COMPANY GRADE GUIDE TO

SHOWER AND LAUNDRY (S&L) OPERATIONS

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QUARTERMASTER SCHOOL, FORT LEE, VIRGINIA
OCTOBER 2021

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Preface

This leader's guide provides information on field services support in tactical austere environments. It focuses on field services support in large-scale combat operations, incorporating themes from FM 3-0 and FM 4-0. It also addresses the Army Health System's and Surgeon General's standards for hygiene on the battlefield. The ATP 4-42 addresses force health protection as it relates to preventive medicine and veterinary services support field hygiene and sanitation as it relates to provision of field services. This guide briefly discusses the Army Field Hospital, with a focus on internal shower and laundry support mission for staff and patients.

Leaders of Quartermaster Soldiers will use this publication to guide them in supervising shower and laundry operations. The principal audience for this leaders guide is commanders and platoon leaders in Composite Supply Companies, Quartermaster Field Services Companies and Army Field Hospitals. Commanders and platoon leaders should also refer to Army Publication ATP 4-42 or FM 4-0 for more detailed guidance for field services doctrine for shower and laundry operations in support of Army, joint or multinational doctrine.

Logistics planners should include shower and laundry as considerations in their planning. A Quartermaster Company can be placed as far forward as the supported brigade combat team (BCT). The goal is to provide a minimum of one shower and one change of clothing at least every seven days. The field services functions are critical to rebuild combat power, prepare for transition to offensive operations, and to restore unit morale.

Commanders of military units are responsible for assuring sanitary control of facilities that are operated under their command and for restricting practices that present a high risk to Soldier's health. Field shower and laundry operations is an example of an activity requiring oversight by the command (DA PAM 40-11).

The proponent of this guide is the United States Army Quartermaster School. The preparing agency is the Aerial Delivery and Field Services Department, Chief Field Services Division. Send comments and recommendations to Director, Aerial Delivery and Field Services Department, ATTN: Chief, Field Services Division, 710 Adams Ave, Bldg 6025, Fort Lee, VA, 23801; or submit by e-mail to: usarmy.lee.tradoc.mbx.qm-adfsd-field-services@mail.mil.

CHAPTER 1 INTRODUCTION TO SHOWER & LAUNDRY OPERATIONS

Chapter 1 provides an overview of Shower and Laundry (S&L) Operations across unified land operations. Quartermaster personnel primarily provide these services in many units at the tactical and operational levels of logistics. The chapter concludes with a diagram on Organizational Relationships.

WARTIME TACTICAL SUPPORT

1-1. S&L Support at the tactical level will be provided by a Composite Supply Company or a Quartermaster Company (M) (COMPO 2/3 only) that can send S&L teams as far forward as desired by the supported commander. At the operational level, this support will be provided by a combination of Composite Supply Companies, Quartermaster Companies, Host Nation Support (HNS), and contractors.

1-2. The shower and laundry teams may deploy separately and as far forward as the BSBs. There are six shower and laundry teams in the Quartermaster Company (M) (COMPO 2/3). Each team can support 3,500 troops per week at 500 troops per day. The laundry service can clean 315,000 pounds of laundry at 15 pounds per Soldier per week. Each shower and laundry team consists of 12-head shower unit and one Laundry Advanced System (LADS). The laundry unit operates 20 hours per day. The shower unit operates 10 hours per day. The remaining operating time is for equipment maintenance.

PEACETIME SUPPORT

1-3. In support of peacetime training, contingencies, humanitarian aid, or support and stability operations. S&L Operations may be provided by Active, Reserve, and National Guard components, contractor, or HNS. Army Regulations, standard operating procedures (SOPs), and HNS agreements will govern policies and procedures for procuring and using contracted services.

HUMANITARIAN ASSISTANCE AND DISASTER RELIEF

1-4. The United States military normally conducts humanitarian assistance/disaster relief missions in support of other United States Government departments or agencies to alleviate suffering of disaster victims. Shower and laundry support is often conducted for disaster victims and military personnel involved in relief operations.

PURPOSE OF S&L OPERATIONS

1-5. S&L Operations provide command and control of personnel and equipment support in giving warm showers and laundry service to Soldiers in the field. The Surgeon General mandates all Soldiers will be provided at least one shower per week to prevent diseases on the battlefield. The concept of individual "wash and return" laundry support allows each Soldier to turn in 15 pounds of personal laundry per week.

ORGANIZATIONAL RELATIONSHIPS

1-6. Shower and laundry support requires close coordination between those providing and those receiving the support. Shower and laundry sections support their parent units as well as supporting units on an area support basis and as directed by higher headquarters. Operational relationships are critical when coordinating and managing mission requirements with supported units. Figure 1-1 depicts the relationships between higher headquarters and the shower and laundry sections and between supported and supporting units. While the hospital center and field hospital is also depicted to show medical laundry support, it has no command or reporting relationship with the other units shown. The field hospital is a supported unit of the shower and laundry section that coordinates with their higher headquarters to gain access to shower and laundry support.

1-7. Soldier hygiene capabilities are organic to the tactical and operational field services company and the composite supply company assigned to a sustainment brigade, in support of the division, and to the Theater Sustainment Command (TSC). The Division Sustainment Support Battalion (DSSB) has an organic composite supply company that supports units operating in the division support and consolidation areas. However, the shower and laundry capability is being removed from the active component composite supply company in component (COMPO) 1 by FY25. The DSSB also supports the BSB in the brigade area. Shower and laundry sections can be pushed forward to support BCT during mission staging operations that last at least 48 hours or in support of established Area of Operation (AO). Modification table of organization and equipment (MTOE) and support capabilities for Composite Supply Company and Quartermaster Company (COMPO 2/3) are different. Leaders should reference capabilities documents while planning to ensure adequate personnel and equipment are available to support mission requirements. This is especially true in situations where one unit is replace by another unit during a deployment or extended training mission.

1-8. Shower and laundry support requests are generated from the brigade combat team to the sustainment brigade. In the event that the sustainment brigade cannot support the brigade combat team the TSC provides supplementary support with other available assets in the theater. The sustainment brigade supporting the brigade combat team requiring the support generates requests for the supplementary support. The force provider company also has Soldier hygiene capabilities but are not discussed in this section.

