



CHAPTER 5

Soldier's Load Management and Training for FOOT MARCHES

The ability of a soldier to march and fight is directly related to his load. The maximum individual load limit cannot be exceeded as an infantry soldier will not accomplish his mission. Soldiers fight light with only the equipment required for the immediate mission. They receive additional weapon systems and materiel when required.

Effective individual fighting loads and minimum approach march loads can only be achieved through safeguarding and transporting portions of the load—commanders must decide to tailor loads that result from risk analysis. Transportation resources must be used to avoid excessive loads on soldiers such as CLOHE at company level and SLOHE at battalion level.

"No soldier should be compelled to walk until he actually enters battle. From that point forward he should carry nothing but what he wears, his ammunition, his rations and his toilet articles. When battle is concluded he should get new uniforms, new everything."

General George Patton, Jr.

Section I
TRANSPORT RESPONSIBILITY

The soldier load concept transfers responsibility for transporting part of the load from the individual soldier to battalion and division staff, and transfers the load from men to CLOHE. The soldier load problem can be reduced by reorganizing existing transport resources, which entails dedicating resources to the roles of CLOHE and SLOHE.

5-1. SIZE OF COMPANY LOADS

Table 5-1 shows planning figures for the required load-handling lift for each infantry company.

CONFLICT/ ENVIRONMENT	CLOHE (COMPANY LEVEL)	SLOHE (BATTALION LEVEL)
LOW INTENSITY		
TEMPERATE CLIMATE	1,850 LB	4,800 LB/400 CUBIC FT
COLD WET CLIMATE	1,850 LB	7,000 LB/600 CUBIC FT
MEDIUM INTENSITY		
TEMPERATE CLIMATE	2,250 LB	6,350 LB/500 CUBIC FT
COLD WET CLIMATE	2,250 LB	8,550 LB/700 CUBIC FT

Table 5-1. Soldiers loads requiring transportation.

a. **Transportation Resources.** The provision of CLOHE at company level and SLOHE at battalion level is the responsibility of the command level that has control of transportation resources for ongoing operations.

b. **Resupply.** Company commanders will more readily make risk judgments if they have operational control of transportation. They can reduce the weight of ammunition, food, and water carried by their men to carry an immediate resupply, which consists of part of their basic load.

5-2. EXPEDIENTS FOR EXTRA TRANSPORTATION

If extra transportation resources are not given to battalions, greater reliance must be placed on—

a. **Extensive use of helicopters to free unit HMMWVs for use as CLOHE and SLOHE.** This might entail allocating one dedicated helicopter to each infantry brigade for logistical support to release three HMMWVs and trailers required for each company for load handling.

b. **Deployment of corps plug transportation assets.** Corps assets could be placed under the operational control of battalions for use as load-handling equipment. Forward deployment of corps transportation assets in the division can release existing HMMWVs and can improve the soldier load-carrying capacity of units, as will direct resupply of forward units by airdrop or steerable parachutes.

c. **Host nation support.** Units should be prepared to use local resources to include conventional vehicles, agricultural tractors, beasts of burden and their handlers, and human porters, which are obtained through host nation support, renting, and capture. Leaders must know the legal parameters of commandeering equipment and animals. The required funding must be provided for renting equipment. Possible host nation resources should be identified in contingency plans. At least one man in each platoon should be designated as a general-purpose driver.

Section II

FACTORS AFFECTING THE SOLDIER'S LOAD

Commanders at all levels must understand the factors affecting the soldier's load and the subsequent capabilities or limitations produced in the unit. The physical limitations of individual soldiers, stress, and the weight of equipment and munitions all affect the soldier's ability to carry his required load. These factors must be carefully analyzed by the commander or leader in the load determination process.

5-3. PHYSICAL LIMITATIONS

The fighting load for a conditioned soldier should not exceed 48 pounds and the approach march load should not exceed 72 pounds. These load weights include all clothing and equipment that are worn and carried.

a. A soldier's ability to react to the enemy is reduced by the burden of his load. Load carrying causes fatigue and lack of agility, placing soldiers at a disadvantage when rapid reaction to the enemy is required. For example, the time a soldier needs to complete an obstacle course is increased from 10 to 15 percent, depending on the configuration of the load, for every 10 pounds of equipment carried. It is likely that a soldier's agility in the assault will be degraded similarly.

