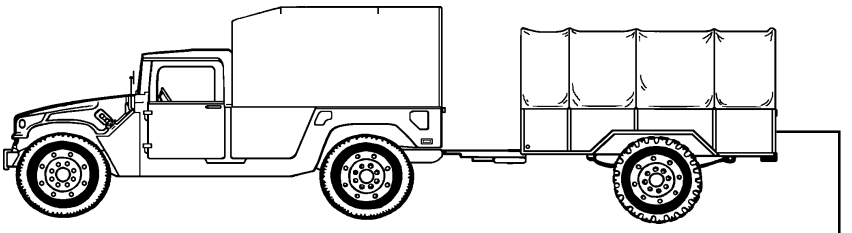
FAW: 3280 LBS
RAW: 3780 LBS
GW: 7330 LBS
CB: 98 IN

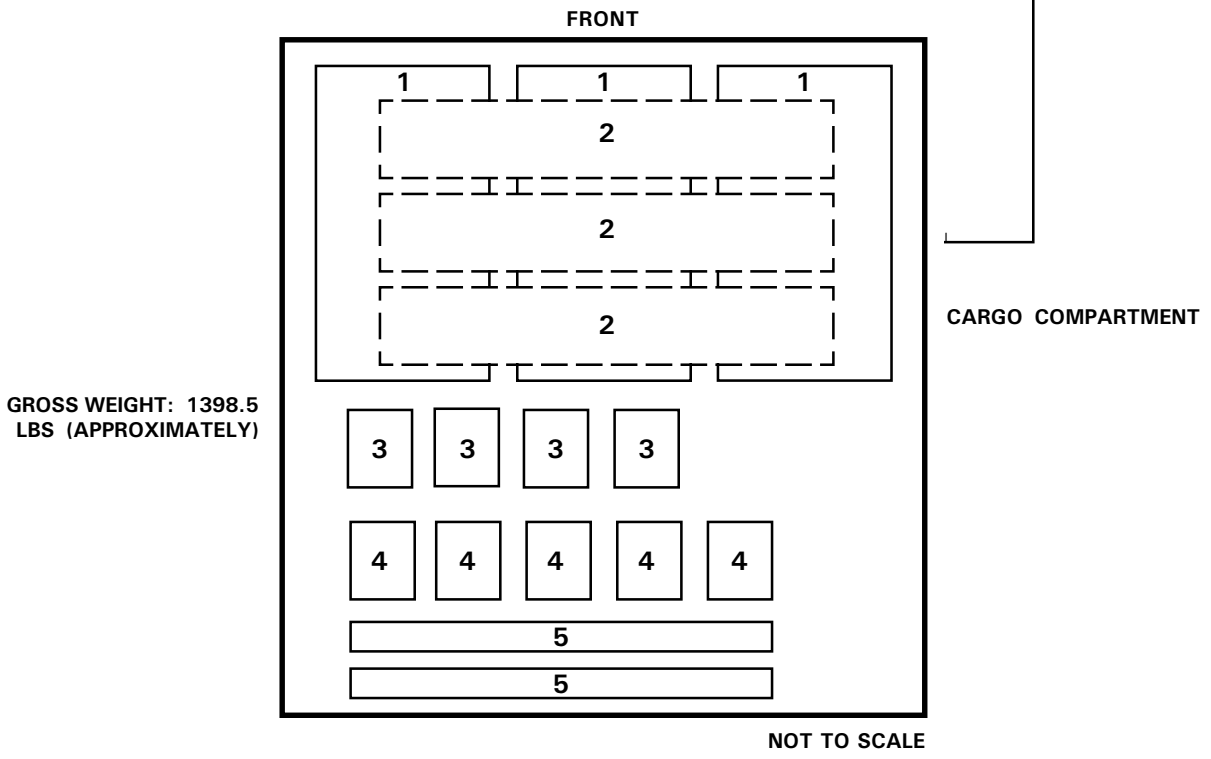
LEGEND

FAW—FRONT AXLE WEIGHT
RAW—REAR AXLE WEIGHT
GW—GROSS WEIGHT
CB—CENTER OF BALANCE

TEMPLATE	NOMENCLATURE
1	DRIVER/ASSISTANT DRIVER
2	MONITOR, PROPAQ
3	CHEST, MEDICAL, SIZE #3
4	VENTILATOR
5	SPLINTS, TRACTIONS
6	TABLE, OR
7	CAN, WATER
8	CASE, MRE
9	CHEST, MEDICAL, SIZE #5
10	DEFIBRILLATOR
11	REFRIGERATOR
12	OXYGEN CONCENTRATOR
13	STANDS, LITTER

Figure F-11. Vehicle #6 "B" load—truck, utility, cargo/troop carrier, 1¼-ton, 4 x 4.





TEMPLATE	NOMENCLATURE
1	SCREEN SYSTEM, CAMOUFLAGE
2	SUPPORT SYSTEM, CAMOUFLAGE
3	CAN, WATER
4	CAN, FUEL
5	STAND, LITTER SUPPORT

Figure F-12. Trailer/vehicle #6 "B" load—trailer, cargo, l'-ton, M101A2.

Table F-1. Forward Surgical Team Base TOE List

LIN	QTY	EQUIPMENT NOMENCLATURE	WEIGHT	CUBE	TOTAL WEIGHT (POUNDS)	TOTAL CUBE (FEET)
		EQUIPMENT CARRYING CAPACITY				
C05701	1	MONITOR, CHEMICAL AGENT	6	1	6	1
C68719	2	CABLE, TELEPHONE: WD-1/II	20	1	40	2
C89070	23	CAMOUFLAGE SCREEN SYSTEM	60	3	1,380	69
F55553	1	DISTRIBUTION SYSTEM, ELECTRIC	400	45	400	45
G11966	1	GENERATOR SET: 5KW 60 Hz	825	34	825	34
H31136	1	FACSIMILE SET: AN/TXC-1	445	35	445	35
J31569	1	INSTALLATION KIT, RADIO: MK-2325/ VRC	*92	*14	*92	*14
M12418	20	MASK , CHEMICAL BIOLOGICAL: M40	**0	**0	**0	**0
M45375	1	MES, FST	5,534	555	5,534	555
N05482	12	NIGHT VISION GOGGLE: AN/PVS-78	10	1	120	1
N95862	1	NAVIGATION SET, SATELLITE SYSTEM: AN/PSN	**0	**0	**0	**0
N96741	5	PISTOL, 9mm AUTOMATIC: M9	**0	**0	**0	**0
R45203	1	RADIO SET: AN/VRC-90A	**8	**1	**8	**1
R59160	1	REELING MACHINE: RL-39	2	1	4	2
R64126	1	REFRIGERATOR, SOLID STATE BIOLOGICAL	384	41	384	41
R95035	15	RIFLE: 5.56mm: M16A2	**0	**0	**0	**0
T60464	2	SINK UNIT, SURGICAL SCRUB	75	5	150	10
T31872	1	TELEPHONE WIRE W/REEL	21	1	21	1
TA45408	1	TELEPHONE, DNVT: TA-1	6	1	6	1
V31211	2	TELEPHONE SET: TA-312/PT	9	1	18	2
Y34027	20	WRIST WATCH	**0	**0	**0	**0
TOTAL:					**9,433**	**814**
		VEHICLE CARRYING CAPACITY				
T61494	6	TRUCK, UTILITY HMMWV	2,500	104	15,000	624
W95537	6	TRAILER, CARGO 3/4 TON	1,500	175	9,000	1,050
TOTAL:					**24,000**	**1,674**

* Equipment mounted on vehicle
** Personal equipment, hand carried

Table F-2. Forward Surgical Team Suggested CTA Equipment List

LIN	QTY	EQUIPMENT NOMENCLATURE	WEIGHT	CUBE	TOTAL WEIGHT (POUNDS)	TOTAL CUBE (FEET)
----------	20	PERSONNEL AND EQUIPMENT	250.0	25.0	5,000.0	500.0
B15688	1	BAG, LYSTER	10.2	0.09	10.2	0.09
B72536	5	BLANKET SET	32.0	3.1	160.0	15.5
NSN	1	BOX LATRINE	48.0	2.4	48.0	2.4
NSN	2	CAN, GARBAGE	10.0	0.21	20.0	0.42
NSN	6	CAN, GAS	46.0	0.81	276.0	4.86
NSN	8	CAN, WATER	41.7	1.3	368.9	10.4
NSN	6	CHAIR, FOLDING, METAL	10.5	1.18	63.0	7.08
C84612	4	CONTAINER, ENVIRONMENTAL	125.0	16.0	500.0	64.0
NSN	20	COT, FOLDING	19.5	3.25	390.0	65.0
H22122	3	FIRE EXTINGUISHER, 1.5 LB	12.8	0.012	38.4	0.036
NSN	6	FIRST AID, VEHICLE	4.7	0.14	28.2	0.84
H22396	3	FIRE EXTINGUISHER, 2.7 LB	3.0	0.012	9.0	0.036
K25479	1	HEATER, IMMERSION	59.0	5.6	59.0	5.6
K25943	7	HEATER, SPACE	36.0	5.0	252.0	35.0
NSN	7	LANTERN, GAS	5.3	0.15	37.1	1.05
NSN	6	LITTER, FOLDING	25.3	2.0	151.0	100.0
NSN	2	LITTER, SUPPORT FOLDING	13.75	1.0	27.5	2.0
NSN	20	MATTRESS, PNEUMATIC	16.0	0.75	0.0	0.0
R75709	1	REPAIR KIT, TENT	38.0	2.0	38.0	2.0
S58674	1	SCREEN, LATRINE	32.0	607.0	32.0	607.0
V48578	2	TENT, GP LARGE W/LINER/POLES	666.0	69.0	1,332.0	138.0
X65258	20	TRUNK, LOCKER	25.0	5.0	500.0	100.0
X80211	1	TYPEWRITER, ELECTRIC	32.0	1.78	32.0	1.78
TOTAL:					**9,372.3**	**1,663.092**

APPENDIX G

SAFETY AND FORCE PROTECTION

G-1. Safety Policy and Program

An effective safety and personnel protection program is essential to any unit. Leaders must stress the importance of constant vigilance to detect potential hazards and reduce or eliminate them.

a. *Policy*. Protection of the force is an Army policy to reduce and keep to a minimum accidental manpower (and monetary) losses, thus providing more efficient use of resources and advancing combat effectiveness.

b. *Program*. The FST's protection program should be designed to cover all operations and take into consideration all conditions peculiar to the specific operation of the unit. Implementation of the program includes the establishment of safety rules, procedures, and supervision (refer to AR 385-10).

G-2. Responsibility for Accident Prevention

a. *Commander*. The FST commander is responsible for ensuring that all activities are conducted in accordance with established safety rules, for determining causes of accidents, and for seeing that corrective action is taken immediately to prevent their recurrence. He must be aware of and enforce all safety regulations promulgated by higher headquarters. If a deviation from an established safety rule is desired, it is his responsibility to request permission for the deviation. He may appoint an individual of the team to serve as safety officer to carry out those functions outlined in AR 385-10.

b. *Individuals*. Team members should be made to realize that safety rules are established for their protection and for the protection of their patients as well. It is the individual's responsibility to follow all instructions and to use all safeguards when conducting specialized procedures and when operating equipment, machinery, and tools.

G-3. Principles of Accident Prevention

An effective unit protection program depends on the proper application of the following principles:

a. *Stimulation of Interest*. Emphasis on safety must be vigorous and continuous; it must originate with the commander. Group discussions, safety meetings, bulletin board notices, posters, and recognition of individuals for participation create interest in a safety program.

b. *Fact Finding*. This refers to the assembly of information concerning the occurrence and prevention of accidents. For each accident, the following facts should be determined:

(1) Who was injured and what was damaged.

(2) The time and place where the accident or injury occurred.

(3) The severity and cost of the accident or injury.