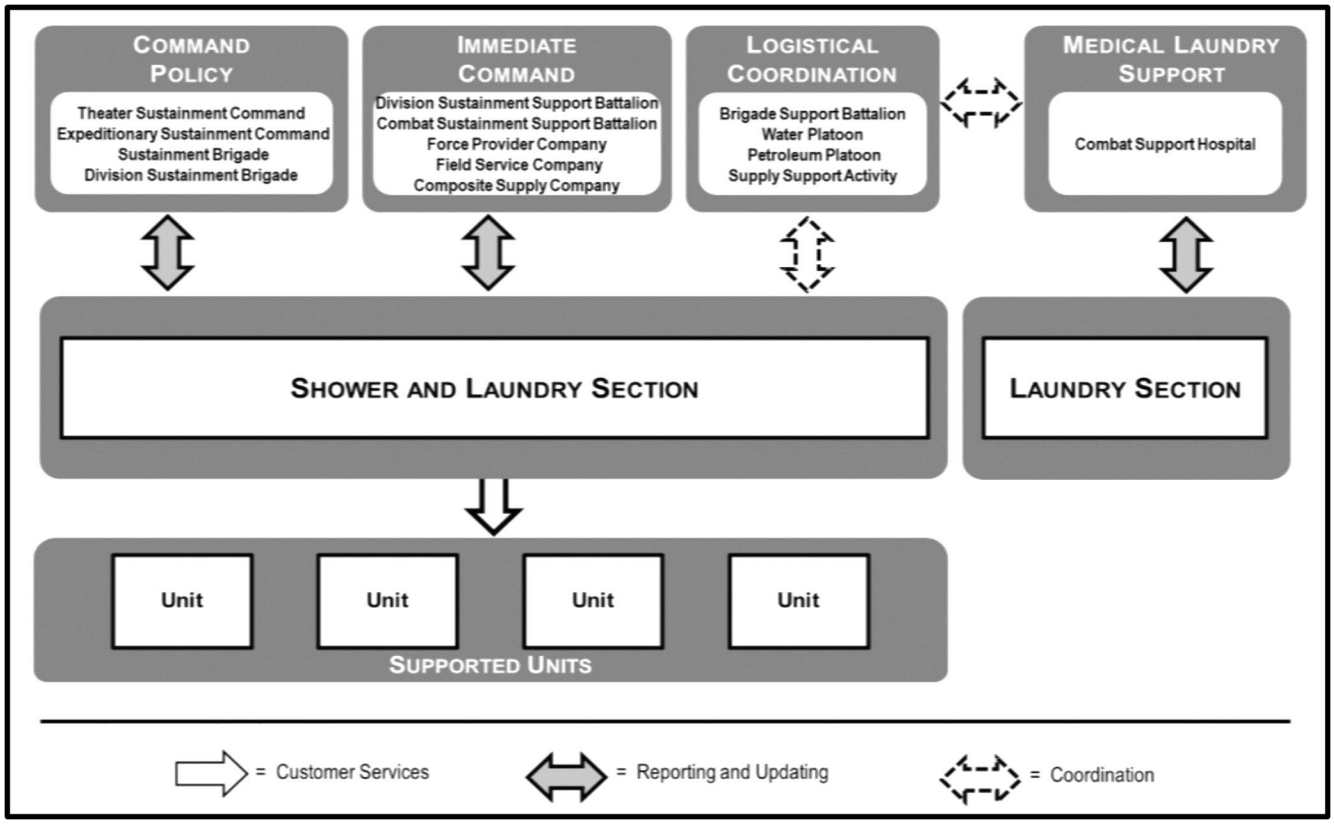


Figure 1-1. Organizational Relationships

CHAPTER 2 DUTIES AND RESPONSIBILITIES

Chapter 2 will discuss the "Personnel Roles" of the key players involved in the planning, operational, and sustainment of shower and laundry operations (ATP 4-42, chapter 8-36).

SUPPORT OPERATIONS OFFICER (SPO) – BRIGADE AND BATTALION LEVEL

2-1. The responsibility for shower and laundry functions begins at the sustainment brigade level where operations are planned, organized, controlled and directed. Brigade planning responsibilities include—

- Determine general area for site selection to ensure water, fuel, gray water disposal, & other requirements are met.
- Arrange to have water tested by preventive medicine personnel or water treatment specialists.
- Notify supported units when help is needed to set up tents or laundry equipment.
- Publish the source of supply for laundry supplies and fuel.
- Publish SOPs that give requirements for records and reports.
- Incorporate the loading plans for the Laundry Advanced System (LADS) in the battalion-loading plan.
- Coordinate with supported units and plan for the movement and defense of operating sites.
- Coordinate release times, communications and possible succeeding missions for the laundry unit.

2-2. The SPO at the sustainment brigade advises the commander on shower and laundry support. The SPO briefs the command on the brigade's shower and laundry capabilities to support units in a theater environment. The SPO at the brigade support battalion (BSB) advises the BSB commander on shower and laundry support to the brigade combat team.

2-3. The supported unit S-4 requests shower and laundry services. When requesting shower and laundry support, the S-4 provides the following to inform supporting unit of requirements:

- Number of Soldiers supported for each service date.
- Proposed site location.
- For DA Form 1687 (*Notice of Delegation of Authority - Receipt for Supplies)*, signature cards for laundry pick up and turn in.
- Type of laundry to be turned in to unit may be individual or organization:
- Individual personnel laundry turned in by unit supply sergeant using DA Form 2886 (*Laundry List for Military Personnel)* and organized on DA Form 3136 (*Roster and Statement)*.
- Organizational and bulk consolidated laundry items organized by the supported unit supply NCO and itemized on DA Form 1974 *(Laundry List [Medical Treatment Facility and Organization])*.

COMPANY COMMANDER

2-4. Company commanders verify that preventive medicine personnel or water treatment specialist test the water supply. They should evaluate operations, in part, by periodically inspecting the shower and laundry equipment. Company commanders should ensure that there are adequate amounts of shower and laundry supplies.

PLATOON LEADER

2-5. The Platoon Leader is responsible for the local security of the site for shower and laundry operations. Security for shower and laundry operations is primarily access control, as it is within a larger perimeter. Platoon leaders supervise preventive maintenance for laundry, and shower equipment and supervises the establishment of shower and laundry facilities. The Platoon Leader is responsible for coordinating and disposition of gray water drainage, and safety. Platoon leaders estimate platoon supply requirements and supervises receipt, storage, and issue of supplies and equipment. Platoon Leaders are responsible for the accountability of assigned laundry and shower equipment, water storage equipment, and assigned

vehicles. The Platoon Sergeant will provide input on the site selection, however the Platoon Leader will ultimately make the final decision.

PLATOON SERGEANT (SFC- COMPO 2/3 ONLY)

2-6. Platoon sergeants provide input for site selection for platoon operations and supervise site set-up for shower and laundry operations. The platoon sergeant coordinates and oversees the shower and laundry section work by spot-checking operations and conducting routine inspections. Platoon sergeants assist the platoon leader with implementing the company plan for local security at the shower and laundry site. The platoon sergeant supervises, monitors, and advises the chain of command on shower and laundry operations. The platoon sergeant—

- Assist in site selection for platoon headquarters.
- Supervises site selection for platoon operations.
- Assists in preparing the shower and laundry LOGSTAT.
- Coordinates scheduling needs with supported units for the platoon sections.
- Inspects shower and laundry field sites.

SECTION CHIEF (SSG)

2-7. Section chiefs supervise Shower and laundry equipment layout and setup to include the posting of signs to identify the different areas such as parking and signs to show traffic flow. The section chief supervises daily section operations, coordinates laundry schedules with supported units, and supervises equipment preventive maintenance. Section chiefs determine supply requirements by keeping records of supplies used during the shower and laundry daily operations. The section team chief works under the supervision of the platoon sergeant. The Section Chief—

- Supervises the layout and setup of the shower and laundry site, which includes advising on and conducting operational inspections; and, ensures the section is complying with environmental standards directives from higher headquarters.
- Prepares and submits LOGSTAT reports as required to the platoon sergeant or platoon leader.
- Obtains materials for building storage bins and shelves as needed to expedite shower and laundry operations.
- Coordinates with supported units personnel.
- Coordinates with preventive medicine personnel to test water.
- Inspects section's equipment and supervises daily preventive maintenance activities.