b. Speed of movement is as important a factor in causing exhaustion as the weight of the load carried. The chart at Figure 5-1 shows the length of time that work rates can be sustained before soldiers become exhausted and energy expenditure rates for march speeds and loads. A burst rate of energy expenditure of 900 to 1,000 calories per hour can only be sustained for 6 to 10 minutes. Fighting loads must be light so that the bursts of energy available to a soldier are used to move and to fight, rather than to carry more than the minimum fighting equipment.

c. When carrying loads during approach marches, a soldier's speed can cause a rate-of-energy expenditure of over 300 calories per hour and can erode the reserves of energy needed upon enemy contact. March speeds must be reduced when loads are heavier to stay within reasonable energy expenditure rates. Carrying awkward loads and heavy handheld items causes further degradation of march speed and agility. The distance marched in six hours decreases by about 2 km for every 10 pounds carried over 40 pounds. Figure 5-2 shows speeds that are sustainable with given loads, which results in an energy expenditure of 300 calories per hour.

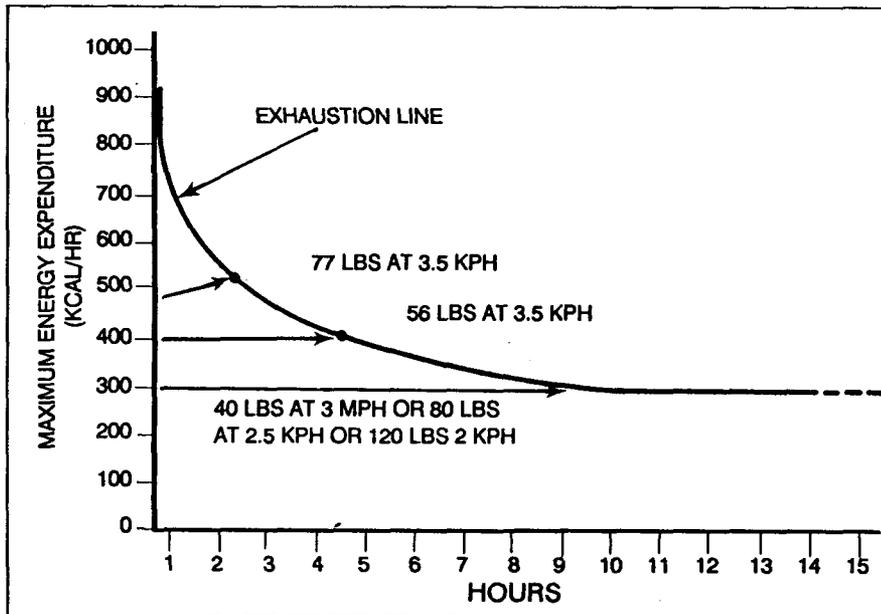
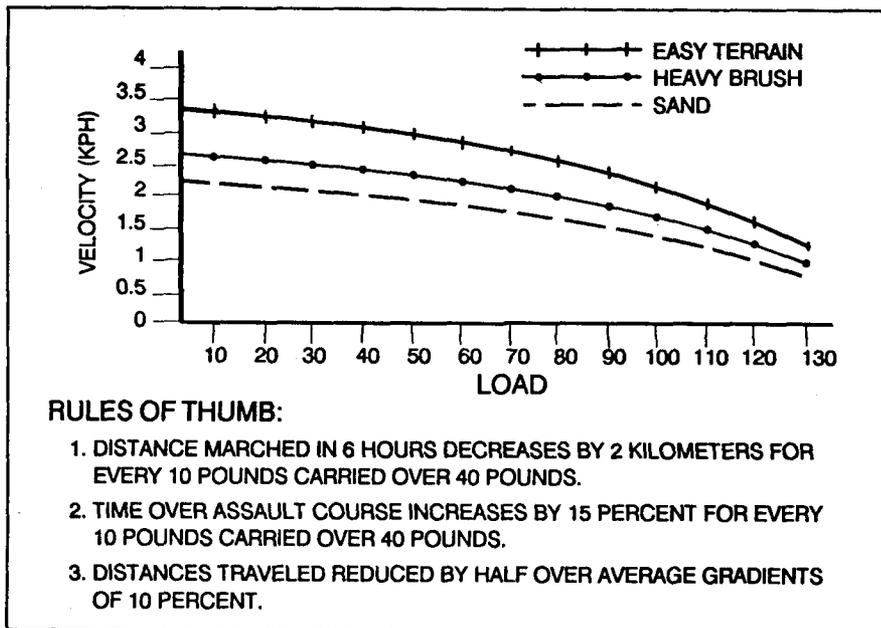


Figure 5-1. Work rate and energy expenditure.