(4) The nature of the accident or injury.

(5) Measures that can be instituted to guard against future recurrences.

c. Corrective Action Based on Facts. Any corrective action that is adopted should be based on available and pertinent facts surrounding the accident or injury. Near accidents also should be reported with all available information so that hazards and unsafe procedures or conditions can be eliminated. Similarly, any procedure or condition that might be dangerous should be reported so that remedial action can be instituted.

d. Applicability. Practical safety controls should be provided in all planning, training, tactical operations, professional activities, and off-duty activities.

e. Safety Education and Training. The objectives of safety education and training are to develop the individual's safety awareness, so that tasks are performed with minimal risk to the individual and to others.

f. Inspections. The purpose of safety inspections is to eliminate the cause of accidents through specific, methodical procedures.

G-4. Unit Protection Plan

Items that can be included in any protection plan are listed below; however, the list is neither all-inclusive nor restrictive. Precautions for certain medical procedures or equipment are included here.

a. Accident Reporting. Basic to any unit protection plan is accident reporting. A definite procedure should be established that emphasizes prompt and complete reporting of all accidents or injuries (AR 385-40). The unit commander, or his designated representative, should investigate all accidents or injuries to determine the causes and take corrective action to prevent their recurrence. Any accident resulting in damage to equipment should be reported immediately. Continued operation of damaged equipment can subsequently result in injuries to personnel.

b. Fire Prevention.

(1) A unit fire plan or fire SOP should be included in the safety program. It should contain fire prevention guidance and information on what to do if a fire occurs.

(2) NO SMOKING signs should be posted wherever fire hazards exist. Smoking should be permitted only in designated smoking areas. Fire-fighting equipment should be available, and all personnel should be familiar with its location and operation. This equipment should be inspected frequently to determine if it is serviceable and operative. Fire drills should be conducted often enough for all personnel to be familiar with the procedures. Guard personnel should be alert to fire hazards at night. Gasoline, oil,

paint, and other flammables should be stored in approved locations and in authorized containers. Oxygen and acetylene tanks must be stored separately from other flammables.

c. *Generators*. Generators in the field produce the same potential electrical hazards that are found with electricity at permanent installations and demand the same precautions. Personnel working around generators or electrical wiring should remove rings and watches. Generators should be grounded; they SHOULD NOT be refueled while they are in operation.

d. *Housekeeping*. Operational areas must be kept clean and orderly at all times. Hazards to personnel and equipment can be eliminated or controlled by enforcing high housekeeping standards.

e. *Heaters*. When heaters are used, they should be watched closely for potential tent fires. Spark arrestors or flue guards on stove exhaust pipes and metal shields in stovepipe openings in tents should be used when heaters are in operation.

f. *Vehicle Operation*. Army Regulation 385-55 contains guidance on government vehicle operation.

g. *Weapons and Ammunition*. Continual command emphasis should be directed toward training each individual in the unit in the handling of weapons and munitions. Training should begin when an individual joins the unit. The commanders should ensure that all personnel are briefed on the handling and disposition of weapons which accompany patients to the treatment facility. Weapons of unit personnel should be cleared and placed on safety until otherwise required. Army Regulation 190-11 and FM 19-30 provide guidance on the physical security of weapons and munitions.

G-5. Accident Investigation and Reporting

a. *Investigations*. Accident investigation is necessary for accident prevention. Investigation seeks to determine the cause of accidents by finding the elements and sources from which accidents develop. Corrective measures may then be instituted.

b. *Reporting*. In accordance with AR 385-40, the Army's accident reporting system provides for the initial reporting of accidents at unit level. This is done to notify the higher echelon of command that a mishap has occurred; to record information that will identify causes and corrective actions, indicate trends, and provide a basis for formulating future plans; and to evaluate progress in accident prevention.

G-6. Hearing Conservation

a. The following guidelines are applicable primarily when the FST is not tactically deployed. However, when deployed in support of combat operations, a modified hearing conservation program should be adopted. Technical Bulletin Medical 501 provides the guidance on units' hearing conservation programs. Tactical SOPs may be developed by the unit from this bulletin.

b. The FST will contact the supporting PVNTMED unit for identification of noise hazardous equipment, job sites, and exposed personnel. This will be accomplished by conducting noise-level surveys on the unit's excessive noise-generating equipment (that is, compressors, generators, and motor vehicles). This data will be used for planning and prioritizing screening tests for those individuals exposed to hazardous noise levels in their work environment.

c. Personnel identified in this survey will be entered in the hearing conservation program. They should be monitored for response to noise exposure and adequacy of hearing-protective devices by periodically testing hearing levels. Audiograms will be conducted annually, as a minimum.

d. Hearing protection will be issued to applicable personnel, and its use will be required when operating in proximity to generators, compressors, and tactical vehicles. Areas around this equipment should be indicated by placing NOISE HAZARDOUS AREA, HEARING PROTECTION REQUIRED signs as directed in the unit SOP.

G-7. Compressed Gas Cylinders

All compressed gas cylinders should be considered full for handling purposes. They should never be dropped or struck by any object. While cylinders are being transported in vehicles, they should be restrained to prevent them from falling. Cylinders must be protected from dampness and excessive temperatures. Smoking should be prohibited near a cylinder. Valve protection caps must be installed on each cylinder. Oxygen should be stored in sandbagged revetments and separated from other gases by at least 40 feet.

G-8. Flammable or Explosive Materials

Flammable materials or materials that are prone to explode must be kept in approved safety containers and away from Bunsen burners or heating elements. Acids used in maintenance and medical laboratory procedures should be stored in proper containers and used with caution.

G-9. Hazardous Waste

Refer to FM 8-10-1 for a detailed discussion of the handling and disposition of hazardous and medical waste.

APPENDIX H

NUCLEAR, BIOLOGICAL, AND CHEMICAL OPERATIONS

Many countries that may constitute a threat consider chemical warfare part of conventional warfare. They may use chemicals during both defensive and offensive operations. They are prepared to accept casualties and reduced efficiency in exchange for tactical gain. Nuclear weapons and biological agents, while not considered part of conventional warfare, may be used by an ever-increasing number of adversaries. All FST personnel must understand the capabilities of these weapons and agents and know how to negate their effects and survive to continue the FST mission.

Section I. INDIVIDUAL AND UNIT SURVIVAL OPERATIONS

This section will discuss techniques and procedures that are necessary for the survival of the individual and the team. These procedures are employed by all Army units, including medical units. Individuals and units must first attend to their defense requirements to survive and continue their mission. Forward surgical teams are fortunate; they do not have to engage, fight, and contain an enemy force while under an NBC attack. Usually, they can be more deliberate in attending to their survival and their patient's survival.

H-1. Fundamentals of Nuclear, Biological, and Chemical Defense

a. Chemical agents add a troublesome, complex dimension to the battlefield. These agents can produce numbers of casualties that overtax the medical evacuation, medical treatment, and personnel replacement systems; create heat and psychological casualties; and degrade the efficiency and effectiveness of a unit. During chemical contamination—

- Individuals and units become more difficult to identify.
- Command, control, and communications deteriorate.
- All simple human tasks, such as eating, sleeping, moving, and passing body wastes, become difficult, complicated and subject to contamination.

b. Training and rehearsal of SOPs are keys to reducing unit casualties and enhancing the FST's ability to relocate, if necessary, and continue its mission.

c. Nuclear, biological, and chemical defense no longer means just to protect yourself and stay alive. Nuclear, biological, and chemical casualties are the price of waging war. We must take educated and often calculated risks. Nuclear, biological, and chemical defense is a condition, not a task in the mission. Degradation of capabilities caused by individual and collective protection must be weighed against potential casualties from NBC attack. Going too far in either direction can reduce individual effectiveness and the overall efficiency of the FST. Mission-oriented protective posture (MOPP) was designed for maximum flexibility to maintain unit capability at the highest level possible, despite contaminated conditions. See Table H-1 for MOPP levels and equipment worn at each level.

Table H-1. Mission-Oriented Protective Posture Levels and Protective Equipment

MOPP EQUIPMENT	MOPP LEVELS						COMMAND
	MOPP READY	MOPP ZERO	MOPP 1	MOPP 2	MOPP 3	MOPP 4	MASK ONLY
MASK	CARRIED	CARRIED	CARRIED	CARRIED	WORN[a]	WORN	WORN
OVERGARMENT	READY[c]	AVAILABLE[d]	WORN[a]	WORN[a]	WORN[a]	WORN	
VINYL OVERBOOTS	READY[c]	AVAILABLE[d]	AVAILABLE[d]	WORN	WORN	WORN	
GLOVES	READY[c]	AVAILABLE[d]	AVAILABLE[d]	AVAILABLE[d]	AVAILABLE[d]	WORN	
HELMET PROTECTIVE COVER	READY[c]	AVAILABLE[d]	AVAILABLE[d]	WORN	WORN	WORN	
CHEMICAL PROTECTIVE UNDERGARMENT[b]	READY[c]	AVAILABLE[d]	WORN[b]	WORN[b]	WORN[b]	WORN[b]	

a IN HOT WEATHER, COAT OR HOOD CAN BE LEFT OPEN FOR VENTILATION.
b THE CPU IS WORN UNDER THE BDU (PRIMARILY APPLIES TO SOF, ARMORED VEHICLE CREWMEN).
c MUST BE AVAILABLE TO THE SOLDIER WITHIN TWO HOURS. SECOND SET AVAILABLE IN 6 HOURS.
d WITHIN ARM'S REACH OF SOLDIER.

d. Nuclear, biological, and chemical defense training must strike a balance between protection and mission accomplishment. Training includes techniques of decontamination and MOPP relief to rebuild the medical-oriented potential of the situation. In combat, the focus is on protecting the team and its patients, rather than on the source of contamination. Nuclear, biological, and chemical contamination is an aspect of METT-T and the medical commander's analysis of the situation**.**

This paragraph implements STANAG 2047.

H-2. Nuclear, Biological, and Chemical Protection and Contamination Avoidance

a. Protection can be improved by locating, identifying, and reporting NBC hazards; by warning about NBC hazards; and through passive measures. Passive measures decrease the probability of attack by reducing target signature and improving survivability. Normally, these measures include concealment,

cover, operations security, and dispersion. However, when the FST collocates with the CSH, the hospital must be laid out so that all patient care elements are interconnected and, therefore, the hospital is difficult to conceal. Concealment of a hospital unit is not a normal practice. However, when the FST locates with a medical company, the area or tactical commander (brigade or higher) will normally require the forward medical facilities to be camouflaged; thus, achieving a hide-position. Partial cover for the unit may be achieved by sandbagging around the facility and the revetment of vehicles, supplies, and equipment. Camouflage will cause the unit to lose its identity as an MTF, increasing the potential to be attacked.

b. Avoidance can be achieved by locating and marking contaminated areas along routes, around assembly areas, and the area(s) intended for occupation. Locating and identifying the type and density of contamination enables the unit to develop a plan to bypass, or cross an NBC hazardous area. See FM 3-3 and FM 3-3-1 for more detailed information on NBC contamination avoidance.

NOTE

Forward surgical teams do not set up and operate in contaminated areas.

c. In addition to chemical agent alarms, M9 paper can detect liquid contaminants. Strips of M9 paper taped to clothing, equipment, and vehicles can provide the warning that a contaminated area has been entered, or that a chemical attack is occurring. However, the paper can react to nonthreatening liquids; therefore, the Chemical Agent Monitor (CAM), the M256A1 Detector Kit, or the M8 paper must be used to verify chemical agent contamination. Field Manual 8-285 provides signs and symptoms, self-aid, buddy aid, and combat lifesaver care, and medical treatment for chemical agent injuries.

d. Look for evidence of a chemical agent in the physical reaction of the soldier. Physical symptoms of a chemical agent can be similar to toxins, heat stress, and combat stress reactions.

e. A chemical company with the newly developed Biological Integrated Detection System will be able to detect and identify a number of biological agents. Units, other than the chemical company and specialized medical units, are unlikely to immediately detect the use of biological agents. Any unusual disease pattern is most likely the first warning of a biological attack. It is critical that medical commanders and staff report possible biological warfare (BW) attacks immediately through command channels. When assumed before the attack, MOPP 4 provides excellent protection against BW agents. The best passive defense against BW agents is the use of PVNTMED measures.

f. A nuclear hazard presents additional considerations for protection. A strike warning (STRIKWARN) (nuclear) message will be sent from the tactical or area command headquarters for friendly nuclear strikes. Generally, this message will be brief.

