

Chapter 8

Movement on Foot

8001. Effect of Cold on Mobility

- a. **Tactical Significance of Individual Load.** The individual's load (weapon/ammunition and pack) is a great impediment to mobility. Commanders must make every effort to move nonessential equipment and to reduce each Marine's individual load to an absolute minimum. Minimal essential supplies and equipment must be carried. The individual fighting load must not inhibit the Marine's capability to fight once he arrives at the objective. See paragraphs 8002 and 8003.
- b. **Effects of Temperature.** During the winter, low temperatures, snow, ice, and the difficulties of constructing roads and trails all hinder movement on the ground. During a thaw, ice on lakes and streams are weakened, and roads may become impassable. In summer, many areas become swampy because the underlying permafrost in arctic regions hinders drainage.
- c. **Effects of Snow.** Besides restricting movement, snow blankets the country and obscures its features, making navigation difficult. Snow also hides natural obstacles, such as tree stumps, rocks, ditches, and small streams, as well as manmade obstacles, such as minefields and defenses. Snow also acts as an insulator. In the early stages of a thaw, it retards the thawing of underlying ground, preventing effective drainage and forming a deep and often almost un-negotiable slush.
- d. **Unaided Foot Movement.** Men on foot cannot move easily through fresh or powder snow which is more than 8-inches deep. At depths of over 15 inches, unaided movement becomes laborious and very tiring. In such conditions, troops with no over-snow capability are road bound. Unable to maneuver effectively, they are at a great disadvantage relative to troops who can move freely over the snow.
- e. **Aided Foot Movement.** In most conditions, using skis or snowshoes can enhance individual mobility, and equipment can be carried in team sleds. Troops can be trained to use snowshoes quite rapidly; however, their use is very tiring and restricted by steep terrain. Use of skis gives greater speed than snowshoes and opens up more terrain but requires more training. Ski troops pulled behind vehicles (skijoring) can achieve considerable speed. They arrive at their destination faster and more fit to fight than those who expended energy on laborious foot movement do. In any movement in cold weather, straggling cannot be tolerated for survival depends on staying with the unit.

8002. The Fighting Load

a. **Commander's Considerations.**

- (1) The primary consideration is not how much a Marine can carry, but how much can be carried *without* impaired combat effectiveness-moral or physical. The combat strength of a unit is not counted simply in numbers of Marines, but in numbers of Marines physically able and eager to engage the enemy.
- (2) It is generally better to risk temporary inconvenience from lack of health and comfort items than to exhaust Marines due to overloading.
- (3) It is fundamental truth that men become physically exhausted more quickly when under the stress of combat. Marines must carry less into battle than they are conditioned to carry in training. Marines should be conditioned for carrying weight but should be equipped in combat for fleetness on foot.

(4) A common mistake is to base the fighting load on the gear and supplies necessary to meet every contingency. The commander cannot reasonably expect to carry enough gear for every possible eventuality. The items to be carried must be based on likely expectations.

(5) It is the commander's responsibility to produce transport to carry additional gear. As a rule of thumb, a rifle company or unit of similar size requires one 5-ton truck and trailer. In cold weather operations support assets such as helicopters, trucks, BV 202/206 (small-unit support vehicles [SUSV]), LAV, AAV, or sleds may be provided. Commanders must use them wisely to take the load off their Marines. These assets may have to be shared with others who have responsibilities (logistics, MEDEVAC, etc.).

(6) The commander must ensure that the supply system provides, on a dependable and timely basis, the balance of essential supplies and equipment not carried by the unit. Marines must feel confident that they will be supported with the necessary supplies and equipment.

(7) Commanders must design training that builds cohesion and pride among Marines operating under austere conditions. To effectively demonstrate this Spartan mentality, leaders must be visible and active. Train Marines in field craft, foraging techniques, and of caches and field expedients. Make maximum use of captured stores.

b. Equipment and Ordnance Load

(1) Specific loads that should be considered are:

ITEM	POUNDS
180 rounds of 5.56 mm	7.7
(4) M-67 fragmentation grenades	6.8
(1) SMAW	29.3
(1) M-720, 60 mm Mortar w/ multipurpose fuse	7

(2) Some Marines may be expected to carry accessory equipment into combat. Examples are:

ITEM	POUNDS
SINGARS w/ battery	21
Squad Automatic Weapon	18
240G machine gun and/or	24.2
U.S pistol, M-9	1.75

8003. Winter Warfighting Load Requirements

The winter warfighting load requirements have been developed as a guide for commanders when planning movements in the cold weather operating area. Commanders will decide, depending on the mission and terrain, which equipment load Marines will carry.

a. Basic Uniform Requirements. The following list of uniform items comprises the basic cold weather uniform. This list may vary depending upon the severity of the weather, the activity level of the Marine, and the individual metabolism of the Marine. However, the unit leader should dictate the outer camouflage layer.