RULES OF THUMB:

1. DISTANCE MARCHED IN 6 HOURS DECREASES BY 2 KILOMETERS FOR EVERY 10 POUNDS CARRIED OVER 40 POUNDS.
2. TIME OVER ASSAULT COURSE INCREASES BY 15 PERCENT FOR EVERY 10 POUNDS CARRIED OVER 40 POUNDS.
3. DISTANCES TRAVELED REDUCED BY HALF OVER AVERAGE GRADIENTS OF 10 PERCENT.

Figure 5-2. March speeds.

5-4. STRESS

Battlefield stress decreases the ability of soldiers to carry their loads. Fear burns up the glycogen in the muscles required to perform physical tasks. This wartime factor is often overlooked in peacetime, but the commander must consider such a factor when establishing the load for each soldier. However, applying strong leadership to produce well-trained, highly motivated soldiers can lessen some of the effects of stress.

5-5. MUNITIONS AND EQUIPMENT

As the modern battlefield becomes more sophisticated, potential enemies develop better protected equipment, which could be presented as fleeting targets. Unless technological breakthroughs occur, increasingly heavy munitions and new types of target acquisition and communications equipment will be required by frontline soldiers to defeat the enemy.

a. In the future, the foot soldier's load can be decreased only by sending him into battle inadequately equipped or by providing some means of load-handling equipment to help him carry required equipment. Weights of selected items are provided in Table 5-2.

WEIGHT IN POUNDS <i>(every ounce counts)</i>			
BDU.....	3.8	TROUSERS, WET WEATHER	1.2
DRAWERS, COTTON .....	.1	RATION, MRE	1.3
HANDKERCHIEF.....	.1	BAG, WATERPROOF .....	.8
SOCK, CUSHION SOLE .....	.2	PAD, SLEEPING	1.3
UNDERSHIRT, COTTON .....	.3	3 SHELTER HALF, POLES, PEGS, AND ROPE	4.5
TOWEL.....	.2	CARRIER, SLEEPING BAG .....	.4
CANTEEN, 1 qt w/WATER	2.8	BOOTS, COMBAT LEATHER	3.3
CANTEEN, 2 qt w/WATER	4.8	JACKET, FIELD	3.3
LINER, PONCHO	1.6	BAG, DUFFLE	3.5
MESS KIT.....	2.8	CAP, BDU .....	.3
GLOVES, BARBED WIRE .....	.4	CASE, SLEEPING BAG	1.5
PARKA, WET WEATHER	1.2	LINER, FIELD JACKET .....	.7
PONCHO, NYLON	1.3	OVERSHOES	4.2
SHIRT, SLEEPING .....	.7		

SCARF, WOOL .....	.4	TELEPHONE, TA-1	1.5
SLEEPING BAG	7.1	E-TOOL, w/CARRIER.....	2.5
BELT, TROUSERS .....	.2	ALICE, MEDIUM, w/FRAME.....	6.3
HELMET, BALLISTIC	3.4	ALICE, LARGE, w/FRAME	6.6
BELT, PISTOL, w/SUSPENDERS AND FIRST-AID POUCH	1.6	AN/PRC-77, w/BATTERY	20.8
TOILET ARTICLES	2.0	M60 SPARE BARREL w/BAG	8.0
WEAPONS:		60-mm MORTAR, M225	14.4
M16	1.6	60-mm SIGHT, M64.....	2.5
M203	10.0	60-mm BASEPLATE, M-7.....	14.4
M60 MG	23.3	60-mm BIPOD	13.2
M249 SAW	15.2	81-mm MORTAR, M29	30.0
AMMUNITION:		81-mm SIGHT, M53.....	6.0
5.56 w/MAG (30 rds).....	.9	81-mm NIGHTLIGHT	2.0
7.62 LKD (100 rds).....	7.0	81-mm BASEPLATE	25.0
40-mm (ALL TYPES).....	.5	81-mm BIPOD	40.0
5.56 LKD (200 rds).....	7.6	BINOCULARS	3.2
GRENADE, FRAGMENTATION..	1.0	FLASHLIGHT, w/BATTERY.....	.8
GRENADE, SMOKE	1.0	COMPASS, M2 .....	.3
RD, 60-mm MORTAR, HE	3.5	DRAGON TRACKER	8.1
RD, 81-mm MORTAR, HE	9.3	DRAGON NIGHTSIGHT	34.0
LAW	5.2	AN/PVS-5 NVG.....	1.9
MINE, M21	18.0	AN/PVS-4 NVD.....	3.9
CLAYMORE, M18	5.0	PISTOL, CAL .45.....	2.5
DRAGON, MSL	25.3	PROTECTIVE MASK, w/DECON KIT	3.0
AT4	14.0		
FLARE, TRIP.....	1.0		
BAYONET, w/SCABBARD	1.3		
CASE, SMALL-ARMS.....	.9		