(1) The message should contain—

- A proword indicating that the message is a nuclear STRIKWARN.

- A brief message, prearranged by SOP, directing the unit to observe a specific nuclear defense level or evacuate the area.

- Expected time of burst.

- The location of burst.

(2) For maximum protection, the FST, along with its host unit (CSH or medical company), must—

- Evacuate from soft shelter systems to bunkers, or use sandbags or earth berms (refer to FM 8-10-7, Appendix B) for radiation shields.

- Cover vision portals in bunkers to shield against blinding light.

- Take down antennas and disconnect all cables, including handsets, from all radios except mission-essential sets for monitoring nets as required by command SOP.

- If moving or if time does not allow for digging in, assume positions at the bottom of hills. The best shielded position is over the brow of a hill and part way down the slope (see Figure H-1).

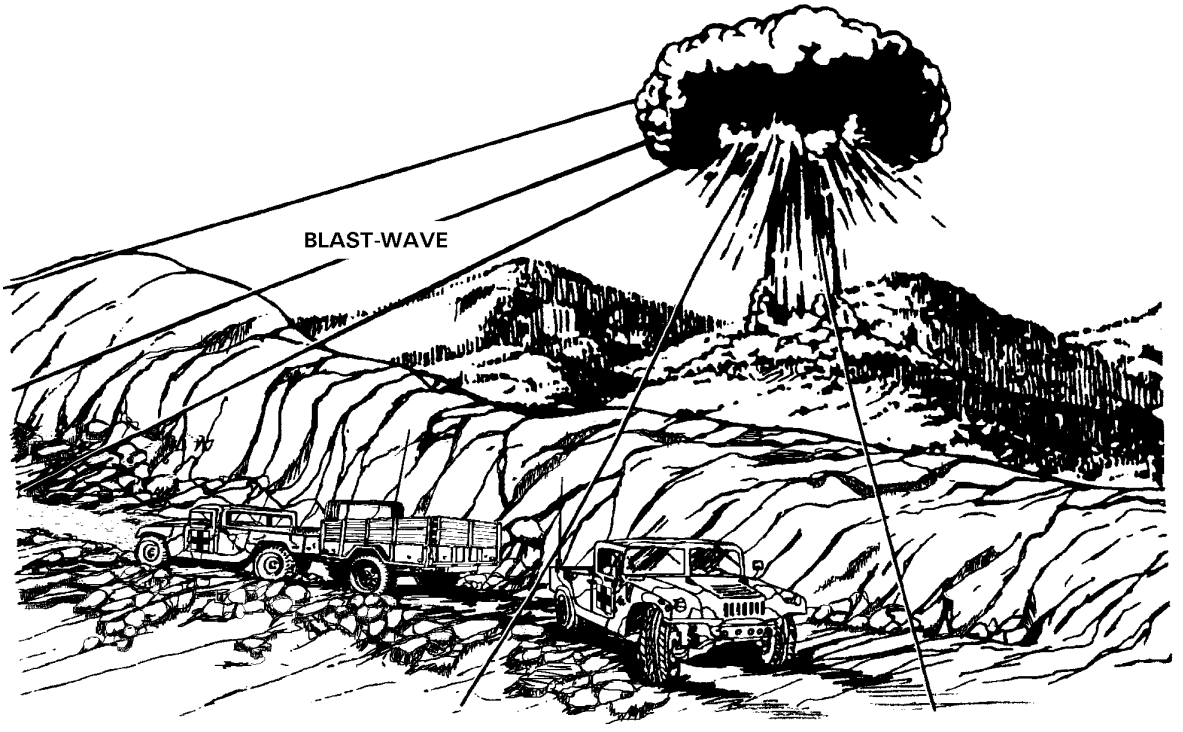


Figure H-1. Protected blast-wave position.

H-3. Chemical and Biological Agent Decontamination

a. After biological and chemical contamination, decontamination (see Table H-2) to some degree, must take place before the protection level is reduced below MOPP 4. The team can undertake the following hasty decontamination actions:

- Decontaminate skin with the M291 (or M258A1) kit.
- Wipe down equipment with the M295 Decon Kit Individual Equipment.
- Spray down vehicles, using the M13 Decon Apparatus, Portable or the M11 decontamination apparatus, to include vehicle exits, entrances, and any areas necessary for unit operations.

b. If a biological contaminant is suspected, follow the same decontamination procedures as with chemicals.

Table H-2. Decontamination Techniques

TYPE	BEST START TIME	PERFORMED BY	TECHNIQUE	EFFECTS
IMMEDIATE	WITHIN 1 MINUTE	INDIVIDUAL	SKIN DECON	STOPS AGENT FROM PENETRATING.
	WITHIN 15 MINUTES	INDIVIDUAL OR ELEMENT	PERSONAL WIPEDOWN	
			OPERATOR'S SPRAYDOWN	
OPERATIONAL	WITHIN 6 HOURS	UNIT	MOPP GEAR EXCHANGE	POSSIBLE TEMPORARY RELIEF FROM MOPP 4. LIMIT LIQUID AGENT SPREAD.
		FST	VEHICLE AND EXTERNAL EQUIPMENT WASHDOWN	
THOROUGH	WHEN MISSION ALLOWS RECONSTITUTION	UNIT	DETAILED TROOP DECON	PROBABLE LONG-TERM MOPP REDUCTION WITH MINIMUM RISKS.
		DECON PLATOON	DETAILED EQUIPMENT DECON	

H-4. Decontamination—After Nuclear Fallout

Decontamination can begin when fallout stops or when the unit has cleared the contaminated area.

a. To perform individual decontamination—

- Brush or wash clothing and equipment thoroughly to remove dust particles. (This must be done away from the position to be occupied.)
- Shower and change clothes, if time and supplies are available.
- Wear a scarf or other piece of cloth to cover the mouth and nose, if there is a great deal of dust in the air.

b. To decontaminate equipment in an area—

- Turn over 2 inches of soil in the immediate area of the facility, equipment, and vehicles.
- Wash shelter system, outside stored equipment, and vehicles using any available source away from the occupied position.

H-5. Unit Nuclear, Biological, and Chemical Defense Teams

a. The FST will be required to organize an NBC defense team from its own resources. The FST NBC defense team is comprised of individuals designated by the FST commander. This team will normally be headed by an EMT NCO assisted by two additional selected team members.

b. Each FST element will be trained (as an additional duty) to handle the NBC defense aspects in their own areas. The CSH or the supported medical company's NBC operations NCO, assisted by selected FST personnel trained in defense procedures, will operate assigned NBC equipment and perform decontamination operations.

c. The NBC operations NCO will advise and assist in the NBC defense activities of the FST and in training NBC equipment operators and decontamination teams. He advises on operational exposure guidance and unit decontamination operations. He coordinates radiological monitoring, chemical detection, and unit decontamination operations. The NBC operations NCO—

- Trains other personnel in NBC defense.
- Receives, prepares, evaluates, and disseminates information on an NBC attack.
- Inspects individual and unit NBC equipment and advises on its maintenance.
- Ensures that the basic load of individual and unit NBC equipment and supplies are maintained.

- Assists in the employment of unit's decontamination teams and the unit's detecting, monitoring, and surveying equipment.

- Maintains unit radiation status records from data obtained from the AN/PDR27, AN/PDR77, AN/VDR2, IM93/UD, IM9/PD, or other radiation detection equipment.

Section II. MEDICAL OPERATIONS IN A NUCLEAR, BIOLOGICAL, AND CHEMICAL ENVIRONMENT

H-6. Fundamentals of Combat Health Support in a Nuclear, Biological, and Chemical Environment

a. The mission of the FST (as previously stated) is to provide a forward surgical capability for nontransportable patients. It optimizes the recovery potential of critically wounded soldiers through early surgical intervention. On a volatile and chaotic battlefield, this unit may be thrust into a situation where it is the first forward surgical element available in a given area to provide frontline surgical support. However, the unit is not equipped with chemical agent patient treatment sets or a chemical agent patient decontamination set and will rely on the supported medical company to thoroughly process those patients triaged to it. The FST is not staffed or equipped to handle chemical agent contaminated casualties. When available, the FST will employ a chemical and biological agent harden collective protection shelter (CPS) system. Employment of the CPS will be as outlined in the user's TM provided with the system. With training and practice, the FST can continue its surgical support mission on the integrated battlefield but will require its patients to be decontaminated by the supported medical company.

b. On future battlefields, the enemy may employ NBC weapons and agents. Chemical, biological, and directed-energy (DE) protective measures and procedures to mitigate the effects of nuclear weapons must be included in both the FST training programs and the daily operations. This section provides guidance for unit operations in an NBC environment and for protection from the hazards of DE devices. The information presented in this text emphasizes contingency planning for the capability to provide CHS.

c. Nuclear, biological, and chemical actions create high casualty rates, materiel losses, maneuver problems, and contamination. Mission-oriented protective posture Levels 3 and 4 result in body heat buildup, reduced mobility, and degraded visual, touch, and hearing senses. Laser protective eyewear may degrade vision, especially at night. Individual and unit operational effectiveness and productivity are degraded.

d. Contamination is a major problem in providing CHS in an NBC environment. To increase survivability, as well as supportability, FST units must take necessary action to avoid NBC contamination. Maximum use must be made of—

- Alarm and detection equipment.

- Unit dispersion (when possible).

- Overhead cover, shielding materials, and when available, CPS.
- Chemical agent resistant coating.

e. Generally, a biological aerosol attack will not significantly impact on materiel, terrain, or personnel in the short term. Detailed information on characteristics and soldier dimensions of the nuclear battlefield, NBC operations, extended operations in contaminated areas, NBC decontamination, NBC avoidance, and NBC and DE protection are contained in FMs 3-3, 3-3-1, 3-4, 3-5, 3-100, 8-9, 8-10-7, 8-33, 8-50, 8-250, and 8-285. For additional information regarding nuclear weapons effects, mitigation, and nuclear defense training, refer to FMs 25-50, and 25-51.

H-7. Deployment in Nuclear, Biological, and Chemical Operations

a. Normally, the FST will deploy to handle those 57 patient conditions outlined in Appendix A. However, in an NBC environment, plans must be made to consider worst-case scenarios. The FST commander makes a quick appraisal to determine the expected patient work load in an unconventional warfare situation. The standard triage- and EMT-decision matrices for managing NBC casualties in a contaminated environment will be considered for immediate implementation by the supported medical company (see FMs 8-9 and 8-10-7).

b. If unable to relocate upon receipt of a STRIKWARN or chemical warning (CHEMWARN) message, or an NBC report, the FST will automatically configure for NBC operations.

H-8. Collective Protection Shelter Systems

a. Without CPS systems, medical care for patients in an NBC environment will be greatly reduced. Therefore; a CPS systems (METT-T determined) must be available for forward deploying FSTs. The CPS system will provide a contamination-free area in which FST personnel and patients can remove their protective ensemble; thereby maintaining required treatment capabilities.

b. The CPS system will consist of chemical and biological protection shelters, NBC filter blower units, conditioned (heated or cooled) air systems, and air locks to accommodate staff, ambulatory, and litter patients. The CPS system, when deployed, will provide complete chemical and biological agent hardening capability for the FST.

c. The shelter system will be configured as required for the TTM, surgery, and recovery elements. It may be used in an NBC or a conventional operational mode. Information on the establishment and operations of the CPS will be provided in FM 8-10-7 when the system becomes available.