SHOWER AND LAUNDRY NCO (SGT- COMPO 1) / TEAM CHIEF (SGT- COMPO 2/3)

2-8. The Shower and Laundry NCO / Team Chief manages the day-to-day shower and laundry operations to include issuing daily laundry work orders. The Shower and Laundry NCO performs the following tasks:

- Assists on selecting operating site.
- Supervises the layout and setup of the shower and laundry site.
- Maintains load plans and supervises/assist in setting up shower and laundry equipment.
- Enforces operational safety rules and precautionary measures to include executing environmental standards.
- Develops and distributes work schedules.
- Notifies leadership on any problems regarding site operations.
- Determines laundry supply requirements and forwards requests through supply support channels.
- Prepares, maintains, and submits required reports.
- Inspects section's equipment and supervises daily preventive maintenance activities.
- Ensures laundered items are returned to appropriate personnel or organization within 48 hours.
- Ensures that a separate shower schedule is set up for males and females.

- Obtains flooring materials for the building of duckboards or pallets for walkways and shower and laundry tents.

SHOWER AND LAUNDRY SPECIALIST (SPC-PVT)

2-9. Shower and Laundry Specialists sort washable laundry from laundry that cannot be washed. They review laundry lists for accuracy of contents for each Soldier's laundry bag. Shower and laundry specialists install, inspect, operate, and maintain mobile laundry and shower equipment (washers, dryers, and showers).

CHAPTER 3 SHOWER CAPABILITIES

Chapter 3 provides an overview of shower and laundry capabilities. It discusses the overall capabilities of shower and laundry capability for the combatant commander. It also discusses the methodology of processing personnel through the shower point.

SHOWER SERVICES

3-1. Each S&L Team utilizes the 12-Head Shower Unit for shower operations. The 12-Head Shower Unit will provide warm showers for a maximum of 500 Soldiers per day. The shower element may be setup at a fixed site or a tactical location in a field environment. A planning factor of 3K gallons per day of water is needed for sustained operations. An approved central drainage system to collect gray water must be coordinated through appropriate command levels. The shower point is staffed with at least three shower personnel.

UNIT SCHEDULES

3.2. Each supported unit receives a scheduled time for S&L operations to ensure services are provided in an orderly manner, and coincides with supported units' availability. Female Soldiers are scheduled separately from male Soldiers. If a unit schedule is not possible, a general schedule will be implemented with separate hours for males and females.

TRAFFIC FLOW

3-3. Soldiers utilizing the shower will adhere to the following procedures:

- Supported unit personnel will provide guards to protect individuals' valuables, sensitive items, and weapons while Soldiers are showering
- Soldiers will leaves their helmets, uniforms, and boots in the changing area/tent
- Soldiers enter the shower tent/area and may remain under the shower for up to seven (7) minutes
- After showering and disposing of one's soap, the Soldier returns to the dressing area to dry off. Soldiers will then pick up their valuables, boots, helmet, etc…
- S&L personnel will keep a log book to account for the number of Soldiers utilizing showers and will report the number of Soldiers showered, water used, and fuel used each day to higher headquarters
- Soldiers are responsible for furnishing all of their personal hygiene items unless sundry packs are provided by the command

CHAPTER 4 LAUNDRY CAPABILITIES

Chapter 4 discusses laundry capabilities while on deployment or in support of a training exercise. Focuses on processing laundry bundles and leader's priorities.

LAUNDRY

4-1. Individual laundry service is similar to commercial services. The laundry element within S&L Operations returns each Soldier's clothing after it is washed and dried. *Numbered mesh bags* are used to identify each Soldier's laundry and to ensure clothing is returned to the Soldier.

LAUNDRY PROCESSING PROCEDURES

4-2. When mission dictates a unit representative is necessary to handle laundry turn-in and pick-up, those individuals will need a DA Form 1687 delegation document. This mission is normally executed by the supported unit's Supply NCO or designated representative.

Laundry List for Military Personnel (DA Form 2886)

4-3. This form is used for processing individual laundry. The form is made up of three copies separated by carbon paper. This form should be filled out in as many copies as is required by your unit's operation:

- The *first copy* is the bundle copy. The Soldier, submitting their laundry fills in this copy. Completing the heading, lists the quantities of each item they want laundered, and puts the copy with their laundry bag.
- The *second copy*, the patron's copy, is kept by the Soldier who turns in the laundry items. This copy is retained as receipt by the Soldier until the clean laundry is returned.
- The *third copy* is not used at the time of this release.

4-4. **DA FORM 1974 Medical Treatment Facility and Organization (Laundry List) is used for hospital laundry. See hospital SOP for processing procedures.**

CHECKING AND MARKING LAUNDRY BUNDLES

4-5. Laundry NCO will supervise the verification of total quantity of bundles received is accurate.

4-6. Checkers ensure items in Soldier's individual laundry bag match the DA Form 2886 and ensure pockets are free of ammunition, pens, sharps, or anything that can cause injury to laundry personnel or damage laundry machine.

4-7. Marking - Identified individual laundry items will be placed into *numbered mesh bags*.

4-8. Clothing turned-in, soaked in liquid detergent or containing powder detergent in pockets are returned without processing to the customer due to detergent specifications/limitations of laundry equipment.

PROCESS OF FINISHED LAUNDRY

4-9. Once laundry has been washed and dried, it is taken to the shipping area to be processed for pickup by the individual supported Soldier or designated unit representative.

4-10. Army Public Health Center (APHC) recommends scheduling receiving and reissue operations at different times to avoid cross contamination between soiled and clean laundry. It's highly recommended to separate "Receiving and Shipping" tents/areas to avoid cross contamination by dirty laundry.

4-11. Platoon Leaders should develop contingency plans in case the supported units relocate prior to pick-up of laundry.

CHAPTER 5 SHOWER AND LAUNDRY EQUIPMENT

Chapter 5 describes specific shower and laundry equipment and the critical equipment characteristics. This chapter will inform leaders of critical elements in order to plan hygiene operations in austere environments.

12-HEAD SHOWER

5-1. The 12-Head Shower system is made up of 12 individual shower stalls (six shower stalls combined). Heated water is provided by an AWH-400 hot water heater. Per Army Public Health Center (APHC), the optimum water temperature for 12-Head Shower is between 95° F (35° C) and 110° F (43.3° C) in order to kill highly resistant bacteria in austere conditions. Ensure there is no buildup of sediment, scale, or biofilm on shower heads and faucets since these conditions will promote the growth of Legionella bacteria.

Figure 5-1. 12-Head Shower

LAUNDRY ADVANCED SYSTEM (LADS)

5-2. The Laundry Advanced System (LADS) launders Soldiers clothing in any environment, capable of washing up to 400 lbs. of laundry per hour, up to a maximum of 20 hours per day. Dirty wash water is recycled through a distillation process to recapture 90% of water used for laundry operations. Four (4) hours per day is needed for LADS maintenance. Each S&L team has one LADS capable of supporting 500 Soldiers per day (3,500 per week).

5-3. The LADS consists of two (2) laundry drums and water-processing equipment within an 8'x 8'x 20' International Organization for Standardization (ISO) frame, a fuel tank, a 3K water collapsible water tank, a storage container and a generator mounted on a M871A3 trailer. The LADS washes laundry, extracts the water and dries the laundry in the same drum.

