Chapter 4

Rations and Diet

4001. Effect of Cold Weather on Nourishment

a. Caloric Intake. In cold weather operations Marines must eat more than usual in order to function without suffering significant weight loss. The body burns a larger percentage of calories to maintain body temperature, leaving less energy to perform physical work. In a cold climate, at least 4,500 calories are needed to perform hard, physical work and sustain life. Without proper intake individuals will weaken physically in a short period of time.

b. Fluids. The body loses liquid at an exceptional rate in arctic conditions due to evaporation, exertion, and low humidity. However carefully you adjust clothing and ventilation, the heavy exertion of movement on foot and other field activities will exact a toll in sweat and loss of moisture in the breath. These problems are combined with decreased thirst in a cold environment, and potentially a lack or readily available water. To prevent serious dehydration fluids must be regularly replaced, preferably with hot drinks. If those drinks contain sugar they have the additional advantage of providing extra calories.

4002. Rations

Lethargy induced by the cold, combined with the difficulties and inconvenience of cooking, may sometimes tempt Marines to skimp or miss meals. The principles of sound leadership and discipline in cold weather require that meals are prepared and entire rations are eaten. Marines in cold weather operations may be fed with the following five different types of combat rations:

a. Rations, Cold Weather. Rations, cold weather, provide the 4,500 calories needed for the average Marine to function in a cold environment if all portions of both packages are eaten. They contain the correct proportion of carbohydrates, fat, and protein.

b. Meal-Ready to Eat. MREs may freeze in cold environments. Marines can prevent this by carrying the individual food packets in their shirt or trouser pockets. Each MRE contains 1,200 calories. Therefore four entire MREs must be eaten in order to provide the necessary calories.

c. Long-Range Patrol Ration. The long-range patrol ration (LRPR) is a lightweight, nourishing ration that may be easily prepared in hot water. Four LRPR's are required to provide the necessary calories for one day.

d. Tray Pack. The tray pack system is another useful ration system in the cold weather environment. Tray pack meals come in vacuum-sealed aluminum trays that can be stored without refrigeration. They are prepared in heat systems that utilize vehicle generators; diesel fired burners, or external electrical generators to heat a water bath. The tray packs are immersed in the hot water bath and heated to serving temperature. The meal is served on paper trays. Each storage tray contains plastic eating utensils and enough of an entrée, vegetable, or dessert to feed a squad-sized unit.

e. Food packet, Assault. The food packet, assault, is an excellent ration for cold weather operations. Marine commanders must ensure they receive the arctic supplement as well as two packets per day per person to gain the necessary 4,500-calorie intake.

4003. Fluids

Daily requirements for fluid vary from a minimum of 6 quarts up to 8 quarts per day during heavy exertion.

Leaders must insist that Marines take as much of the daily fluids as possible in the form of hot liquids. Marines should be cautioned to drink coffee, cocoa and other caffeine drinks in moderation due to their diuretic effects. Diuretics increase urine output, which will contribute to dehydration. Sugar flavored concentrates may be added to drinking water to improve taste and increase intake by the troops. The additives also have the benefit of increasing total caloric intake.

a. Sources of Water. Water is generally available from streams and lakes or by melting snow and ice. Fuel and time must be made available to melt snow or ice. The milky water of glacial streams should be allowed to stand until the coarser sediment settles. Holes cut in ice to obtain water should be protected to prevent refreezing. In very cold weather, the hole should be broken open frequently. If water is not available, melting ice provides more water in less time than snow. When melting snow, a small amount of water is initially put in the pot and melted. Additional snow is added to the resulting water.

b. Water Disinfecting. Water taken from streams or lakes should be disinfected to prevent potentially devastating disease. Disinfecting may be accomplished by one of two processes. Boiling water is the most effective means of water disinfecting. Marines should be instructed to bring the water to a boil and then allow it to set one minute for disinfecting. This process is sufficient up to an altitude of 17,000ft. The other process requires the passage of the water through a filter followed by treatment with either iodine tablets or bleach. To disinfect one quart of water in one hour, six drops of bleach or one iodine tablet should be added to cold water. Doubling the water treatment dose may decrease the contact time required for disinfecting. While doubling dosage is not dangerous for periods up to one month, it will make the water taste poorly and may discourage Marines from drinking the proper amount.

c. Warning Against Alcohol. NEVER consume alcohol while on operations or when exposed to extreme cold. The reported warming effects of alcohol are false. The feeling of warmth is brought about by a quick release of internal heat out into the periphery. The temporary sensation of warmth is soon lost, and the drinker is left colder than before. Additionally, alcohol remains liquid well below freezing (32F). Consumption of very cold alcohol may result in immediate frostbite of the throat leading to death.

4004. Rules for Leaders

The general rules below require vigilant supervision at all levels of leadership:

- Ensure Marines eat all of their rations.
- Whenever possible, allow time for the preparation of hot meals.
- Snacks, such as cookies or chocolate bars, should be saved to eat between meals and when on the march.
- Before going to bed, ensure stoves are filled and thermoses contain water for breakfast.
- Teach Marines to drink at least 6 quarts of water a day even if they do not feel thirsty to prevent the problems associated with dehydration.
- Use all available stoves for the time consuming process of snow melting if water is not available.
- Designate areas for ice or snow which will be melted for drinking water at least 100 meters uphill and upwind of heads and garbage disposal sites.
- Do not allow Marines to eat snow or ice. Such activity may result in painful cracking of the lips and contribute to hypothermia.
- Encourage Marines to eat at least a small meal prior to going to sleep. The metabolism of food will help keep Marines warmer during the night.
- Encourage Marines to prepare hot liquids that they may drink during activities where they are likely to become cold, such as sentry duty.
- Plan ahead to prevent Marines from unnecessarily standing around in the cold **where** they will burn extra calories to remain warm.