Table 5-2. Weights of selected items.

b. Unless part of the load is removed from the soldier's back and carried elsewhere, all individual load weights are too heavy. Even if rucksacks are removed, key teams on the battlefield cannot fulfill their roles unless they carry excessively heavy loads. Soldiers who must carry heavy loads restrict the mobility of their units.

c. Overloaded soldiers include the antiarmor teams (individuals carry weights of 111, 101, and 90 pounds), mortar teams (individuals carrying 83 pounds, even after distributing 100 mortar rounds of 3.5 pounds each), fire support teams (carry 92 to 95 pounds), and M60 machine gun teams (carry 78 to 87

pounds). All radio operators equipped with the AN/PRC-77 and KY57 VINSON secure device are also loaded above the maximum recommended combat load (84 pounds). AT4 gunners and low-level voice intercept teams are overloaded as well as Stinger and engineer breaching teams.

Section III ECHELONING AND LOAD TAILORING

A diagram showing the concept of dividing the total soldier load into combat, sustainment, and contingency loads and the different levels of combat loads (fighting and approach march) is at Figure 5-3.

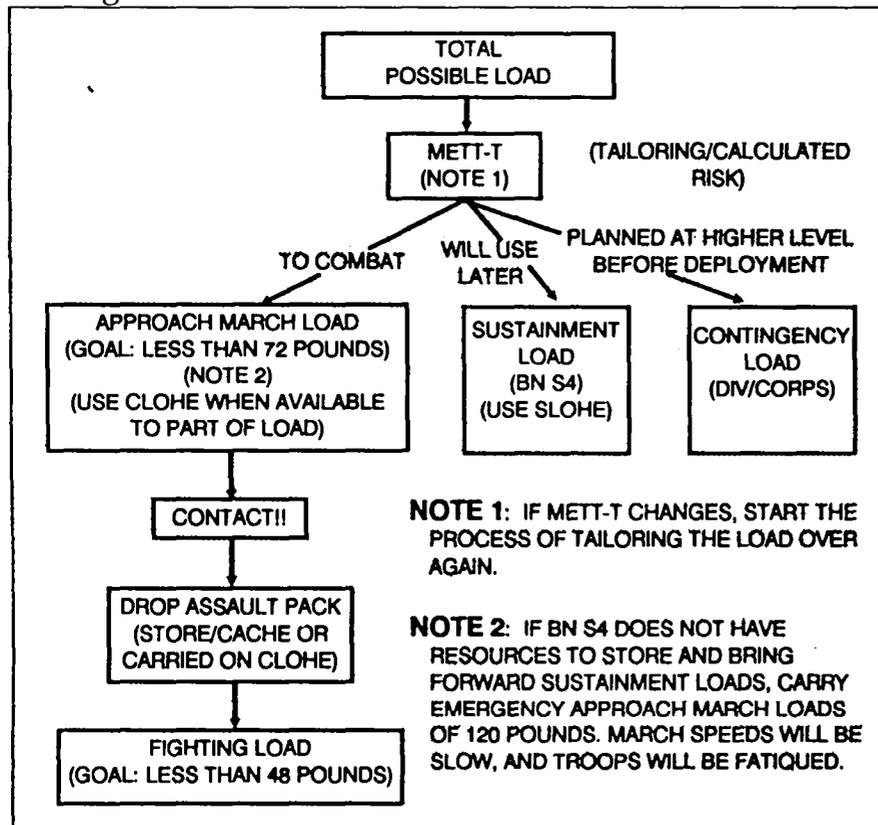


Figure 5-3. Load echelon diagram.

5-6. COMBAT LOAD

The definition of a combat load that is carried by soldiers is as follows: The minimum mission-essential equipment, as determined by the commander responsible for carrying out the mission, required for soldiers to fight and survive immediate combat operations. The combat load is the essential load carried by soldiers in forward subunits or the load that accompanies soldiers other than fighting loads.

a. **Fighting Load.** The fighting load includes bayonet, weapon, clothing, helmet, and LBE, and a reduced amount of ammunition.