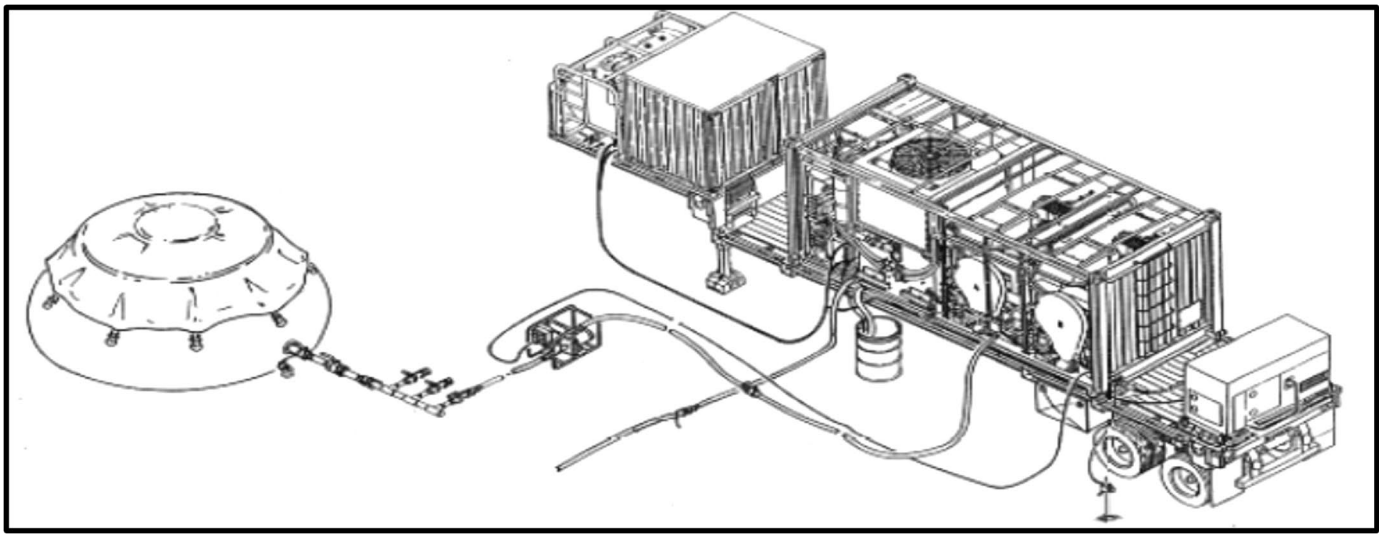


Figure 5-2. Laundry Advanced System typical Set-up

CONTAINERIZED BATCH LAUNDRY (CBL)

5-4. The CBL is the laundry system normally assigned to an Army Field Hospital. The CBL is designed to provide laundry services for direct patient-related linen for ambulatory patients and direct patient care providers.

5-5. The CBL provides a capability to wash and dry 150-200 lbs. of laundry per hour in an ISO Frame containerized system. The water reuse system recovers over 50% of the laundry waste water. It is capable of collecting gray water and transferring it to an approved gray water source.

5-6. The CBL consists of two (2) commercial 50-lb washer/extractors and 75-lb dryers mounted in an 8'x8'x20' ISO container.

Figure 5-4. Containerized Batch Laundry System

CHAPTER 6 CRITICAL OPERATIONS

6-1. Draining the LADS to change dirty water, prevent over-night freezing, or in preparation for movement must be performed to prevent damage to the system.

6-2. Failure to properly clean and flush Anti-Foam and detergent hand pumps can cause solution to harden inside pumps and tubing. This will lead to pump and tubing damage and prevent the proper amount of Anti-Foam solution from being added during follow-on operations.

6-3. Failure to flush water from pumps and tubing after cleaning can lead to freeze damage.

LADS COOLDOWN CYCLE

6-4. A COOLDOWN must be performed IAW TM10-3510-221-10 WP 17 at the end of LADS operations. Thermal Fluid temperature must be below 150°F in order for the system to move on to Shut-Down procedures. Thermal Fluid Temperatures above 150°F while not in Laundry Operations will cause damage to equipment and or personnel. A normal cooldown lasts about 30 minutes.

LADS BOIL-OVERS

6-5. A boil-over a catastrophic event that causes dirt to co-distill with the water and overflow the pre-filters and coalescer filters. The dirt particulates are carried along with the condensed water and over-flow into the Rinse 2 Tank, thereby contaminating the system's "clean water". Therefore clothes will finish the laundry cycle contaminated by dirty rinse water causing the laundry to smell foul. There are FOUR variables that affect a Boil-Over:

- Detergent
- HEAT
- Water Level
- Anti-Foam.

6-6. Currently there is no Boil-Over alarm mechanism. Therefore most personnel are not aware there is a catastrophic problem with the LADS until laundry production is interrupted. The typical symptoms are as follows:

- FILTER REPLACEMENT: Frequent replacement of the 10-micron pre-filter is required more than once in three days. It is critical to address this issue immediately via the four factors discussed below. Failure to resolve a Boil-Over will result in clogging of the LADS distillate plumbing and standpipe and foul smelling laundry.
- DETERGENT: Residual detergent left in clothes is enough detergent to effectively wash a load of laundry in the LADS. Therefore, ensure the proper amount of detergent is used (1 Squirt per load). Excessive detergent in wash cycle is normally the leading cause to a Boil-Over in the Still. Excessive detergent leads to clogged pre-filters, which eventually lead to clogged Distillate Plumbing. One method of determining if there is enough "residual" detergent in clothing is as follows.
- HEAT: Often "ambient" temperature is a factor in causing a Boil Over. When the ambient temperatures are expected to be over 100°F, consider positioning the LADS so direct sunlight is not on the back of the LADS during the hottest times of the day (afternoon sun 1300 – 1600). The solar load on the LADS still, despite insulation, will add heat and may contribute to a Boil-Over.
- WATER LEVEL: The higher the water levels in the still, the higher probability exists for a Boil-Over. "Staggered cycles" were programmed into the LADS software to help

alleviate a Boil-Over. The still should be kept clean at all times; this will assist the boiling rate stay within normal range.

- ANTI-FOAM: Ensure there is an adequate amount of Anti-Foam on hand at the start of laundry operations (one stroke of the pump delivers 4 ounces of the liquid). Adding too much Anti-Foam will contribute to the premature clogging of the pre-filters.

CBL WATER TREATMENT AND PRESERVATION (WTS)

6-7. While the system is deployed, steps must be taken to ensure that no biological growth occurs in the water treatment system or other components of the CBL. Failure to observe adequate precautions may result in water contamination, with resulting serious illness or death to personnel.

ELECTRICAL POWER

6-8. Electrical Power must be disconnected before any electrical system work is performed to prevent electrical shock, injury, or death (electrocution). Only trained and qualified personnel may perform maintenance or attempt to correct electrical discrepancies on the electrical system.

WATER TREATMENT AND SYSTEM PRESERVATION

6-9. While the system is deployed, steps must be taken to ensure that no biological growth occurs in the water treatment system or other components of the CBL. Failure to observe adequate precautions may result in water contamination, with resulting serious illness or death to personnel.

SYSTEM FLUSH

6-10. If the CBL is shut down for less than 24 hours, but greater than 4, run a system flush. If it is to be shut down for periods of less than 4 hours, there is no need to run any preservation cycles.

SODIUM BISULFITE PRESERVATION PROCEDURE

6-11. Sodium bisulfite is used to preserve the Nanofilter elements during shut down periods in excess of 24 hours while on missions. This is required to prevent biological growth on the membrane surfaces. Failure to wear proper safety equipment may result in serious skin irritation, eye injury, or respiratory damage. If sodium bisulphite contacts eyes or skin, flush with clean water and seek immediate medical attention. Rubber gloves face and eye protection, and dust masks must be worn when handling sodium bisulphite. If sodium bisulphite vapors are inhaled, relocate immediately to a well-ventilated area and seek immediate medical attention.