APPENDIX I

ELECTRICAL POWER GENERATION

I-1. Power-Generation Equipment

a. The FST employs the 5 kw, diesel-powered generator set discussed below. The power-generation diagrams depicted in Figure I-1 outline the 24-hour electrical power requirement for the team. This figure also shows the equipment by line item number (LIN) and the amount of kw power each piece of equipment draws.

b. This diesel-powered generator set (LIN J35813) distributes power through the 60 amperes (amp), 3-phase electrical feeder (LIN F55553) and provides power for the equipment used in the FST, to include lighting of the facility.

c. Personnel designated to operate the FST's power-generation equipment are required to undergo qualification training and be certified to operate the equipment. Designated FST personnel may be trained/ supervised by the power-generation equipment repair specialist who is assigned to the CSH or the supported medical company.

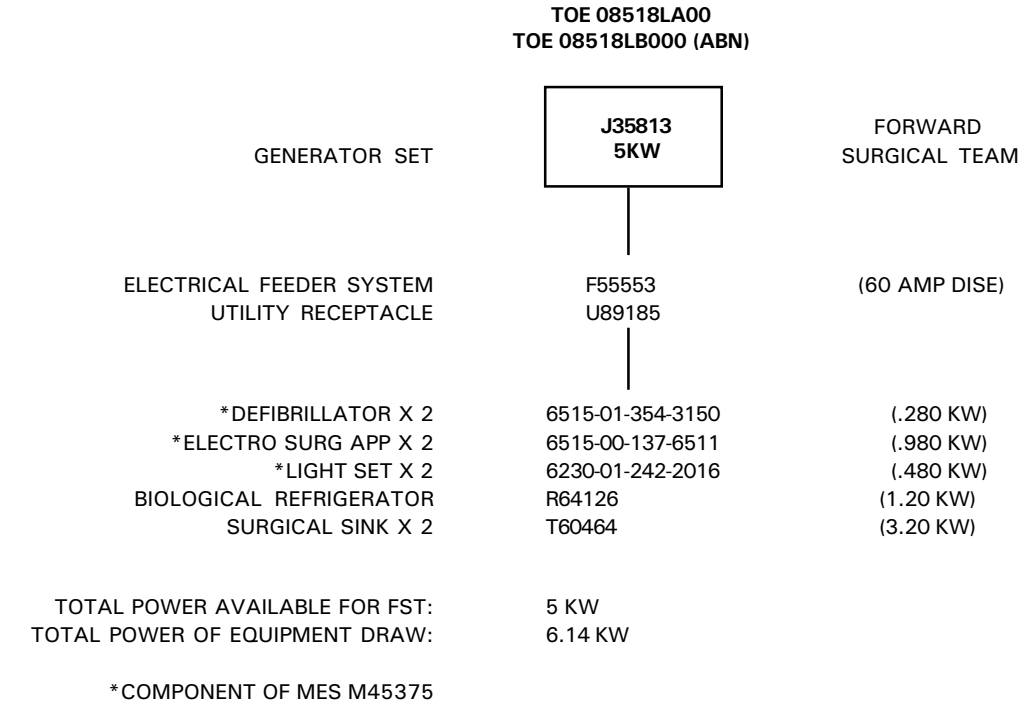


Figure I-1. Power distribution diagram for a corps FST.

I-2. Power-Generation Equipment for a Medical Company

The treatment platoons of divisional and nondivisional medical companies employ a trailer-mounted, 30 kw power plant. During the FST's generator downtime, the medical company will be required to share electrical power with the team. To assist in this effort, some recently tested and proven guidelines (beginning at Table I-1) are provided that may be used in setting up and operating 3-phase generators at maximum efficiency. The checklist and the succeeding illustrations provide instructions for 3-phase electrical power distribution. These instructions are intended for trained power-generation personnel in the medical unit that employs 15 kw and larger generators. This information is to be used in conjunction with the TM of the specific power-generation equipment to be operated.

Table I-1. Operator's Checklist and Guide for 15 KW and Larger Generators

[ ] OBSERVE AND POST WARNING INSTRUCTIONS. Refer to High-Voltage Warning, Figure I-2.

[ ] DETERMINE WHERE THE EQUIPMENT WILL BE LOCATED. Refer to Operator's Preparations and Considerations, Table 1-2.

[ ] USE POWER FORMULA PROVIDED IN FIGURE I-3.

[ ] RUN 50-FOOT EXTENSION CABLE ASSEMBLY(IES) FROM THE EQUIPMENT AREA TO THE M40 OR M60 POWER DISTRIBUTION CENTERS. Refer to Cable Connection (Table 1-3) and Cable Placement (Figure I-4).

[ ] CONNECT THE M40 POWER DISTRIBUTION CENTER(S) TO THE M100 POWER DISTRIBUTION WITH SERVICE FEEDER CABLES. Refer to Table I-3, Figure I-5, and Figure I-6.

NOTE:
1. The M40 power distribution centers ARE NOT USED in series.
2. The M40 power distribution centers ARE ONLY connected with each other by the J-1 and J-2 40 amp input and output ports.
3. M40 and M60 power distribution centers are NEVER connected to each other.

[ ] GROUND THE GENERATOR. ENSURE THE GENERATOR GROUNDING ROD IS 9 INCHES DEEP OR THAT IT IS THOROUGHLY WETTED DOWN IN THE MODIFIED GROUNDING POSITION.

[ ] CONNECT THE M100 POWER DISTRIBUTION TO THE GENERATOR WITH A PIGTAIL. Refer to generator hookup, Figure I-7.

NOTE:
1. The BLACK lead wire is connected to L1.
2. RED lead wire is connected to L2.
3. BLUE lead wire is connected to L3.
4. WHITE lead wire is connected to L0.
5. GREEN lead wire is connected to the GROUND TERMINAL.

[ ] THE ALTERNATING CURRENT OUTPUT CONNECTION SWITCH IS SET ON THE 120 VOLT/3-PHASE POSITION. Refer to AC circuit breaker, Figure I-8.

[ ] SET THE AMMETER-VOLTMETER TRANSFER SWITCH ON THE GENERATOR. Refer to Setting Ammeter-Voltmeter, Figure I-9.

[ ] BALANCE THE LOAD. Refer to Figures I-6, I-10, and I-11.

DANGER

HIGH VOLTAGE

DEATH ON CONTACT MAY RESULT IF PERSONNEL FAIL TO OBSERVE SAFETY PRECAUTIONS.

- NEVER WORK ON ELECTRICAL EQUIPMENT UNLESS THERE IS ANOTHER PERSON NEARBY WHO IS FAMILIAR WITH THE OPERATION AND HAZARDS OF THE EQUIPMENT AND WHO IS COMPETENT IN ADMINISTERING FIRST AID. WHEN THE POWER GENERATOR TECHNICIAN IS AIDED BY USER/OPERATORS, HE MUST WARN THEM ABOUT DANGEROUS AREAS.

- THE POWER SUPPLY TO THE EQUIPMENT MUST BE SHUT OFF BEFORE BEGINNING TO WORK ON THE EQUIPMENT. THE POWER SOURCE MUST BE GROUNDED AT ALL TIMES WHEN EQUIPMENT IS IN USE OR BEING WORKED ON. BE CAREFUL NOT TO CONTACT HIGH-VOLTAGE CONNECTIONS OF 120/208 VOLTS AC WHEN INSTALLING OR OPERATING THIS EQUIPMENT.

- HIGH VOLTAGE IS PRESENT IN THIS SYSTEM. DISTRIBUTION ILLUMINATION SYSTEM ELECTRICAL (DISE) SUPPORTS EQUIPMENT USING 120/208 V AC. DO NOT RELY ON THE COLOR INSULATION ON THE WIRES INSIDE THE CABLE JACKET. COLORS MAY VARY, DEPENDING ON SUPPLIER. WIRES WILL BE MARKED WITH CONTINUITY TEST TO VERIFY CORRECT PHASE DESIGNATION IN ACCORDANCE WITH THE COLORED TAPE.

Figure I-2. High-voltage warning.

Table I-2. Operator's Preparations and Considerations

[ ] ANALYZE THE ELECTRICAL EQUIPMENT NEEDS IN THE PARTICULAR FIELD APPLICATION.

[ ] KNOW THE TERRAIN TO DETERMINE SPECIAL CONSIDERATIONS FOR GROUNDING AND ROUTING OF CABLES.

[ ] BE FAMILIAR WITH TACTICAL OR OTHER RESTRICTIONS ON LOCATING THE POWER SOURCE(S) RELATIVE TO TENTS, OTHER SHELTER SYSTEMS, AND OTHER POWER-CONSUMING EQUIPMENT.

[ ] DEVELOP AN ACTUAL POWER DISTRIBUTION PLAN BASED ON ANALYSIS THAT ALLOWS FOR TERRAIN AND TACTICAL CONSTRAINTS AND PROVIDES DISTRIBUTED ELECTRICAL POWER FROM THE LEAST NUMBER OF GENERATORS AS POSSIBLE.

[ ] START ANALYSIS AT THE CONSUMING END OF THE NETWORK AND WORK BACKWARDS TO THE POWER SOURCE. IF AMPERAGE DATA IS NOT AVAILABLE, USE THE FUSE TO COMPUTE POWER REQUIREMENT.

[ ] WHEN THE TOTAL ELECTRICAL WATTAGE IS CALCULATED, DIVIDE TOTAL POWER BY 1000. THIS WILL GIVE YOU THE KW OF POWER TO BE CONSUMED.

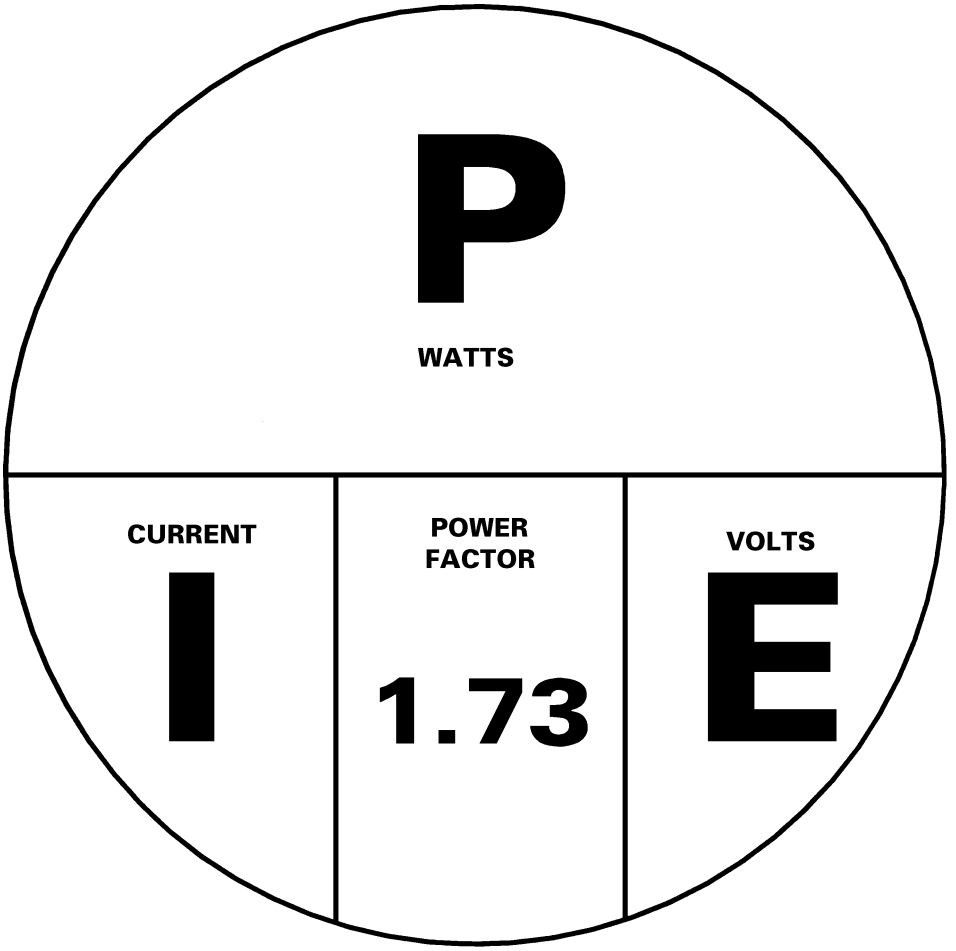
[ ] DETERMINE AMOUNT, TYPE, AND LOCATION OF THE M40, M60, M100, AND M200 AMP DISTRIBUTION SYSTEMS NEEDED. LOCATE THE EQUIPMENT CLOSE TO THE POWER SOURCE TO REDUCE OR ELIMINATE THE NEED FOR FEEDER SYSTEMS AND ADDITIONAL CABLING.