Extreme Cold Weather Clothing System (ECWCS) Parka and Trousers
Cold Weather (C/W) Trousers w/ Suspend
C/W Hat or Balacalava
Polypropylene or Capilene long underwear

VB Boots or Ski March Boots w/ appropriate sock system and gaiters
Gloves with Inserts or Trigger-finger Mittens
Overwhites (parka, trouser, and over mittens)
Helmet w/ Camo cover (white)

As part of the basic cold weather uniform, each man should be required to have in his possession at all times some required pocket items. These seven items should be carried in the pockets of your ECWCS uniform:

Pocket knife
Whistle
Pressure Bandage
Chapstick and Sunscreen
Sunglasses
Survival Kit and rations (fire starting material, signaling material, food gathering material, water procuring material, sheltering material, 1st aid material)
Notebook w/ pen or pencil

NOTE: Some additional items that should be carried at all times are:

Contact gloves
Avalanche cord (10 meters)
Flashlight w/ tactical lens and spare batteries
Chemlights or route marking material

b. Assault Load. The Assault Load is equipment in addition to the basic cold weather uniform requirements, and is carried in the load bearing vest (LBV), butt pack and pack system. This is the equipment carried for short duration missions such as security patrols or during the final assault phase. It is carried at all times when you are away from your bivouac site.

An extra insulating layer (polypropylene, woolly pully, etc.)
Protective layer (ECWCS Parka and trousers if not worn)
Load Bearing Vest (LBV) with 2 quarts of water and first aid kit.
Rations for the time away from your bivouac site.
Extra socks and gloves.
Isopor mat (strapped to assault pack or carried on ski pole)
Over-the-snow mobility (skis, poles, wax kit and /or snowshoes)
Mission essential gear as required:
T/O weapon with accessories (sling, magazine, cleaning gear, bayonet/K-bar, and basic allowance of ammunition)
*Extra ammunition, demolitions, and pyrotechnics as the mission dictates.
*Optical gear (binoculars, night vision devices, etc.)
*Communication equipment (field phones, spare batteries, etc.)
*Navigational equipment (map, compass, GPS, etc.)

NOTE: Mission essential gear items indicated with an * are spread-loaded throughout the unit as the mission dictates. Also, it may be required for designated personnel (such as RTO's) to carry the assault load in the large Vector pack vice in the small assault pack.

c. Combat Load. The Combat Load is the equipment carried for longer duration missions such as movements to contact. It is carried in the large Vector pack and consists of essential gear required in the event of an unplanned bivouac and the gear required to conduct medevacs. The Following items are in addition to the items already being carried in the Assault Load.

Sleeping Bag
Snow shovel to dig expedient shelters, fighting positions, and avalanche victims)

Individual/squad stove (Whisperlite, Peak1, etc.)
Fuel bottle w/ fuel
Thermos
Poncho (for expedient shelters or medevac purposes)

NOTE: If the gear list dictates that each man carries the Assault Load, then 1 man per squad will also bring the Combat Load items. These items may be spread loaded throughout the squad to prevent overburdening 1 man with extra weight. If all personnel are carrying the Combat Load, then items b,c,d,e, and f are 1 each per 2 men.

- d. Existence Load.** The existence load is any extra gear that is required that can be brought up to the forward combat elements once the situation allows. Ideally, each fire team packs their excess gear in one seabag, and it comes forward on the log train. It includes, but not limited to:

Extra insulating layers
Extra socks
Extra glove and mitten liners
Toiletries
Sewing Kit

- e. Group Stores.** Ideally, each fire team will have their own sled to haul their group stores. This sled may be pulled by the individual Marines during their movements, carried in the roof of the SUSV, or it may be brought up via the log train during the consolidation phase of combat. The group stores inside the fire team sled should consist of the following:

1 ECW tent complete(tent body, fly, and pole set)
Extra fuel for the stoves
1 case of extra MRE's/RCW's
2 shovels and pioneer gear as required (hatchet, belay rope, etc.)
2 pr. Climbing skins(if ski-borne)
1 Whisk broom
1 team cook set
candles
trash bags

NOTE: Proper packing of the group stores is discussed in Chapter 3 "Group Equipment."

8004. MILITARY SKIING

Skis are used by Marines to travel over the snow. Military skiing is not to be confused with downhill skiing in the traditional sense. Route selection is of the utmost importance. The goal is to move Marines units safely and efficiently to the objective.