CHAPTER 7: PLANNING FOR SHOWER AND LAUNDRY OPERATIONS

Chapter 7 discusses the planning phase of a mission. Leaders must consider all operational and mission variables that could potentially impact mission success. This chapter also provides information on anticipated support to include environmental, personnel, and preventive medicine requirements.

SITE PLANNING

7-1. Shower and laundry teams may operate within secure fixed facilities in the joint security area, austere combat outposts, or joint service stations. When deployed, shower and laundry teams will provide showers and clean clothes to the supported unit from either a developed or an undeveloped location. A developed location will have an infrastructure (roads, buildings) and undeveloped location will lack that infrastructure. Safety, security and natural terrain will shape the shower and laundry field layout. Mission requirements and environmental conditions often dictate site selection.

7-2. Analyze the site selection to determine if it is feasible to set-up a S&L operation with concentration on the site criteria: Water Availability, Terrain, Road Network, Waste Water management and Cover and Concealment (discuss criteria in detail). The Platoon Leader with assistance from the Platoon Sergeant/Laundry NCO plans the pre-reconnaissance/ reconnaissance of the projected AO within the supported units' concept of support sketch. The site selection depends upon the mission. When possible, site is located near the units or the commands that are supported.

7-3. Proper planning helps ensure a successful mission.

- Identify Soldiers supported and duration.
- Calculate the amount of equipment needed (12 Head Showers, LADS, or CBLs) and consumables required.
- Ensure these items are available, serviceable, and ready for transport to AO.
- Preparation includes plan refinement, rehearsals, information collection, coordination, inspections, and movement.

ENVIRONMENTAL CONCERNS

7-4. S&L leaders identify environmental hazards during the site selection survey and report the potential of polluting the air, soil, water, and degrading natural resources to higher headquarters.

7-5. Check with local authorities for regulatory requirements and comply with environmental standards applicable in the host country. The main environmental concern is waste water disposal. Wastewater generated from shower and laundry operations does not require specialized treatment prior to discharge.

7-6. In some situations, wastewater must be stored or hauled to an approved dumpsite or disposed of through the use of an approved sewage system. Before discharging any water on the ground, leaders should check with local environmental engineers. The proper use of detergents, bleaches, and other chemical supplies will also mitigate environmental impact.

PREVENTIVE MEDICINE (PM)

7-7. Prevention of Disease and Non-Battle Injuries (DNBI) - Preventive medicine services prevent casualties from disease and non-battle injuries. Preventive medicine is the anticipation, prediction, identification, prevention, and control of communicable diseases (including vector, food, and waterborne diseases); illnesses; injuries; and diseases due to exposure to occupational and environmental health threats, including Non-Battle Injury threats, combat and operational stress reactions, and other threats to the health and readiness of military personnel and units. Preventive medicine services includes On-site

Water Quality Analysis. Planners considering field services support should always include preventive medicine in their operational planning process.

7-8. Potable water should be used for showering because of exposure to cuts and scratches, incidental ingestion, and breathing of volatile or aerosolized material, all of which may allow contaminant entrance into the body. However, disinfected water of less than drinking water quality may be used for showering after an appropriate health risk assessment of the proposed water supply is performed by PM personnel and the action is approved by the commander,

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR (CBRN)
7-9. Plan for CBRN conditions. This includes increase in requirements for non-potable/potable water and chemical defense equipment. CBRN defense planning must include detailed procedures for equipment decontamination. Soldiers and personnel are not authorized to be decontaminated through shower and laundry equipment.

SHOWERS
7-10. Select the best possible area for shower operations according to the site layout provided by the supported unit to include verifying that preventive medicine personnel or water treatment specialist personnel have checked the water supply. Obtain information about the specific location and the area immediately around it (for example; road junctions, hills, bridges, and enemy positions/ attack points if in Theater).

PERSONNEL PLANNING FOR SHOWER OPERATIONS
7-11. The shower section is authorized one crew (three total personnel) to execute the shower mission.

- 1 NCO for supervision of the shower site.
- 2 Skill Level 1 personnel (E1 thru E4) required to operate equipment, process personnel, and clean shower facility.
- Shower personnel can also be utilized for laundry operations after shower have been completed for the day.

7-12. Platoon Leaders should ensure there is adequate water available to conduct shower operations. Planning factor IAW ATP 4-42 is 1500 gallons per day for shower operations.

LAUNDRY ADVANCED SYSTEM- PERSONNEL PLANNING
7-13. The number of personnel required to support depends on the amount of laundry to be processed and the number of LADS to be deployed. To operate the LADS, 1 crew is required unless operating 20-hour daily operations then a minimum of 2 crews are required. Additional personnel are required to support the laundry receiving, bagging, un-bagging, and shipping operations. These operations require at least one supervisor per shift and 1 laundry handling person for every 50 soldiers worth of laundry processed.

7-14. Determining the number of LADS required to support a mission is directly dependent on the laundry requirements. The LADS can process 7,500 lbs. (500 soldiers' worth at 15 lbs. per soldier) of laundry in a 20-hour day if the laundry is processed on a continuous basis using the "*BDU 65 MIN*" cycle. This equates to 18 cycles per drum with the average load of 28 bags, weighing 7.5 lbs. each. **In a field environment, it is more realistic to expect daily laundry outputs in the 5,000 lbs. per day range**. This takes into account several factors:

- Normally, delays occur when laundry is received and bagged, causing idle time for LADS.
- Sometimes Soldiers turn in small loads of laundry, resulting in *numbered mesh bags* weighing as low as 2 or 3 lbs. (instead of using max capacity at 7.5 lbs.)

- Soldier's clothing can be soiled to the point where the longer "BDU 70 MIN" or "BDU 75 MIN" cycles should be used. This results in less than 18 cycles per day.
- If the LADS is inoperable for any period of time in a given day, extra laundry must be processed the following day, to prevent falling behind.
- During missions in harsh environmental conditions downtimes should be expected for both corrective and preventive maintenance. The following formula provides guidance on how to calculate the number of LADS required to perform a mission.

7-15. To determine the number of LADS for a mission use the following calculation:

$$\frac{\text{NOS} \times 15 \text{ lbs.} \times \text{ULF} \times \text{SF} \times \text{EF}}{7{,}500 \text{ lbs.}} = \text{Number of LADS required (always round up to nearest whole number)}$$

Where:
NOS = Number of soldiers serviced per day
ULF = Under Load Factor 1+ Percentage of laundry bags that weigh < 7.5 lbs.
SF = Soil Factor 1 + 0% for lightly soiled, 7.5% for moderately soiled, or 15% for heavily soiled laundry
EF = Environmental Factor 1 + 25% if temperatures < 32 degrees F or >100 degrees F are expected + 25% for dusty conditions

Example 1:
325 x 15 lbs. x 1.25 x 1.15 x 1.25 / 7,500 lbs. = 1.17 LADS or 2 LADS when rounded up

Where:
NOS = 325 soldiers ULF = 1.25 for 25% of *numbered mesh bags* weighing less than 7.5 lbs.
SF= 1.15 for heavily soiled laundry EF= 1.25 for high temperatures

Example 2:
400 x 15 lbs. x 1.25 x 1.00 x 1.00 / 7,500 lbs. = 1.00 LADS

Where:
NOS = 400 soldiers ULF = 1.25 for 25% of *numbered mesh bags* weighing less than 7.5 lbs.
SF = 1.00 for lightly soiled laundry EF = 1.00 for moderate temperatures

Example 3:
450 x 15 lbs. x 1.25 x 1.15 x 1.50 / 7,500 lbs. = 1.94 LADS or 2 LADS when rounded up

Where:
NOS = 450 soldiers ULF = 1.25 for 25% of *numbered mesh bags* weighing less than 7.5 lbs.
SF = 1.15 for heavily soiled laundry EF = 1.50 for high temperatures and dusty conditions

PERSONNEL PLANNING FOR CBL OPERATIONS

7-16. The CBL is shipped with all the equipment necessary to operate in normal and adverse environments. There are two packout configurations:

- **Full Packout**- Ships all supplied equipment within the CBL container.