(1) For hand-to-hand combat and operations requiring stealth, carrying any load is a disadvantage. Soldiers designated for any mission should carry no more than the weapons and ammunition required to achieve their task; loads carried by assaulting troops should be the minimum.

(2) Unless some form of CLOHE is available, cross-loading machine gun ammunition, mortar rounds, antitank weapons, and radio operator's equipment causes assault loads to be more than the limit of 48 pounds. This weight restricts an individual's ability to move in dynamic operations. Extremely heavy fighting loads must be rearranged so that the excess weight can be redistributed to supporting weapons or can be shed by assaulting troops before contact with the enemy.

b. **Approach March Load.** The approach march load includes clothing, weapon, basic load of ammunition, LBE, small assault pack, or lightly loaded rucksack or poncho roll.

(1) On prolonged dynamic operations, the soldier must carry enough equipment and munitions for fighting and existing until resupply. In offensive operations, soldiers designated as assault troops need equipment to survive during the consolidation phase, in addition to carrying munitions for the assault. A limit of 72 pounds for a soldier load should be enforced.

(2) Normally, the soldier's large rucksack is not part of the approach march load. If the field pack internal frame is issued,

only the small assault pack section is carried—the large section should be kept at battalion level. If the ALICE system is used, either a partly loaded small ALICE should be carried individually with a duffle bag or one large ALICE for each man should be kept at battalion level.

c. Emergency Approach March Loads. Circumstances could require soldiers to carry loads heavier than 72 pounds such as approach marches through terrain impassable to vehicles or where ground/air transportation resources are not available. Therefore, larger rucksacks must be carried. These emergency approach march loads can be carried easily by well-conditioned soldiers. When the mission demands that soldiers be employed as porters, loads of up to 120 pounds can be carried for several days over distances of 20 km a day. Although loads of up to 150 pounds are feasible, the soldier could become fatigued or even injured. If possible, contact with the enemy should be avoided since march speeds will be slow.

d. Shedding Items on Contact. Rucksacks, assault packs, and other items of the approach march load should be placed in caches before combat, and contact and antiambush drills must include shedding most of the approach march load. However, this procedure makes it difficult for the soldier to retrieve his equipment later in the battle, and it should only be used when transport is unavailable.

5-7. TAILORING COMBAT LOAD TO METT-T

When confronted with the unacceptable loads that soldiers may be required to carry, senior commanders would like to establish firm limits. However, when realistically applying such guidelines, the soldier may not survive and win on the modern battlefield if his munitions and survival items are less effective than his enemy's.

a. Senior leaders must resist the temptation to prescribe the soldier's load. Only the subunit commander, who is assigned a specific mission, has information on all the factors that must be

considered to decide the equipment needed for his mission. He must also have the authority to decide what load his soldiers must carry. The subunit commander receives guidance from his superiors, but any standard load imposed on him only inhibits his ability to make the correct judgment.

b. Consideration of risk judgments that must routinely be taken by subunit commanders are at Table 5-3. To use the table, the commander prioritizes the factors in column 1 based on an estimate of the situation. This estimate includes a complete analysis of the unit's mission at the end of the march, the enemy situation, the terrain to be marched on or through, the expected weather, and the physical condition of the troops. After prioritization, the commander decides what items to include in the soldier's load and what items to leave with the sustainment load in the unit trains area.

c. Considerations for this decision-making are included in columns 2,3 and 4. This prioritization allows the commander to tailor the soldier's load based on the mission and to decide what items are to be transported or stored in the sustainment load. The mission analysis also identifies requirements for additional transportation assets.

RISK ASSESSMENT			
1	2	3	4
FACTOR/QUESTION	TAKE	LEAVE	REMARKS
MISSION <hr/> a. To defeat the enemy in close battle. b. To get there quickly.	Reduced munitions Water	Food Threat protection Environmental protection Reserve munitions	Mobility is paramount with 40-pound loads

Table 5-3. Risk judgments in load planning.