- a. Value of Trained Ski Troops.** Trained ski troops can move as fast as men marching on hard ground can. Skis give mobility, encourage swift maneuvers to exploit surprise, and enable moves against flanks and rear areas over snow-covered terrain. Skis are normally used only on the approach march. In most cases, skis are staged before the final assault.
- b. Specialized Units.** Reconnaissance, surveillance and target acquisition units have the greatest need to become good skiers. Those in supporting units who might accompany reconnaissance units should acquire similar skills and be trained with the unit they are to support. This includes artillery forward observers, engineer reconnaissance teams, and forward air controllers.
- c. Ski Training.** Ski training is not easy. It takes about 4 weeks to achieve proficiency. Some Marines who take longer should be trained to snowshoe. Commander may have to task-organize their units according to skiing proficiency.

(1) Military skiing requires Marines to negotiate all types of terrain in many different weather and snow conditions. Marines must carry a weapon and heavy pack and often have to pull a team sled. They must master the techniques of moving uphill and downhill across difficult country with the minimum effort and at a pace to keep up with the rest of the patrol or unit. A military skier must become so proficient that skiing is second nature so that his whole concentration can be given to his mission.

(2) Certain basic skills must be learned by military skiers. A competent instructor is essential. While artificial slopes or dry land (grass) is useful for pre-environmental training, skiing techniques must be perfected on snow. Some preliminary ski training can usefully be done before setting out for theater where troops may have to ski.

Military ski instruction is described in more detail in the MCRP 3-35.1B, *Marine Ski Instruction Manual*.

8005. Skiing Speeds for Planning Purposes

Movement on skis is a combat multiplier that enables units to move over terrain unattainable without this advantage. However, skiing makes great physical demands, and ski troops must be very fit and capable of prolong feats of endurance. Do not contemplate moving on skis until Marines are fit and have mastered the basic skills.

- a. Snow/weather conditions and unit ability influence the speeds of all skiers to such an extent that no accurate figures can be quoted for likely speeds. Each unit leader must know the abilities of his unit and evaluate its movement capabilities and rate in accordance with the abilities of his least experienced individual. Generally, movement rates can be calculated by adapting the following speeds to your situation.

(1) Skiers carrying rifles and packs can achieve between 3 to 5 kilometers per hour. When Marines pull team sleds speed falls to 2 to 3 kilometers per hour.

(2) Add one hour to estimated time for journey for every 300 meters ascended and for every 800 meters descended.

(3) On long marches out of contact with the enemy, skiers can be towed behind a vehicle in suitable country, saving time and energy. When skijoring, speeds of up to 15 kilometers per hour can be achieved dependant on the unit's level of training (see paragraph 8008.)

8006. Military Snowshoeing

- a. **Speed.** Snowshoes enable a man to progress at about the same pace over the snow as he would achieve in boots on hard ground but the expense of considerable effort. Speed varies with the depth and consistency of the snow. Trained and conditioned men on snowshoes average 15 kilometers a day over flat or gently rolling terrain, and 20 kilometers a day on forced march.
- b. **Maintenance.** Very little maintenance is needed as long as snowshoes are checked regularly and minor repairs are carried out promptly. Snowshoes are most likely to be damaged when negotiating tree stumps or rocky ground that may snag or fray the webbing. When such types of terrain are encountered, frequent inspections are desirable.
- c. **Comparison with Skis.** Snowshoes are very useful when pulling and carrying heavy loads since the hands and arms remain free. On steep slopes, their use is limited because traction deteriorates. The snowshoes slide, causing loss of footing. Snowshoes will not glide over the snow like skis. Wet

snow may stick to snowshoes, adding weight and making walking more cumbersome. In summary, snowshoes have the following advantages and disadvantages when compared with skis:

(1) Advantages of Snowshoes

- Simple to use. Marines need little training on them.
- Can pull heavier loads than men on skis.
- Durable and require little maintenance.
- Light and reactively easy to pack and carry.
- Leaves the hands free.
- Rarely cause the user broken or strained lower limbs.

(2) Disadvantages of Snowshoes

- Tiring to use.
- Do not slide, nor make the best use of the characteristics of snow.
- Cannot move effectively on the hillside.
- Move poorly through brush.