- **Minimum Packout**- Ships designated items separately per TM 10-3510-226-10 in order to meet container weight constraints.

7-17. Packout procedure must be strictly followed in order to pack all supplied equipment and allow for safe transport of the container. Failure to follow this procedure may prevent movement of the CBL and damage laundry equipment inside the container.

7-18. **Do not pack corrosive laundry chemicals in the CBL.** The CBL may be exposed to high temperatures during transport, and interior temperatures may exceed 120 °F (48.9 °C). Corrosive Laundry chemicals stored in excess of 120 °F (48.9 °C) may degrade and produce harmful gases. Failure to observe safety precautions may create a hazard resulting in serious injury or death to personnel and destroy internal metal components.

7-19. **Do not pack fuel in the CBL.** The CBL may be exposed to high temperatures during transport and interior temperatures may exceed the flash point of JP-8, DF-1 or F-24 fuels. Failure to observe safety precautions may create an explosion and fire hazard resulting in serious injury or death to personnel.

DETAINEE SHOWER AND LAUNDRY OPERATIONS

7-20. When showering detainees, disinfected non-potable water (with at least 1 part per million free available chlorine) may be used unless schistosomiasis and/or leptospirosis are endemic and prevalent. Otherwise, potable water should be provided. Detainees should have access to showers at least once per week. One showerhead should be provided per every 25 detainees (Source ATP 4-02.46 Army Health System). Detainees should only be showered after all US personnel have showered during daily operations. Shower facility must be thoroughly sanitized per ATP 4-42 guidelines at the completion of detainee shower services.

7-21. Detainee clothing should be laundered at least once a week preferably in an Army field laundry or a commercial central laundry facility. Ensure detainee laundry is washed separately and all systems are purged of water, cleaned and sanitized prior to washing US Personnel clothing. When centralized laundry services are unavailable, there should be at least one clothes washing station per 100 detainees. Specific criteria for planning for detainee clothes washing, to include water volumes and temperatures, are provided in ATP 4-02.46.

CHAPTER 8 SHOWER AND LAUNDRY SAFETY MEASURES

8-1. Leaders should instill a sense of safety awareness and every Soldier must watch for unsafe acts or conditions, make on-the-spot corrections, and report unsafe acts or conditions to a first line supervisor.

8-2. Shower and laundry leaders should inspect work areas daily for safety hazards. Supervisors must enforce safety rules and all personnel must be aware of safety guidelines. All personnel should know and apply the following safety precautions when performing shower and laundry operations:

8-3. Always wear the appropriate PPE for the job being performed.

8-4. All personnel should be familiar with the location and operation of fire extinguishers.

8-5. Detergent, sanitizer, and anti-foam are irritants. Impermeable gloves and eye protection must be worn when handling or dispensing these items. Manufacturer safety data sheets should be available for all hazardous materials utilized in the maintenance and operation of shower and laundry equipment. Applicable precautions as specified in the safety data sheets must be enforced in the handling, utilization, storage, and disposal of all materials. Failure to follow this warning may result in personal illness or injury.

8-6. Exhaust discharge contains deadly gases. Do not operate the LADS in an enclosed area unless exhaust discharge is properly vented outside. Severe personnel injury or death due to carbon monoxide poisoning could result. The LADS can be operated at ambient temperatures between 33°F and 120°F outside of a shelter. If ambient temperatures are below 33°F, or environmental conditions such as blowing dust, sand, rain, and solar radiation are present, then the LADS may be operated in a Modified Type II Lightweight Maintenance Enclosure (LME).

SHOWER AND LAUNDRY GENERAL HOUSEKEEPING

8-7. Daily cleaning of shower and laundry facilities and equipment using an appropriate detergent solution breaks down soils and residues that harbor odor- and disease-causing microbes. The presence of soil creates a barrier around microbes and will prevent adequate disinfection. See DA Pamphlet 40-11, Preventive Medicine, for more information about how to reduce the incidence of preventable infections.

8-8. Unless dealing with infectious agents, laundry units should instruct supported units (or hospital staff) to remove the majority of any solid mass (specifically feces and vomit) deposited on laundry before the laundry is turned in. Other than wearing gloves, there is no special treatment or processing required for removal of feces or vomit from regular shower operations: remove the gross contaminant, clean with a detergent, and disinfect with bleach or other Environmental Protection Agency-approved disinfectant.

8-9. Emergency procedures are needed for laundry and shower support scenarios in which a highly infectious agent may be involved (Operation United Assistance - Ebola). In these situations units should, develop an emergency cleanup procedure for incidents when shower or laundry surfaces are contaminated with blood, feces, or vomit. Additionally, each shower and laundry section should have a cleanup kit with appropriate supplies and PPE for conducting a gross contamination cleanup. All personnel should be given an orientation on the emergency cleanup procedure and the location(s) of associated supplies. Consult with supporting preventive medicine personnel for assistance in developing the procedures.

8-10. For daily cleaning and sanitizing of shower and laundry facilities surfaces (outside of a healthcare setting) use ready-to-use chlorine bleach solution to disinfect surfaces. Many cleaning products are formulated with a minimum free available chlorine concentration that typically exceeds 500 parts per million; products identified on the Environmental Protection Agency List G and L are formulated at significantly higher concentrations. The Centers For Disease Control and Prevention (CDC) recommends application between 500 and 5,000 parts per million free available chlorine, depending on the amount of organic material (blood, urine, or mucous) present on the surface. In the typical shower and laundry operation personnel will use 500 parts per million free available chlorine for general housekeeping of the facilities.

8-11. Disinfection is a process of inactivating or destroying harmful microorganisms (germs) from nonliving or inert surfaces. It is not the same as sterilization, which is the removal or destruction of all forms of life to include bacterial spores. There are many chemical products specially formulated for disinfecting surface types and textiles. The effectiveness of the product to destroy different types of harmful microorganisms depends on the disinfecting agent, the chemical concentration, and contact time; therefore, selecting an appropriate product for the intended application is important. A chlorine disinfecting solution can easily be prepared using plain, household bleach, and is more cost effective than purchasing ready-to-use commercial products.

8-12. Glove use is recommended as the minimum PPE when preparing bleach. To prepare a 500 parts per million solution from a chlorine product with a base strength of 5.25%, mix ¼ cup (59 milliliter) of bleach with one gallon (3.8 liter) of water. To prepare a 500 parts per million solution from a chlorine product with a base strength of 8.25%, mix 1.5 tablespoons (22 milliliter) of bleach with one gallon (3.8 liter) of water. Prepare disinfecting solutions fresh each day. Take care to not produce overly concentrated solutions as this can cause respiratory irritation and induce an asthma attack in susceptible individuals. Ensure area is well ventilated during use. Clean surfaces using a detergent solution prior to applying the disinfectant. Clean, rinse, and then apply the disinfectant using a spray bottle or wiping application. Allow a one-minute contact time to ensure adequate disinfection and then rinse residual disinfectant from the surface using clean water. Refer to TB MED 531 for additional information.