NOTE:

1. THE M40 AND M60 CANNOT BE USED IN SERIES OR BE CONNECTED TO EACH OTHER. THE M60 IS A STAND-ALONE SYSTEM AND SHOULD BE USED WITH SMALLER-RATED GENERATOR SETS (GENERALLY 5 KW).

2. THE M100 FEEDER SYSTEM IS NORMALLY USED WITH ONE OR MORE M40 DISTRIBUTION SYSTEMS AND THE M200 SYSTEM WITH TWO OR MORE M100 DISTRIBUTION SYSTEMS WHEN ADDITIONAL CAPACITY IS NEEDED.

3. M40 OR M60 DISTRIBUTION PANELS ARE TO BE USED TO POWER UTILITIES AND EQUIPMENT, EITHER 110 VOLT OR 220 VOLT; 50 OR 60 HERTZ.



$$P = 1.73 \times I \times E$$

$$I = \frac{P}{1.73 \times E}$$

$$E = \frac{P}{1.73 \times I}$$

Figure I-3. Power formula for three-phase generator.

Table I-3. Cable Connection

[ ] ENSURE THE AVAILABILITY OF SUFFICIENT ELECTRICAL UTILITY KIT (M46) TO SUPPORT THE SHELTER SYSTEM BEING POWERED.
[ ] CONNECT REQUIRED NUMBER OF DUPLEX RECEPTACLE BOXES TO THE BRANCH CIRCUIT CABLE. CONNECT AN EXTENSION CABLE BETWEEN THE BRANCH CIRCUIT CABLES AND THE DISTRIBUTION CENTER (M40 OR M60) TO THE 20 AMP OUTPUT CONNECTOR.
[ ] CONNECT SERVICE/FEEDER CABLE OF THE DESIRED LENGTH TO THE M40 OR M60 DISTRIBUTION CENTER OUTPUT CONNECTOR.
[ ] CONNECT THE SERVICE/FEEDER CABLE (SELECTED LENGTH) TO THE OUTPUT CONNECTOR OF THE M100/M200 FEEDER CENTER, DEPENDING ON POWER REQUIREMENT.
[ ] CONNECT THE INPUT PIGTAIL FROM THE GENERATOR OUTPUT CONNECTOR.

EACH SEPARATE SHELTER SYSTEM SHOULD HAVE AN M46—ELECTRICAL UTILITY KIT

EACH KIT CONTAINS:
1. EXTENSION CABLE ASSEMBLY (ASSY) 15'
2. BRANCH CIRCUIT CABLE ASSY, 12-OUTLET
3. UTILITY LIGHT, 120V, DUAL SOCKET
4. ROPE SUPPORT ASSY
5. CABLE SECURING STRAP

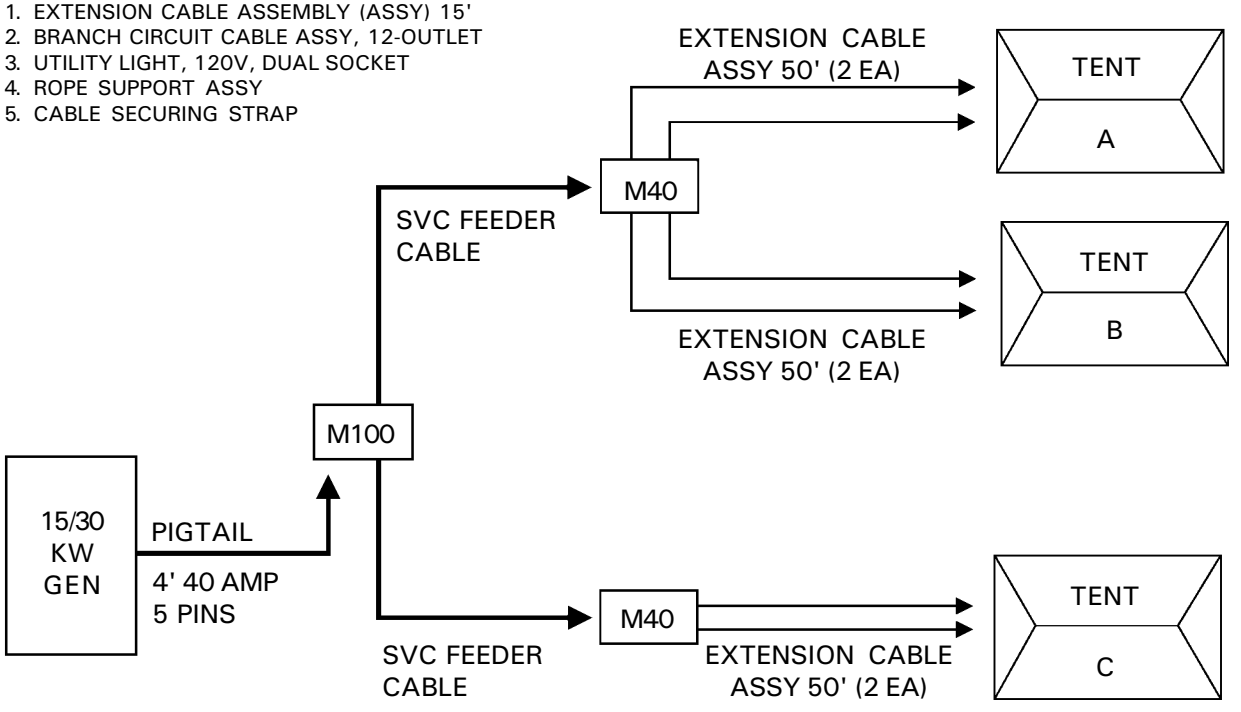
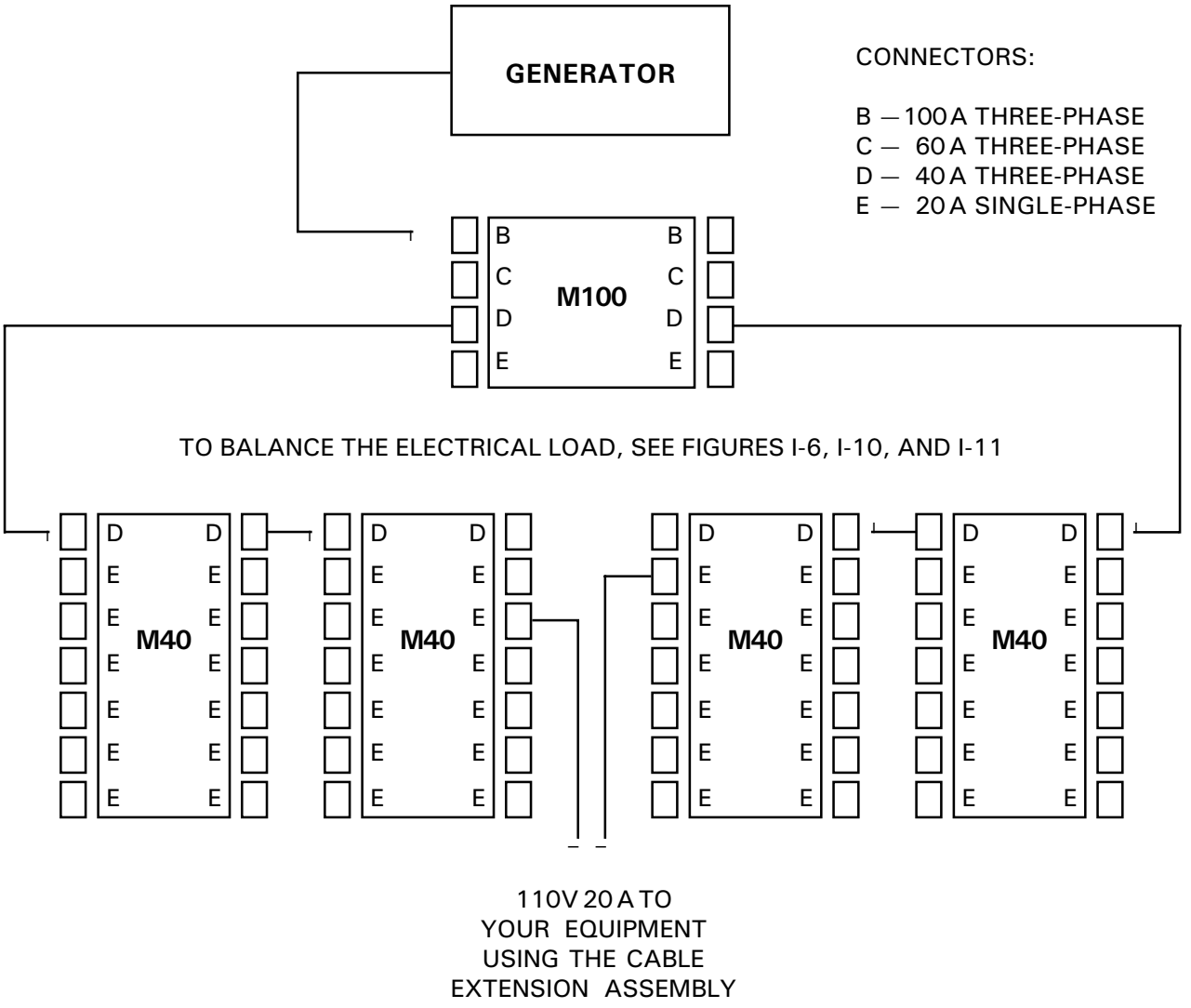


Figure I-4. Cable placement.



M40s **CAN** BE CONNECTED WITH EACH OTHER USING THE "D" CONNECTOR
DO NOT CONNECT M40s WITH EACH OTHER USING THE "E" CONNECTOR

Figure I-5. Connecting for three-phase operation.