8007. Trail-Breaking

The purpose of the trail breaking is to use a small body of troops to prepare a track so that the main body can move as easily and quickly as possible, either on foot or in vehicles, and arrive fresh at their destination. A trail-breaking party usually has four tasks:

- To reconnoiter and select the route. (See chapter 7.)
 - To navigate. (See chapter 7.)
 - To prepare the route (See par. 8007f.)
 - To act as an advance guard and prevent the main body from running blindly into enemy opposition.
- a. Planning.** When existing tracks are not usable, trail breaking will be necessary. You must select a route and detail a party. The commander in charge of the operation selects the route direction and the number of routes. Since the exact route depends on the conditions underfoot, final selection must rest with the leader of the trail-breaking party. The initial selection is made from maps, air photographs, and reconnaissance reports. The factors which should be considered are the –
- Tactical situation.
 - Type of equipment and method of movement of the main body.
 - Type of terrain.
 - Snow and weather conditions.
- b. Size of Party.** The size of the party depends on the anticipated difficulty in opening up the route and the likelihood of enemy interference. A covering party is often needed to protect the trailbreakers. The total number needed could be up to one-quarter of the main force. In the case of a battalion move, a rifle company might be given the task, and a platoon would form the actual trail-breaking party.
- c. Timing.** Trail breaking is a tiring and time-consuming task. The rate of progress depends on:
- Type of terrain, and whether it is wooded or open.
 - Weather and snow conditions.
 - Number of trails to be broken.
 - Degree of improvement needed to the trails.

- Tactical situation.
- d. Early Dispatch.** The trail-breaking party should be dispatched well in advanced to provide local security at the destination before the arrival of the main body. Take into account the difficulty of the task and the capability of the trail-breaking party to determine how far ahead of the main body the party should move. The trail-breaking party should remain within range of fire support.
- e. Communications.** Make arrangements to keep the trail-breaking party in radio contact with the main body.
- f. Organization and Tasks.** The trail-breaking party should retain its tactical integrity if at all possible. If one platoon is breaking one trail, one squad leads the breaking. The other squad rotates as the leading squad tires. Adapt this principle to party of any size. The usual trail is two tracks wide. If units are pulling sleds, a three-track-wide trail is needed. The trail-breaking party is organized as follows:
- (1) Party Leader.** The leader selects the route, navigates if the navigation patrol is not used, and rotates the teams within the party.
- (2) Breaker.** This man is at the front of the party. He breaks the trail in the direction indicated by the party leader. He does not attempt to travel in a direct line to his objective but takes the easiest route.
- (3) Straightener.** The straightener cuts brush, straightens curves and improves the direction of the trail. He forms a team with the breaker and changes tasks frequently with him.
- (4) Right Cutter.** The right cutter cuts obstructions from the right side of the trail.
- (5) Left Cutter.** The left cutter cuts obstructions from the left side of the trail. The two cutters form another team. One makes a third track, if on skis, by skiing with only one ski in the pervious track.
- (6) Trail Packers.** The remaining member of the party is the packing team. They improve the trail by filling small depressions and ditches. On a cross slope, they flatten the trail and mark the route.
- g. Equipment.** The equipment required by the trail-breaking party is as follows:
- Party Leader: compass, map, and route card.
 - Breaker and straightener: Machete and wire cutter each.
 - Cutters: Axe or machete each.
 - Packers: Shovel each, trail-marking material.
- h. Trail Marking.** It becomes necessary to mark a trail if it leads over existing trails or if it is to be used over a period of time. Any of the following methods can be used as long as the main body is informed.
- Break branches of trees and shrubs in a predetermined manner.
 - Plant flags, sticks, or guiding arrows in the snow.
 - Tie markers made of rags or colored paper to trees.
 - Pile rocks or brush.

8008. Skijoring

Skijoring is the term for moving troops on skis by towing them with vehicles. (See fig. 8-1) It is faster and less tiring than skiing or snowshoeing. Oversnow tracked and wheeled vehicles can be used. The best routes for skijoring are snow-covered roads and trails, frozen lakes and rivers, and paths made by tracked vehicles.

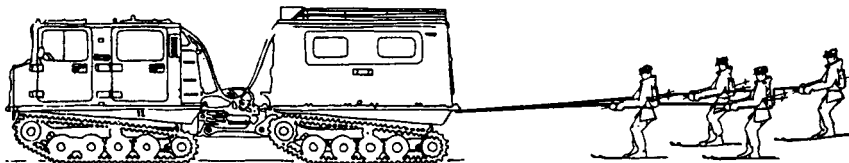


Figure 8-2. Skijoring.

On level ground, trained Marines, depending on weather, snow conditions, and the terrain can sustain a speed of 41 kilometers per hour. Normally, an over-snow vehicle can tow one squad across country or two squads along a road. Towing more than two squads with one vehicle is impractical because of the length of the column, difficulty in making turns, and the increased problems of negotiating steep or wooded country and of keeping up an even pace in inconsistent snow conditions.

- a. **Dangers.** Skijoring is potentially dangerous. No skier should be secured to the rope in any way. A half hitch over a ski pole is secure method of attachment, which is easy to release. Skijoring can be extremely cold. Troops should wear adequate clothing and face protection. When covering long distances, you may need to halt periodically to restore circulation.
- b. **Observer.** You must always station an observer in the rear of the vehicle to signal the driver immediately if a skier falls.