8-13. Coordinate with the personnel responsible that identify and remedy plumbing leaks to prevent attracting pests such as rodents and cockroaches.

CHAPTER 9 MAINTENANCE

9-1. Shower and laundry section leaders, platoon leaders and commanders at all echelons, with assigned shower and laundry elements should establish command emphasis to ensure shower and laundry equipment is maintained to standards. Refer to AR 750–1, *Army Materiel Maintenance,* for more information on individual responsibilities for the maintenance of Army materiel. Leaders should conduct spot checks and follow-up inspections of all shower and laundry equipment. If equipment does not function, troubleshoot according to the technical manual & ensure prompt reporting of deficiencies, malfunctions or failures for evacuation according to the local maintenance guidelines.

9-2. When performing preventive maintenance checks and services, **shower and laundry personnel can fix problems within responsibilities for operator maintenance**. The following are common problems that can be detected by a visual inspection:

- Continuously check for looseness of bolts, clamps, nuts, and screws. Look for chipped paint, bare metal, rust, or corrosion around bolt and screw heads and nuts. Tighten them when loose.

- Check welded areas for chipped paint, rust, corrosion, or gaps.

- Tighten loose connectors. Look for cracked or broken insulation, bare wires and broken connectors. If any problems are found, notify unit maintenance.

- Look for wear, damage and leaks in the hoses and fluid lines, and make sure clamps and fittings are tight. Wet spots mean a leak. A stain by a fitting or connector can also mean a leak.

- Ensure shower and laundry equipment receives all scheduled and unscheduled services. It may require extra services and care when operated under harsh conditions, such as high or low temperatures, long periods of hard use, or continued use in sand, water, mud, or snow.

- Monitor the condition of *numbered mesh bags* for serviceability. Replace bags when there are holes or the zippers do not work.

GLOSSARY

AO	Area of Operation
AR	Army Regulation
BCT	Brigade Combat Team
BSB	Brigade Support Battalion
CBL	Containerized Batch Laundry
CDC	Centers for Disease Control and Prevention
CO	Company
COB	Command Operating Base
DA	Department of the Army
DOS	Days of Supply
DSB	Division Sustainment Brigade
DSSB	Division Sustainment Support Battalion
FM	Field Manual
HNS	Host Nation Support
ISO	International Organization for Standardization
LADS	Laundry Advanced System
LME	Lightweight Maintenance Enclosure
(M)	Modular
MOS	Military Occupational Specialty
NCO	Non Commissioned Officer
PM	Preventive Medicine
QM	Quartermaster
QO	Quartermaster Officer
S&L	Shower and Laundry
SOP	Standing Operating Procedure
SPO	Support Operations Officer
TEMPER	Tent Extendable Modular Personnel

SHOWER AND LAUNDRY OPERATION MANUALS

TM 10-3510-221-10 – Laundry Advanced System (LADS)

TM 10-4510-207-13&P - Operator and Field Maintenance Manual for 12-Head Shower System

TM 10-3510-226-10 – Operator Maintenance Manual for Containerized Batch Laundry (CBL)

TM 10-4520-266-13&P – Operator and Field Maintenance Manual for Heater, Water, 400,000 BTU

TM 10-5430-237-12&P – Tank, Fabric, Collapsible, Water Storage, 3,000 Gallons

ATP 4-42 – Materiel Management, Supply, and Field Services Operations

RESOURCE LINKS:

MOS 92S Equipment Instructional Videos (CBL/LADS/Showers): https://vimeo.com/showcase/7535593

CASCOM Training Technology Division Videos: https://vimeo.com/usarmycascomttd

MilSuite:
https://www.milsuite.mil/book/community/spaces/sustainnet/quartermaster_community/field_services

92S Field Services Training Division email: usarmy.lee.tradoc.mbx.qm-adfsd-field-services@mail.mil

LOGSA ETM Search (Technical Manuals): https://liw.logsa.army.mil/

FMS Web: https://fmsweb.fms.army.mil/

Army Publishing Directorate (APD): https://armypubs.army.mil/

Centers for Disease Control and Prevention (CDC): https://www.cdc.gov/

Occupational Safety & Health Administration for hospital linen (OSHA):
https://www.osha.gov/SLTC/etools/hospital/laundry/laundry.html

Quartermaster Homepage: https://quartermaster.army.mil/

QM Knowledge Center:
https://www.us.army.mil/content/armyako/en/mycommunities/Home/groups/TRADOC/Groups/CASCOM/Groups/SKN/Groups/QMKC.html

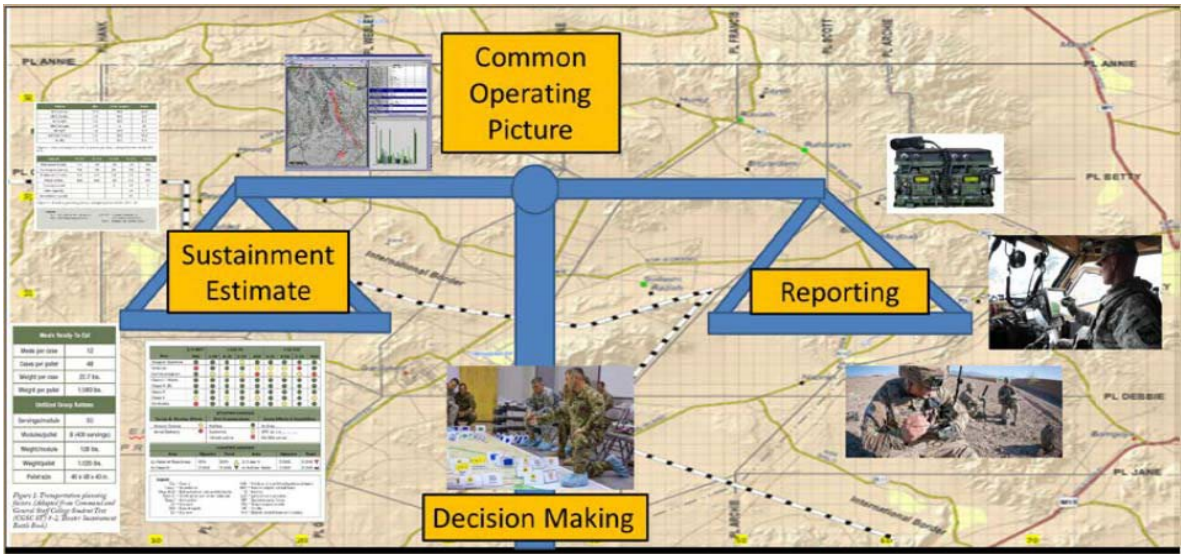
QM Blackboard: https://qm.ellc.learn.army.mil/

Sustainment Unit Individual and Collective Training Resource
Central Army Registry: http://www.adtdl.army.mil/

Appendix A: GTA 63-01-001 (Excerpt)

Conducting Sustainment Estimates

Mission analysis for sustainment planners should be a focused mental effort to define the current operational environment in terms of what do I need (requirements), what do I have (capabilities), what I do not have (shortfalls) and how do I get what I need (request format and distribution method).



• **Requirements**
– Consumption Rates (Offense versus Defense etc.)
– Supported Units (including Changes During the Operation)
– Distribution Assessment (Travel Time/Distance, Preparation and Off-Load Requirements, Special Employment Considerations, Communications etc.)
– Threats (Cyber, CBRNE, etc.)
– Basic Load Replenishment

• **Capabilities**
– Available Assets (Units, Personnel, Equipment, Facilities etc.)
– Haul/Storage Capacity/Weight versus Cube
– Soldier Management (Personnel Readiness, Accountability, Strength Management, etc.)