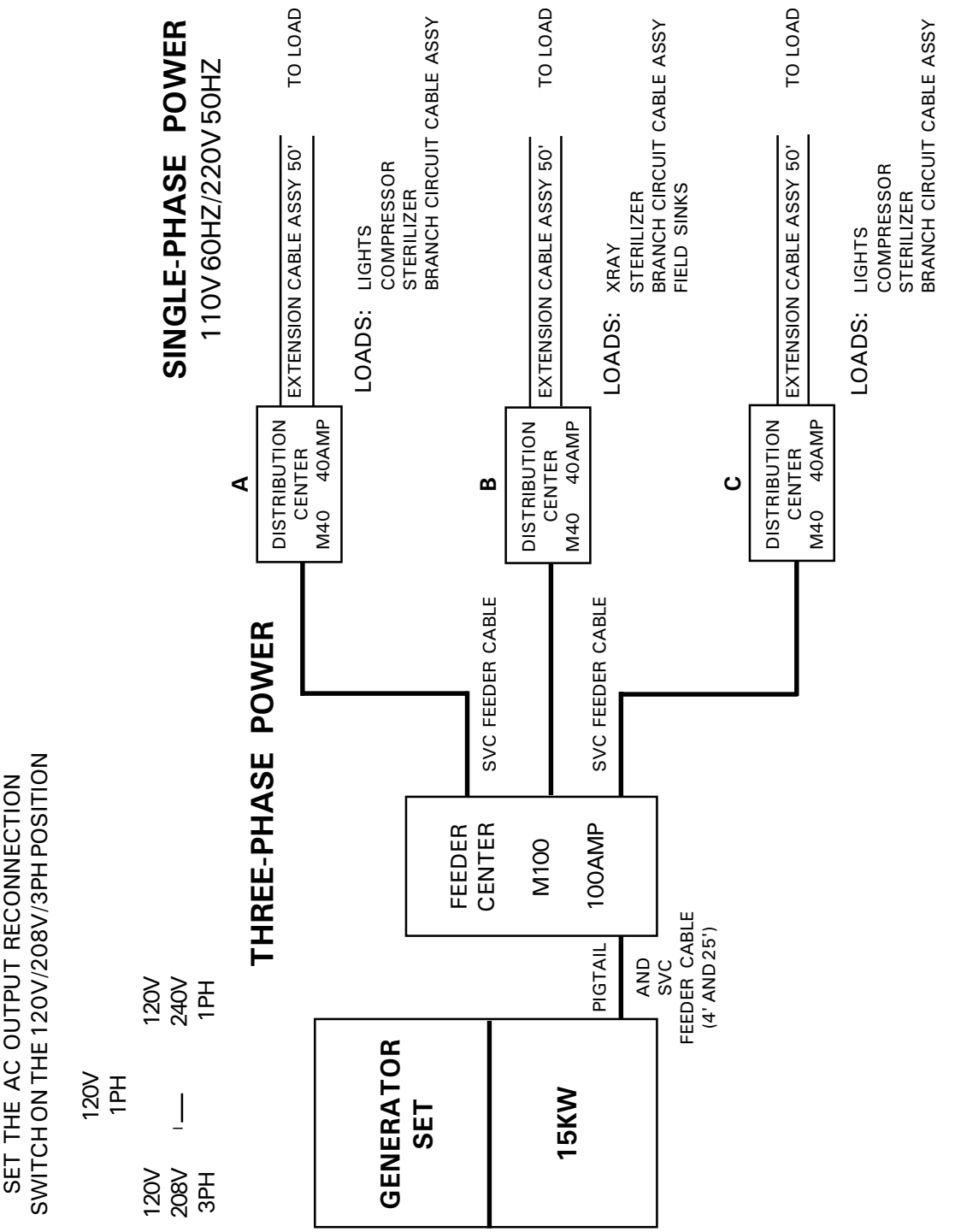
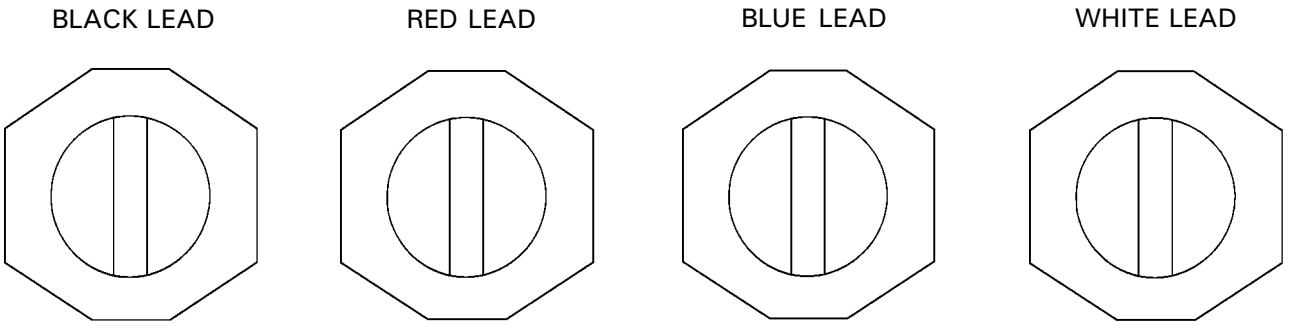


Figure I-6. Power distribution balance.

GENERATOR PIGTAIL HOOKUP
THREE-PHASE (5 WIRE)



GREEN LEAD WIRE (5TH WIRE IS HOOKED UP TO GROUND TERMINAL)

CAUTION: USE THE COLOR OF THE WIRE TO HOOK UP THE PIGTAIL. BE AWARE THAT MANUFACTURES USE OTHER COLORS. BE SURE TO OHM OUT THE CABLE TO ENSURE LEADS ARE PROPERLY CONNECTED.

Figure I-7. Generator hookup.

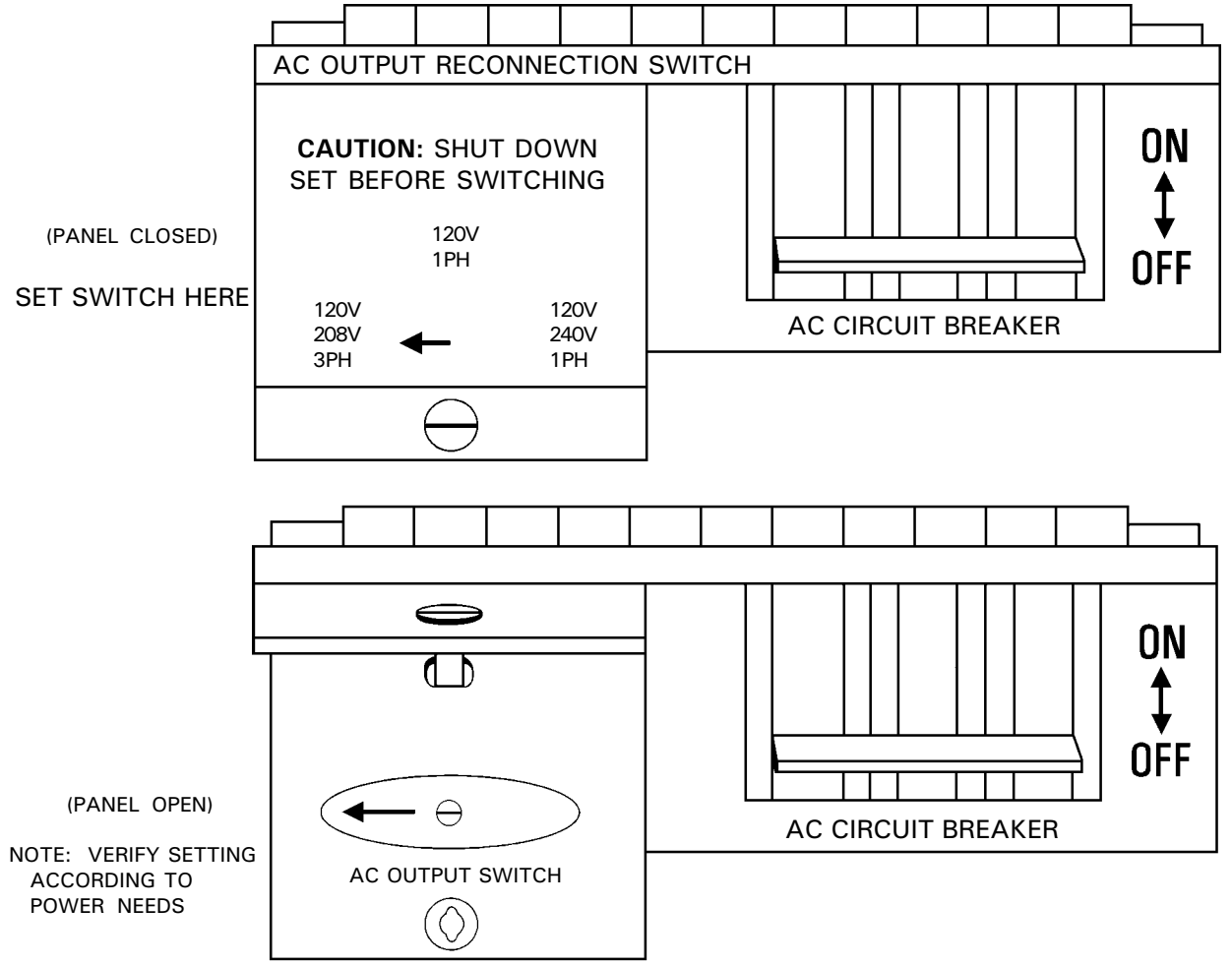


Figure I-8. Alternating current circuit breaker.

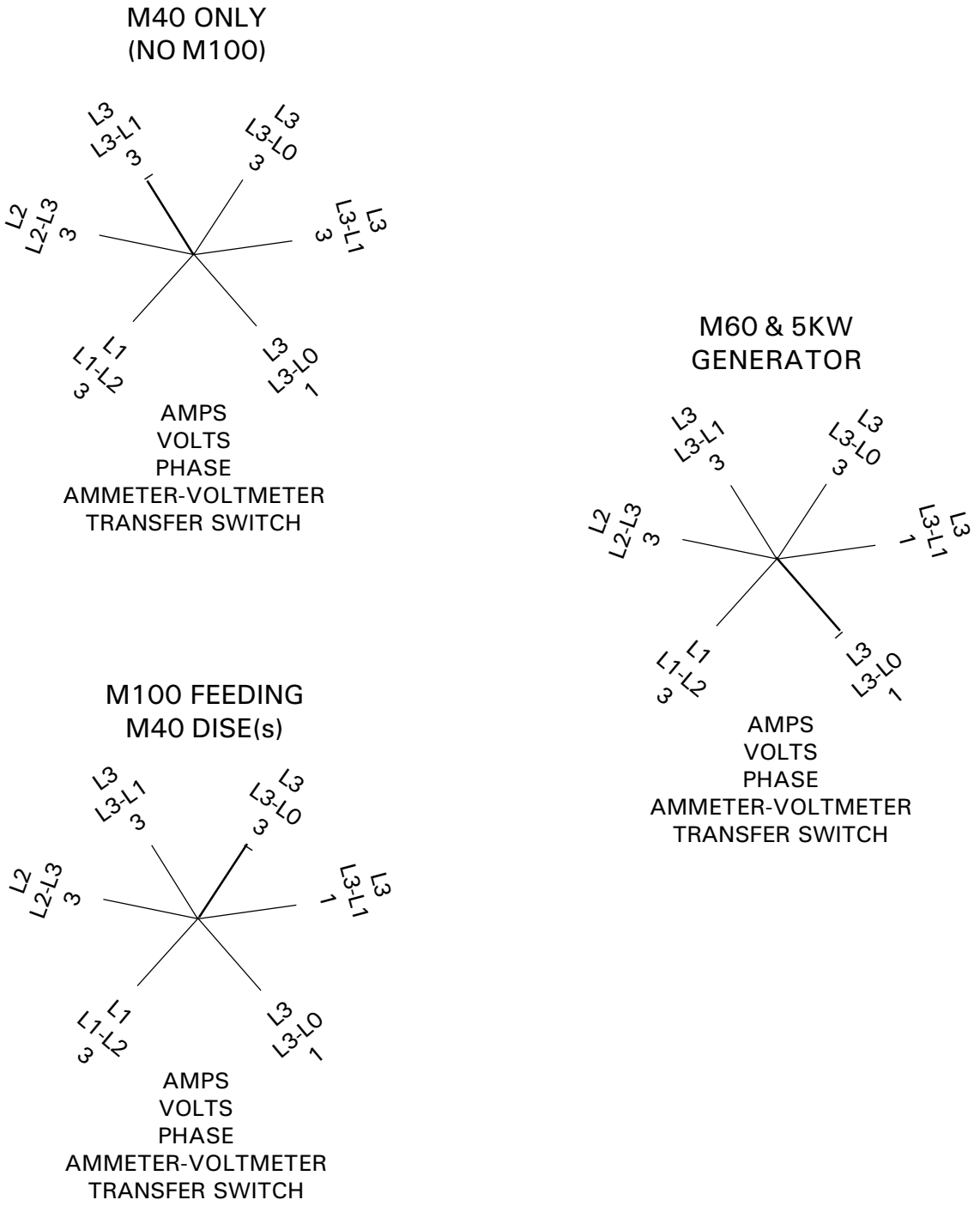
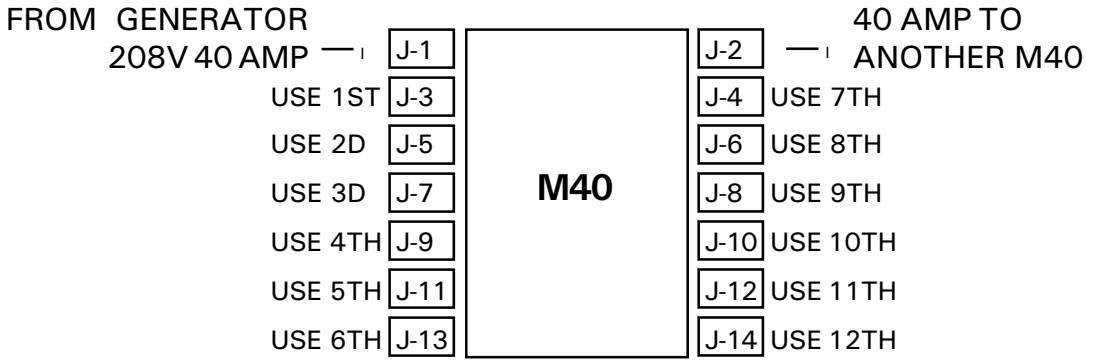