RISK ASSESSMENT			
1	2	3	4
FACTOR/QUESTION	TAKE	LEAVE	REMARKS
c. To sustain stealth operations independent of resupply.	Water Food Environmental protection Reduced munitions Camouflage	Reserve munitions Threat protection	Maximum loads depend on speed/distance for dynamic operations.
d. To carry maximum combat power.	Munitions Water Threat protection Limited environmental protection	Food	Maximum loads depend on speed/distance for dynamic operations.
e. For static operations.	Basic load and reserve of ammunition Barrier material Maximum threat protection Some comfort items to achieve quality rest periods Water Food		
RESUPPLY			
a. Reliability.	Less amounts of all classes of supply		Best solution is for the commander to control his own immediate resupply transport resources.
b. On call.		Reserve munitions	

Table 5-3. (Continued.)

RISK ASSESSMENT			
1	2	3	4
FACTOR/QUESTION	TAKE	LEAVE	REMARKS
<p>c. Planned.</p> <hr/> <p>DEFEAT THE THREAT</p> <hr/> <p>Antipersonnel</p> <p>Antiemplacement Antisoft vehicle Antimateriel Antitank Antiair</p> <hr/> <p>SURVIVE THE THREAT</p> <hr/> <p>Ballistic PASGT vest protection</p> <p>NBC protection</p>	<p>Small-arms/ grenades/ Claymores Grenades/66-mm Rocket/ demolitions AT4/machine gun ammunition Demolition/ grenades Dragon/AT4 Machine gun ammunition</p> <p>Protective mask</p>	<p>Food Environmental protection Quality rest Equipment</p> <p>MOPP suit if enemy use of chemical weapons is low</p>	<p>Basic load must be tailored to meet the threat.</p> <p>Soldiers take the minimum of threat protection.</p> <p>PAGST vest reduces casualties by 50 percent during bombardment.</p>

Table 5-3. (Continued.)

RISK ASSESSMENT			
1	2	3	4
FACTOR/QUESTION	TAKE	LEAVE	REMARKS
Electronic Warfare	VINSON		Secure communications probably not viable below bde/bn level in light units unless COMSEC is of high priority to achieve mission.
TERRAIN			
Flat, improved road			Terrain may cause an increase of time required to conduct march; resupply cross country may be difficult.
Cross country	Water consumption increased		
Hills, improved road			
WEATHER			
a.Environmental Survival:			Energy must be maintained to fight by control of loads/march speeds.

Table 5-3. (Continued.)

RISK ASSESSMENT			
1	2	3	4
FACTOR/QUESTION	TAKE	LEAVE	REMARKS
Exposure	Poncho Extra clothing Limited number of sleeping bags		Work rates should be reduced.
Heat exhaustion	Water	Threat protection	When in combat, men with excess fat can survive off natural reserves.
Disease	Water purification tablets Mosquito nets		
b. Sustenance	High-caloric food		Average of four hours quality sleep each day.
c. Quality rest	Sleeping bags/pads		

Table 5-3. (Continued.)

5-8. ECHELONING THE SOLDIER'S LOAD

When the size of the combat load has been established, needs can be determined for echeloning at battalion-, division-, or force-level trains for other equipment assigned to foot soldiers. Given the approved load limits for individual soldiers (fighting load of 48 pounds; approach march load of 72 pounds), commanders can use the following as a guide for tailoring the equipment and supplies into three echelons. (See Appendix D.)

a. **Combat Load.** Company commanders are responsible for all the equipment included in combat loads.

b. **Sustainment Load.** Battalion S4s are responsible for the safe custody and movement of sustainment loads. This responsibility may be delegated to company supply sergeants. The definition of sustainment load is as follows: equipment that is determined by the commander to be required for sustained operations, which will be brought forward to the soldiers under unit arrangements as required by the commander.

(1) The sustainment load includes individual large rucksacks or A-bags that contain spare clothing and equipment: sleeping bags when not required for survival, limited personal effects, protective items for specific threats (armored vests and chemical protective suits), and a mobile store of unit equipment.

(2) This equipment should be stored in a forward operations base—such as the battalion combat trains area—and pushed forward to front-line soldiers as arranged by the S4. Resupply of ammunition, food, and water is not included in this definition of sustainment load; however, the sustainment load could be pushed forward at the same time as normal resupply.

c. **Resupply.** Combat and sustainment loads contain ammunition, -water, and food to enable units to operate until resupplied, but the amounts carried directly reflect the front-line soldier's confidence in the reliability and frequency of resupply. This concept assumes the normal operation of the battalion resupply system, but transport carrying an immediate company resupply should normally be under the operational control of the company commander.

d. **Contingency Load.** The contingency load is stored under divisional or corps arrangements until required. It consists of all other items of individual and unit equipment not required for ongoing operations such as the soldier's B-bag for extra clothing and TOW missiles in theatres where there is no armored threat.