• **Shortfall or Excess (Culmination Point)**
– Identify (Resource or Distribution Shortfall) and Mitigate Risk
– Delivery Method (LRP/Supply Point/Air)

• **Analysis**
– *Is the mission supportable?*
– *Does this mission extend operational reach?*
– *Does this mission provide a tactical advantage?*

Appendix B: Army Sustainment Training Aides, Training Circulars & Training Manuals

Army Sustainment Training Aids, Training Circulars, and Training Manuals

- Central Army Registry: http://www.adtdl.army.mil/

PUB #	TITLE
GTA 01-14-001	Battle Damage Assessment and Repair Smart Book
GTA 03-08-002	Contaminated Casualty Care
GTA 07-08-003	Physical Readiness Training Quick Reference Card
GTA 07-09-003	Combined Arms Training Strategy
GTA 08-01-004	MEDEVAC Request Card
GTA 08-10-017	MC4 Training Strategy
GTA 09-14-002	Recovery Smart Book
GTA 11-01-007	Send a Radio Message
GTA 14-01-001	Field Ordering Officer (FOO) Smartcard
GTA 21-02-010	Army Warrior Tasks and Battle Drills
GTA 21-08-001	Risk Management Quick Reference Booklet
GTA 21-08-002	Combat Training Smart Card
GTA 41-01-005	Religious Factors Analysis
GTA 55-03-032	Army Watercraft
GTA 70-01-001	Contracting Basics for Leaders Smartcard
GTA 90-01-016	The Deployed Contracting Officers Representative (COR) Smartcard
GTA 90-01-017	Commander's Emergency Response Program (CERP) Smartcard for Leaders
GTA 90-01-020	Defense Support of Civil Authorities (DSCA) Handbook: Tactical Level Commanders and Staff Toolkit
GTA 90-01-021	DSCA Handbook: Liaison Officer Toolkit
GTA 90-01-030	DoD Support to Foreign Disaster Relief
GTA 90-01-32	OCS Planning and Management for Leaders
TC 4-11.46	Sustainment Unit Gunnery and Live Fire Exercise Strategy
TC 4-11.47	The Senior Gunner Program for Sustainment Units
TC 4-93 Series	Command Post Exercise-Functional (CPX-F)
TM 38-700	Packaging Of Material: Preservation
TM 38-701	Packaging Of Material: Packing
TM 4-14.21	Army Rail Safety
TM 4-15.21	Army Watercraft Safety
TM 4-33.31	Cold Weather Maintenance Operations
TM 4-41.11	Dining Facility Operations
TM 4-41.12	Food Program Operations
TM 4-42.21	General Fabric Repair
TM 4-43.31	Petroleum Laboratory Testing and Operations
TM 4-48 Series	25 Rigger Manuals

Appendix C: Army Sustainment Publication:

Army Sustainment Publications

- Army Publishing Directorate: http://www.apd.army.mil

PUB #	TITLE
ATP 4-13	Army Expeditionary Intermodal Operations
ATP 4-14	Expeditionary Railway Center Operations
ATP 4-15	Army Watercraft Operations
ATP 4-16	Movement Control
ATP 4-25.12	Unit Field Sanitation Teams
ATP 4-25.13	Casualty Evacuation
ATP 4-31	Recovery And Battlefield Damage Assessment and Repair
ATP 4-32	Explosive Ordnance Disposal (EOD) Operations
ATP 4-32.1	Explosive Ordnance Disposal (EOD) Group and Battalion Headquarters Operations
ATP 4-32.2	Multi-service Tactics, Techniques, and Procedures for Explosive Ordnance
ATP 4-32.3	Explosive Ordnance Disposal (EOD) Company, Platoon, and Team Operations
ATP 4-33	Maintenance Operations
ATP 4-35	Munitions Operations and Distribution Techniques
ATP 4-35.1	Ammunition and Explosives Handler Safety Techniques
ATP 4-41	Army Field Feeding and Class I Operations
ATP 4-42	General Supply and Field Services Ops
ATP 4-42.2	Supply Support Activities Operations
ATP 4-43	Petroleum Supply Operations
ATP 4-44	Water Support Operations
ATP 4-45	Force Provider Operations
ATP 4-46	Contingency Fatality Operations
ATP 4-46.2	Mortuary Affairs Contaminated Remains Mitigation Site Operations (Pending Publication)
ATP 4-48	Aerial Delivery
ATP 4-90	Brigade Support Battalion
ATP 4-91	Army Field Support Brigade
ATP 4-92	Contracting Support to Unified Land Operations
ATP 4-93	Sustainment Brigade
ATP 4-93.1	Combat Sustainment Support Battalion
ATP 4-94	Theater Sustainment Command

Appendix D: Leader Portal Resources

Leader Portal Resources

- JAG Connect-Criminal Law: https://www.milsuite.mil/book/groups/jagconnect-army-criminal-law
- JAG Connect-Leadership, Management, and Training: https://www.milsuite.mil/book/groups/jagconnect-army-lom
- JAG Connect-Legal Assistance milBook: https://www.milsuite.mil/book/groups/army-legal-assistance
- Leader Net: https://www.milsuite.mil/book/community/spaces/apf/leader_net
- Maneuver Net:
- https://www.milsuite.mil/book/community/spaces/apf/maneuver_net
- MCTP Net: https://www.milsuite.mil/book/community/spaces/apf/mctp_net
- Medical Service Corps Net: https://www.milsuite.mil/book/community/spaces/army_medicine/corps/medical_service_corps
- Military Intelligence Space Net: https://www.milsuite.mil/book/community/spaces/apf/military_intelligence_space_(mi_space)
- MP Warfighters' Forum & Lessons Learned: https://www.us.army.mil/suite/page/567564
- Protection Net: https://www.milsuite.mil/book/community/spaces/apf/protectionnet
- Quartermaster-Logistics Training Department: https://www.milsuite.mil/book/groups/quartermaster-logistics-training-department
- S1 NET: https://www.milsuite.mil/book/community/spaces/apf/s1net
- S3 / XO Net: https://www.milsuite.mil/book/community/spaces/apf/join-apf/join-s3-xo-net
- S6 Community of Purpose: https://www.milsuite.mil/book/groups/s6-community-of-purpose
- S6 Net: https://www.milsuite.mil/book/community/spaces/apf/signal_link/s6_net
- SASMO Share milBook: https://www.milsuite.mil/book/groups/us-army-sasmo and https://www.milsuite.mil/book/community/spaces/sustainnet/sustainment_and_logistics_automation_systems/sasmo_
- Signal Knowledge Network: https://sigkn.army.mil/portal/
- Signal Link Knowledge Network: https://www.milsuite.mil/book/community/spaces/apf/signal_link
- Simulation Operations Net: https://www.milsuite.mil/book/community/spaces/apf/join-apf/join-son
- Sustainment Knowledge Network (SKN): https://www.us.army.mil/suite/page/372426
- Sustain Warfighters' Forum (WfF): https://www.us.army.mil/suite/grouppage/93369
- Sustain Net: https://www.milsuite.mil/book/community/spaces/sustainnet
- Theater Financial Management Center Digital Smart Book: https://www.milsuite.mil/book/groups/13th-fmc
- Theater Financial Management Support Center milWiki Site: https://www.milsuite.mil/wiki/Portal:Theater_Financial_Management_Support_Center

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