Figure I-9. Setting ammeter-voltmeter.

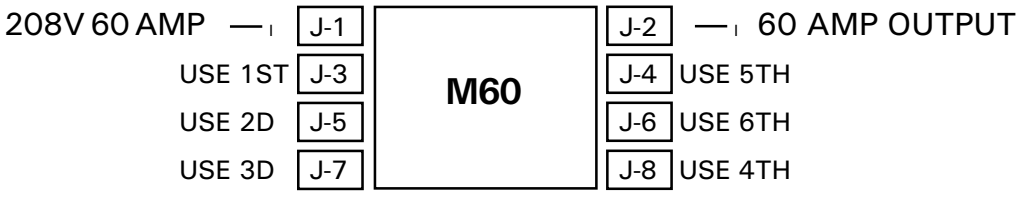
ATTACH EQUIPMENT IN THE ORDER INDICATED. THE TOTAL AMPERAGE OF THE EQUIPMENT CANNOT EXCEED 20 AMPS



J-1	40 AMP INPUT	J-2	40 AMP OUTPUT
J-3	20 AMP OUTPUT GF	J-4	20 AMP OUTPUT
J-5	20 AMP OUTPUT GF	J-6	20 AMP OUTPUT
J-7	20 AMP OUTPUT GF	J-8	20 AMP OUTPUT
J-9	20 AMP OUTPUT GF	J-10	20 AMP OUTPUT
J-11	20 AMP OUTPUT GF	J-12	20 AMP OUTPUT
J-13	20 AMP OUTPUT GF	J-14	20 AMP OUTPUT

Figure I-10. Balancing the power load of the M40.

ATTACH EQUIPMENT IN THE ORDER INDICATED. THE TOTAL AMPERAGE OF THE EQUIPMENT CANNOT EXCEED 20 AMPS



J-1	60 AMP INPUT	J-2	60 AMP OUTPUT
J-3	20 AMP OUTPUT GF	J-4	20 AMP OUTPUT
J-5	20 AMP OUTPUT GF	J-6	20 AMP OUTPUT
J-7	20 AMP OUTPUT GF	J-8	20 AMP OUTPUT GF

Figure I-11. Balancing the power load of the M60.

I-3. Guidelines for Power Distribution Using the Distribution Illumination System-Electrical

a. The distribution illumination system-electrical (DISE) consists of several components:

(1) The electrical feeder system (EFS) (LIN F55621) is a 100 amp-rated feeder system. It is hard-wired (a 5-wire pigtail is provided) directly to the generator and Class L connectors (5-pin, screw-in-type connectors) at the distribution end.

(2) The distribution system, electrical (LIN F55485) is a 40 amp-rated distribution system. It connects directly with a Class L plug to the EFS and allows for a wider distribution of power.

(3) The utility receptacle (U89185) is an electrical system that provides lights and extension cords for use inside the shelter systems. It can be connected by Class L connectors to either of the other two systems (DISE or EFS).

b. The DISE is easy to use. All connections and electrical boxes are circuit breaker protected. Except for the hard wiring to the generator, the entire system is designed so that any member of the unit(s) can establish power "hookups" (refer to checklist provided in Table I-1).

GLOSSARY

ABBREVIATIONS AND ACRONYMS

A/amp amperes/amperages

ABCA American, British, Canadian, and Australian

abn airborne

AC Active Component; alternating current

ACR armored cavalry regiment

ACUS area common-user system

admin administration

AHS Academy of Health Sciences

AM amplitude modulated

AMEDD Army Medical Department

AMEDDC&S Army Medical Department Center and School

amp amperage

AN Army Nurse Corps

AO area of operations

AOC area of concentration

APP apparatus

AR Army regulation

ASMB area support medical battalion

ATM advanced trauma management

attn attention

AUD audio

AUTO automatic

BAS battalion aid station

bde brigade

BDU battle dress uniform

biol biological

BMSO brigade medical supply office

bn battalion

BSA brigade support area

BW biological warfare

C chief

C2 command and control

CAM chemical agent monitor

CBL cable

cc cubic centimeter

cdr commander

CGO cargo

CHEMWARN chemical warning (warning of a chemical warfare attack)

CHS combat health support

Cl chloride

CMH Center of Military History

CNR combat net radio

co company

COMSEC communications security

CO2 carbon dioxide

CONUS continental United States

COSCOM corps support command

CPS collective protection shelter

CPT captain

CPU collective protection undergarments

CS combat support

CSG corps support group

CSH combat support hospital

CSOP clinical standing operating procedure

CSS combat service support

CTA common table(s) of allowances

CTG cartridge

CZ combat zone

DA Department of the Army

DE directed energy

decon decontamination

DEFCON defense readiness condition

dig digital

DISCOM division support command

DISE distribution illumination system-electrical

distr distribution

DJMR Department of Joint Medical Readiness

DLA Defense Logistics Agency

DMOC division medical operations center

DMSO division medical supply office

DNVT digital nonsecure voice telephone

DOD Department of Defense

DODIC Department of Defense identification code

dsl diesel

EAC echelons above corps

EFS electrical feeder system

EL electrical

EMT emergency medical treatment

engr engineer

EOC Emergency Operations Center

EP electronic protection

EPW enemy prisoner(s) of war

equip equipment

EW electronic warfare

FAX facsimile

FH field hospital

FIO2 fractional-inspired oxygen

1LT first lieutenant

FM frequency modulated; field manual (when used with a number)

FORSCOM US Army Forces Command

FSB forward support battalion

FSMC forward support medical company

FST forward surgical team

fwd forward

G3 Assistant Chief of Staff (Operations and Plans)

gal gallon

gen generator

GF gravity feed

GH general hospital

GP general purpose

gp/grp group

GPS global positioning system

HHC headquarters and headquarters company

HIMOB high mobility

HMMWV high mobility multipurpose wheeled vehicle

hosp hospital

HQ headquarters

hr/hrs hour(s)

ICP incremental change package

IHFR improved high-frequency radio

IV intravenous

IVP intravenous pyelogram

JCS Joint Chiefs of Staff

K potassium

km kilometers

kw/KW kilowatt

LAB laboratory

lbs pounds

LDF lightweight digital facsimile

LEN large extension node

LENS large extension node switch

LIN line item number

LRA local reproduction authorized

LT lieutenant

LTC lieutenant colonel

LTOE living table(s) of organization and equipment

ltwt lightweight

mach machine

maint maintenance

MAJ major

MAST medical antishock trousers

MC Medical Corps

MCC movement control center

MCH medical company, holding

med medical

MEDLOG medical logistics

MES medical equipment set

METL mission-essential task list(s)

METT-T mission, enemy, terrain, troops, and time available

MHz megahertz

MIJI meaconing, intrusion, jamming, and interference

min minute

MIW multiple injury wound

ml milliliter

mm millimeter

mm Hg millimeters of mercury

MMH maintenance man-hours

MOPP mission-oriented protective posture

MOS military occupational specialty

MRE meals, ready to eat

MS Medical Service Corps

MSB main support battalion

MSE mobile subscriber equipment

MSMC main support medical company

MST maintenance support team

MTF medical treatment facility

Na sodium

NATO North Atlantic Treaty Organization

NAVSTAR navigational system tracking and range

NBC nuclear, biological, and chemical

NC node center; noncommissioned

NCO noncommissioned officer

NCOIC noncommissioned officer in charge

NCS net control station

NG nasogastric

no number

NPT near patient testing

OCONUS outside continental United States

op/ops operation(s)

OPCON operational control

OPLAN operation plan

OPORD operation order

OPSEC operations security

OR operating room

OVM on vehicle maintenance

PA physician assistant

pam pamphlet

PAO Public Affairs Officer

PEEP positive end-expiratory pressure

PFC private first class

PH phase

PLGR precision lightweight global positioning system receiver

PLL prescribed load list

PMCS preventive maintenance checks and services

PN practical nurse

POE port of embarkation

POL petroleum, oils, and lubricants

POM preparation for oversea movement (units)

POS/NAV position/navigation

PRBC packed red blood cells

p.r.n. as circumstances require (*pro re nata*)

PROFIS professional officer filler system

PSS personnel service support

pub publication

PVNTMED preventive medicine

q. every (*quaque*)

QM quartermaster

QSTAG Quadripartite Standardization Agreement

qty quantity

RC Reserve Component

rd round

RECEPT receptacle

refrig refrigerator

RMSO regimental medical supply office

RTD return to duty

sep/Sep separate/September

SF standard form

SFC sergeant first class

sgl single

SGT sergeant

SIMV synchronized intermittent mandatory ventilation

SINCGARS Single-Channel Ground and Airborne Radio System

SOF Special Operations Forces

SOI signal operation instruction

SOP standing operating procedure

SPC/Spec specialist

spt support

SQDN squadron

SSA supply support activity

SSG staff sergeant

SSN social security number

STANAG Standardization Agreement

STRIKWARN strike warning (nuclear)

surg surgical

svc service

sys system

TAES Tactical Aeromedical Evacuation System

TM team; technical manual

TO theater of operations

TOE table(s) of organization and equipment

TPFDL Time-Phased Force Deployment List

trk truck

trl trailer

trp troop

TSOP tactical standing operating procedure

TTM triage-trauma management

TV tidal volume

UBL unit basic load

UGR unitized group ration

US United States

USAF United States Air Force

util utility

v volt

REFERENCES

SOURCES USED

These are the sources quoted or paraphrased in this publication.

NATO STANAGs

2027. *Marking of Military Vehicles*. 18 December 1975. (Latest Amendment, 25 April 1991.)
2047. *Emergency Alarms of Hazard or Attack (NBC and Air Attack)*. 10 October 1990.
2068 Med. *Emergency War Surgery (Edition 4) (Amendment 3)*. October 1991.
2931. *Orders for the Camouflage of the Red Cross and Red Crescent on Land in Tactical Operations*. 18 October 1984. (Latest Amendment, 11 June 1991.)

ABCA QSTAG

512. *Marking of Military Vehicles*. 31 January 1979. (Latest Amendment, 9 October 1980.)