(1) B-bags should be palletized in company loads, and contingency TO&E equipment should be centralized in battalion packs. Contingency loads are not flown into

deployment areas as part of the initial sorties. When contingency loads arrive in theater, plans should be made at or above division level to store unit contingency equipment. Items of equipment can then be returned to units if the operational situation changes, if the unit is deployed into an area where items of the contingency load are needed, or if the unit is staged through a rear assembly area.

(2) The key to this process is that instructions are issued to soldiers before deployment, listing the items of individual and TO&E equipment that should not accompany them on the initial deployment. Contingency equipment could remain in CONUS, or be stored at a base area in unit packs, or be used as a pool of equipment to be issued as required by the G4.

(3) Provision must also be made for some items of equipment to be back-loaded from battalion to division control upon arrival in theater. This allows units to deploy heavy for maximum flexibility and to add to contingency loads when in theater to fight light.

NOTE: In addition to the LBE, rucksack, A-bags, and B-bags, soldiers leave a C-box of personal equipment at their home station before deployment.

e. **Load Planning.** Units should develop packing lists to include specific deployment options, based on guidance from the chain of command. Once deployment has taken place, authority should be delegated to battalion commanders to send items back to division for inclusion in contingency loads. Company commanders should be authorized to vary the composition of combat and sustainment loads.

5-9. MINIMUM-LOAD CONCEPT

All soldiers, regardless of the threat environment and mission, always carry certain items common to the any mission. These items are the minimum-load configuration (MLC) along with the soldier's assigned weapon system and minimum amount of

ammunition. Additions or deletions to the MLC will be based on the unit commander's estimate of the situation.

Section IV TRAINING

Training in foot marches develops a unit's ability to march to its destination in a condition to accomplish its mission.

5-10. UNIT CHARACTERISTICS

Whether a force is mounted or dismounted, success in combat depends upon troops who can move dismounted cross-country, covering a great distance in the shortest time. The following unit traits are important in achieving this goal: unit discipline, good leadership, teamwork, high morale, endurance, and mental and physical stamina.

5-11. PHYSICAL CONDITIONING

An essential element of training foot soldiers is proper physical and mental conditioning, which develops stamina and endurance to perform required tasks. The best results are obtained from cross-country marches, although physical training and negotiating obstacle courses are also useful. Loads should be light and distances short at the beginning of training, becoming more difficult as training continues. By the end of training, troops should be accustomed to rigorous conditions that are most likely encountered in subsequent operations.

a. Soldiers who are physically fit to APFT standards can carry loads that are 45 percent of their body weight (average 72 pounds) at 4 kph for eight-hour approach marches. The amount of energy expended and discomfort experienced in carrying these loads can be reduced if soldiers have participated in a specialized program of physical conditioning. As a result, much heavier emergency loads can be carried at reduced speeds. Soldiers whose mission is to operate on foot for long periods

without resupply can benefit from such training and conditioning.

b. After a 30-day preparatory training period, soldiers can march 12 miles in less than 3 hours loaded to about 60 pounds, when energy expenditure at that rate would cause exhaustion in 2.5 hours for soldiers who have not received special training. A number of considerations should be examined when developing a program for march conditioning.

(1) Aerobic conditioning (running) should not exceed 3 to 5 sessions each week (30 to 45 minutes each session). Excessive aerobic conditioning could be counterproductive to meeting other physical fitness objectives.

(2) Extended marching with loads is the most demanding physical requirement for infantry soldiers. Training programs should include specific progressive load-bearing marches. Progressions should be developed for increasing a load or distance marched but not at the same time. This training meets the requirement for both aerobic and muscular (legs and back) endurance. Progressive extended marches of 5, 10, 15, and 20 miles should be mandatory training and be scheduled regularly.

(3) Infantry physical training programs should include scheduled (two or three times each week) progressive resistance (strength) training to sustain or improve muscular strength. Also, muscular endurance training should be included. This training should include both upper and lower body muscle groups with emphasis on the upper body. Intensive progressive resistance training (three sessions each week in 48-hour intervals) should be mandatory for soldiers who lack adequate muscle mass (lean tissue) of the upper body.

(4) Mandatory elements of any fitness program should be: load-bearing progressive marches; resistance strength training; aerobic training; and anaerobic (speed and agility) training to include negotiating obstacles and confidence courses.

c. The following is a suggested program for physical conditioning.

(1) Train-up program for six weeks consisting of four one-hour daily workouts and one-half day each week to include:

(a) Two upper body exercise periods (push-ups, dips, sit-ups, and chin-ups or pull-ups).

(b) Two lower body exercise periods (sprints, relays, fireman carry, boot dusters, step-ups on benches).

(c) Two marches: one with heavy load and a short distance, one with light load and a longer distance, or both combined with tactical missions.

(d) Two slow-paced distance runs of 3 to 5 miles at 80 percent maximum heart rate (*FM 21-20*).

(e) One light run of two miles at 60 to 80 percent maximum heart rate.

(2) Sustainment program as determined by the commander based upon the seven physical training principles (*FM 21-20*).

(a) Regularity (three to five times each week).

(b) Progression (slow, steady increase of load or distance).

(c) Overload (work until muscles are fatigued).

(d) Variety (circuit training, free weights, calisthenics/isometrics, confidence and obstacles courses).

(e) Balance (flexibility and muscular balance).

(f) Recovery (stress different muscle groups each day).

(g) Specificity (body adapts to a specific demands).

5-12. NUTRITION

Proper nutrition planning can improve soldier performance and reduce exertion required for a given work load. A preload-bearing diet that is high in carbohydrates can add to a soldier's ability to carry his load. It increases muscle glycogen levels as a "buffer" or reserve against exhaustion. Soldiers with high glycogen levels could require less rations for short load-bearing missions than soldiers low in muscle glycogen.

5-13. TACTICAL TRAINING

Units should train regularly with their dummy basic load of ammunition. The execution of a platoon load-carrying test should be included in the ARTEP – for example, carrying an average load of 70 pounds for 12 miles followed by a tactical exercise, followed by an additional 12 miles and tactical exercise to be completed in a period of 24 hours.

5-14. LEADER TRAINING

Improved use of aimed fire and fire discipline decreases the risk of depleting ammunition, allowing commanders to carry reduced loads of ammunition when foot mobility is paramount.

a. **Commanders.** Potential commanders and staff officers must understand the following points:

(1) The composition of loads depends on METT-T factors. Load planning involves the subunit commander, acting under guidance from his superior, in a series of risk judgments that require balancing the physical ability of his soldiers against the risks of not carrying items of clothing, equipment, food, water, or munitions.

(2) Levels of command above company must support the front-line soldier by arranging for items of individual and subunit equipment to be kept in trains or base areas and by providing resources to fulfill the role of CLOHE and SLOHE. Echeloning of loads must be planned so that combat loads, sustainment loads (battalion level), contingency loads (divisional level), and equipment at home base are properly accounted for, safeguarded, and available to the soldier.

b. **Junior Leaders.** Junior leaders should be taught to make risk judgments involved in load planning and movement as well as load discipline.

5-15. SUSTAINMENT (INTEGRATED) TRAINING

Previously learned subjects should be integrate with foot marches to maintain overall proficiency and to inject realism into

training. The subjects to be integrated and their required emphasis depend on the area of operations in which the training is conducted. A list of subjects that apply to most disciplines includes:

- Camouflage.
- Reconnaissance and security.
- Map reading.
- Use of the compass and other navigational aids.
- Fire support planning.
- Air defense planning.
- NBC defense planning.
- First aid and personal hygiene.
- Field sanitation.
- Occupation of bivouac and assembly areas.
- Tent pitching/field craft.
- Preparation of individual and small-group rations.
- Evacuation of casualties.
- Care of clothing and equipment.
- React to ambushes.
- Use of arm-and-hand signals.
- Request for indirect fire.

5-16. ENVIRONMENTAL TRAINING

Training should consider the terrain and climate of the area in which the unit will subsequently conduct operations. The training program must include familiarization with special equipment and the application of specialized techniques to tactical principles. Specialized training procedures for desert, jungle, arctic, and mountain areas are found in manuals dealing with those areas of operations.

5-17. MARCH DISCIPLINE

March discipline must be stressed throughout training. Aspects requiring special consideration are maintaining the rate of march and distances between men and units, and ensuring

proper timing and use of halts and rest periods. Troops must not drop MRE wrappers or other refuse along the trail, and they must observe prescribed sanitation procedures. At halts any material that could attract the attention of the enemy or could identify a force should be removed or buried. When contact with the enemy is imminent, noise discipline must be observed for required security.