Joint and Multiservice Publications

AR 27-50. *Status of Forces Policies, Procedures, and Information*. SECNAVINST 5820.4G. 15 December 1989.
AR 40-538. *Property Management During Patient Evacuation*. BUMEDINST 6700.2B; AFR 167-5. 1 June 1980.
FM 10-63. *Handling of Deceased Personnel in Theaters of Operations*. AFM 143-3; FMFM 4-8. 28 February 1986.

Army Publications

AR 27-1. *Legal Services, Judge Advocate Legal Services*. 3 February 1995.
AR 385-40. *Accident Reporting and Records*. 1 November 1994.
AR 530-1. *Operations Security (OPSEC)*. 3 March 1995.
AR 710-2. *Inventory Management Supply Policy Below the Wholesale Level*. 31 January 1992. (Reprinted with basic including Change 1, 28 February 1994.)
CMH Pub 20-5. *The Medics' War (US Army in the Korean War Series)*. April 1986.
DA Pam 27-1. *Treaties Governing Land Warfare*. 7 December 1956.
FM 10-27-2. *Tactics, Techniques, and Procedures for Quartermaster Direct Support Supply and Field Service Operations*. 18 June 1991.
FM 10-286. *Identification of Deceased Personnel*. 30 June 1976.
FM 20-31. *Electric Power Generation in the Field*. 9 October 1987.

FM 21-60. *Visual Signals*. 30 September 1987.
FM 24-1. *Signal Support in the AirLand Battle*. 15 October 1990.
FM 27-10. *The Law of Land Warfare*. 18 July 1956. (Reprinted with basic including Change 1, 15 July 1976.)
FM 55-15. *Transportation Reference Data*. 9 June 1986.
FM 704-28. *Classes of Supply*. 1 February 1979.

DOCUMENTS NEEDED

These documents must be available to the intended users of this publication.

Joint and Multiservice Publications

FM 3-3. *Chemical and Biological Contamination Avoidance*. FMFM 11-17. 16 November 1992. (Change 1, 29 September 1994).
FM 3-3-1. *Nuclear Contamination Avoidance*. FMFM 11-18. 9 September 1994.
*FM 3-4. *NBC Protection*. FMFM 11-9. 29 May 1992. (Change 2, 21 February 1996.)
*FM 3-5. *NBC Decontamination*. FMFM 11-10. 17 November 1993.
*FM 3-100. *Chemical Operations Principles and Fundamentals*. MCWP 3-3.7.1. 8 May 1996.
FM 8-9. *NATO Handbook on the Medical Aspects of NBC Defensive Operations AMedP-6(B)*. NAVMED P-5059; AFJMAN 44-151V1V2V3. 1 February 1996.
FM 8-33. *Control of Communicable Diseases Manual (16th Edition)*. NAVMED P-5038. 9 April 1996.
FM 8-285. *Treatment of Chemical Agent Casualties and Conventional Military Chemical injuries*. NAVMED P-5041; AFJMAN 44-149; FMFM 11-11. 22 December 1995.
FM 21-305. *Manual for the Wheeled Vehicle Driver*. 27 August 1993.
*FM 55-12. *Movement of Units in Air Force Aircraft*. AFM 76-6; FMFM 4-6; OPNAVINST 4630.27A. 10 November 1989 (Change 1, 28 December 1992).
*FM 55-450-3. *Multiservice Helicopter External Air Transport: Basic Operations and Equipment*. FMFRP 5-31, Vol I; NWP 42-1, Vol I; AFR 50-16; COMDTINST M13482.2. 11 February 1991. (Reprinted with basic including Change 1, 8 December 1992.)
*FM 55-450-4. *Multiservice Helicopter External Air Transport: Single-Point Rigging Procedures*. FMFRP 5-31, Vol II; NWP 42-1, Vol II; AFR 50-16, Vol II; COMDTINST M13482.3. 11 February 1991.
*FM 55-450-5. *Multiservice Helicopter External Air Transport: Dual Point Rigging Procedures*. FMFRP 5-31, Vol III; NWP 42-1, Vol III; AFR 50-16, Vol III; COMDTINST M13482.4. 11 February 1991. (Reprinted with basic including Change 1, 7 January 1993.)
Joint Pub 3-11. *Joint Doctrine for Nuclear, Biological, and Chemical (NBC) Defense*. 10 July 1995.
Joint Pub 4-02. *Doctrine for Health Service Support in Joint Operations*. 26 April 1995.
TM 38-250. *Preparing Hazardous Materials for Military Air Shipments*. AFR 24-204; NAVSUP Pub 505; MCO P4030.19F; DLAM 4145.3. 25 November 1994.

*This source was also used to develop this publication.

Army Publications

AR 40-2. *Army Medical Treatment Facilities: General Administration*. 3 March 1978. (Reprinted with basic including Changes 1—2, 15 March 1983.)
*AR 40-61. *Medical Logistics Policies and Procedures*. 25 January 1995.
AR 40-66. *Medical Record Administration*. 20 July 1992.
AR 190-11. *Physical Security of Arms, Ammunition, and Explosives*. 30 September 1993.
AR 220-10. *Preparation for Oversea Movement of Units (POM)*. 15 June 1973.
AR 380-40. *Policy for Safeguarding and Controlling Communications Security (COMSEC) Material (U)*. 1 September 1994.
AR 385-10. *Army Safety Program*. 23 May 1988.
*AR 385-55. *Prevention of Motor Vehicle Accidents*. 12 March 1987.
*AR 570-2. *Manpower Requirements Criteria*. 15 May 1992.
AR 750-1. *Army Materiel Maintenance Policy and Retail Maintenance Operations*. 1 August 1994. (Change 1, 1 July 1996.)
DA Pam 710-2-1. *Using Unit Supply System (Manual Procedures)*. 1 January 1982. (Reprinted with basic including Changes 1—13, 28 February 1994.)
FM 8-10. *Health Service Support in a Theater of Operations*. 1 March 1991.
FM 8-10-1. *The Medical Company—Tactics, Techniques, and Procedures*. 29 December 1994.
FM 8-10-4. *Medical Platoon Leaders' Handbook—Tactics, Techniques, and Procedures*. 16 November 1990.
FM 8-10-6. *Medical Evacuation in a Theater of Operations—Tactics, Techniques, and Procedures*. 31 October 1991. (Change 1, 8 March 1994.)
FM 8-10-7. *Health Services Support in a Nuclear, Biological, and Chemical Environment*. 22 April 1993. (Change 1, 26 November 1996.)
FM 8-10-14. *Employment of the Combat Support Hospital—Tactics, Techniques, and Procedures*. 29 December 1994.
FM 8-42. *Medical Operations in Low Intensity Conflict*. 4 December 1990.
*FM 8-50. *Prevention and Medical Management of Laser Injuries*. 8 August 1990.
FM 8-55. *Planning for Health Service Support*. 9 September 1994.
FM 8-73. *Introduction to Operating Room Technique (Berry & Kohn's)*. 1 March 1979.
FM 8-74. *Alexander's Care of the Patient in Surgery*. 1 August 1984.
FM 8-250. *Preventive Medicine Specialist*. 27 January 1986. (Reprinted with basic including Change 1, 12 September 1986.)
FM 9-43-1. *Maintenance Operations and Procedures*. 21 February 1997.
FM 11-30. *MSE Communications in the Corps/Division*. 27 February 1991.
FM 11-32. *Combat Net Radio Operation*. 15 October 1990.
FM 11-37. *MSE Primer for Small-Unit Leaders*. 14 November 1990.
*FM 19-30. *Physical Security*. 1 March 1979.
*FM 21-10. *Field Hygiene and Sanitation*. 22 November 1988.
*FM 21-10-1. *Unit Field Sanitation Team*. 11 October 1989.
FM 24-12. *Communications in a "Come-as-You-Are" War*. 17 July 1990.
*FM 24-33. *Communications Techniques: Electronic Counter-Countermeasures*. 17 July 1990.
FM 24-35. Signal *Operation Instructions, "The SOI."* 26 October 1990.
FM 25-50. *Corps and Division Nuclear Training*. 30 September 1991.

FM 25-51. *Battalion Task Force Nuclear Training*. 16 June 1991.
FM 25-100. *Training the Force*. 15 November 1988.
FM 25-101. *Battle Focused Training*. 30 September 1990.
FM 43-5. *Unit Maintenance Operations*. 28 September 1988.
*FM 55-9. *Unit Air Movement Planning*. 5 April 1993. (Change 1, 14 October 1994.)
FM 55-312. *Military Convoy Operations in the Continental United States*. 3 April 1991.
FM 63-20. *Forward Support Battalion*. 26 February 1990.
FM 100-5. *Operations*. 14 June 1993.
FM 100-10. *Combat Service Support*. 3 October 1995.
FM 100-15. *Corps Operation*. 13 September 1989.
FM 101-10-1/2. *Staff Officers Field Manual—Organizational, Technical, and Logistical Data, Planning Factors (Volume 2)*. 7 October 1987. (Reprinted with basic including Change 1, 17 July 1990.)
SB 8-75 Series. *Department of the Army Supply Bulletin, Army Medical Department Supply Information*. (Expires one year from date of issue; one-time distribution made and no additional copies available.)
CTA 8-100. *Army Medical Department Expendable/Durable Items*. 31 August 1994.
CTA 50-900. *Clothing and Individual Equipment*. 1 September 1994.
CTA 50-909. *Field and Garrison Furnishings and Equipment*. 1 August 1993.
CTA 50-970. *Expendable/Durable Items (Except: Medical, Class V, Repair Parts, and Heraldic Items*). 21 September 1990.

Department of Defense Forms

DD Form 601. *Patient Evacuation Manifest*. 1 October 1951.
DD Form 602. *Patient Evacuation Tag*. 1 February 1963.
DD Form 792. *Twenty-Four Hour Patient Intake and Output Worksheet*. January 1974.
DD Form 1380. *US Field Medical Card*. December 1991.
DD Form 1924. *Surgical Checklist*. October 1993.

Department of the Army Forms

DA Form 581. *Request for Issue and Turn-in of Ammunition*. August 1989.
DA Form 1379. *US Army Reserve Components Unit Record of Reserve Training*. December 1977.
DA Form 1594. *Daily Staff Journal or Duty Officer's Log*. 1 November 1962.
DA Form 1687. *Notice of Delegation of Authority—Receipt for Supplies*. January 1982.
DA Form 3161. *Request for Issue or Turn-in*. May 1983.
DA Form 3888. *Medical Record—Nursing History and Assessment*. June 1991.
DA Form 3889. *Nursing Unit 24-Hour Report*. 1 April 1979.
DA Form 3894. *Hospital Report of Death*. 1 October 1972.
DA Form 3949-1. *Controlled Substances Inventory*. 1 October 1979.
DA Form 4028. *Prescribed Medication*. 1 March 1973.
DA Form 4256. *Doctors Orders*. 1 April 1979.
DA Form 5179. *Medical Record—Preoperative/Postoperative Nursing Document*. June 1991.
DA Form 5179-R (Test). *Medical Record—Perioperative Document (LRA)*. December 1982.

Standard Forms (SF)

SF 509. *Medical Record—Progress Notes*. July 1991.
SF 510. *Medical Record—Nursing Notes*. July 1991.
SF 512. *Clinical Record—Plotting Chart*. May 1989.
SF 517. *Clinical Record—Anesthesia*. May 1989.
SF 518. *Medical Record—Blood or Blood Component Transfusion*. September 1992.
SF 519-B. *Radiologic Consultation Request/Report*. August 1983.
SF 531. *Medical Record—Anatomical Figure*. April 1991.
SF 539. *Medical Record—Abbreviated Medical Record*. October 1975.
SF 549. *Hematology*. July 1978.
SF 550. *Urinalysis*. April 1977.
SF 558. *Emergency Care and Treatment*. June 1982.

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References are to paragraph numbers except where specified otherwise.

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