

BASIC COURSE
Handout #1TABLE 1-1:
SUBACUTE ("MOUNTAIN") HYPOTHERMIA

<p>STAGE I (MILD) HYPOTHERMIA 37-35°C (99-95°F)</p>	<ul style="list-style-type: none"> • In Stage I, body heat conservation mechanisms are compensating to keep the core temperature within a few degrees of normal; it is possible to stay in Stage I for long periods of time, provided that energy reserves are sufficient to provide the necessary heat. • Shivering occurs but may be stopped by voluntary action. • Outer body blood vessels narrow (peripheral vasoconstriction), reducing the blood supply to superficial areas. This results in a cooling of the periphery, providing an insulating layer to reduce heat losses from the core. Blood flow to the extremities may reach as little as 1% of normal, but occurs as periodic "flushes" to different areas so as to prevent permanent damage. • Blood pressure and pulse go up, reflecting the increased metabolic rate.
<p>STAGE II (MODERATE) HYPOTHERMIA 35-32°C (95-90°F)</p>	<ul style="list-style-type: none"> • In Stage II, compensatory mechanisms have begun to be strained to the point of failure. • Shivering is violent and uncontrollable, and may raise the the metabolic rate to five or six times normal for short periods, although this uses up energy reserves at a prodigious rate. • Much physical and mental coordination is lost; slurred speech and amnesia are common. • The periodic variation in circulation to the periphery decreases and stops. • Most healthy people cannot regain a normal core temperature from Stage II without external warming. • Blood pressure and pulse may be high initially, but drop as energy reserves are exhausted.
<p>STAGE III (MARKED) HYPOTHERMIA 32-28°C (90-83°F)</p>	<ul style="list-style-type: none"> • In Stage III, compensatory mechanisms have been overwhelmed, and the core temperature drops quickly. • Shivering stops and is replaced by muscular rigidity. • Consciousness and physical coordination are greatly impaired. • Blood pressure and pulse are weak to the point of being barely detectable.
<p>STAGE IV (SEVERE) HYPOTHERMIA 28-25°C 83-77°F)</p>	<p>In Stage IV, a hypothermia victim appears dead: cold, rigid, with dilated pupils, and with no detectable vital signs.</p> <p>Due to low metabolic needs at this temperature, it is possible for victims to survive long periods without oxygen, and for recovery without brain damage to occur.</p>



THINK HYPOTHERMIA

If you are outdoors for recreation, you presumably do not intend to jeopardize your life.

Hypothermia may be a new word to you, but it's the *only* word that describes the rapid, progressive mental and physical collapse accompanying the chilling of the inner core of the human body.

Hypothermia is caused by exposure to cold, aggravated by wet, wind, and exhaustion. It is the #1 killer of outdoor recreationists.

- TAKE HEED OF "HYPOTHERMIA WEATHER"
- WATCH CAREFULLY FOR WARNING SYMPTOMS.
- CHOOSE EQUIPMENT WITH HYPOTHERMIA IN MIND.
- **THINK HYPOTHERMIA.**

NOTES ON EQUIPMENT

Choose rainclothes that are proof against *wind-driven* rain and cover head, neck, body, and legs. Polyurethane coated nylon is best. The coatings won't last forever. Inspect carefully and test under a cold shower before you leave home. Ponchos are poor protection in wind.

Take woolen clothing for hypothermia weather: 2-piece woolen underwear... or... long wool pants and sweater or shirt. Include a knit cap that can protect neck and chin. Cotton underwear is worse than useless when wet.

A stormproof tent gives best shelter. Take plastic sheeting and nylon twine for rigging additional foul-weather shelter.

Carry trail food...nuts, jerky, and candy...and keep nibbling during hypothermia weather

Take a gas stove or a plumber's candle, flammable paste, or other reliable firestarter.

- **DON'T WAIT FOR AN EMERGENCY. USE THESE ITEMS TO AVOID OR MINIMIZE EXPOSURE.**

BLUE RIDGE
MOUNTAIN
RESCUE
GROUP, A.S.R.C.



COURTESY OF THE BLUE RIDGE MOUNTAIN
RESCUE GROUP OF THE APPALACHIAN SEARCH
AND RESCUE CONFERENCE, INC.
CHARLOTTESVILLE, VIRGINIA

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FOUR LINES OF DEFENSE AGAINST HYPOTHERMIA

From the motion picture
...BY NATURE'S RULES



A public service of SAFECO Insurance Companies

COLD KILLS IN TWO DISTINCT STEPS

STEP ONE: EXPOSURE AND EXHAUSTION

The moment your body begins to *lose heat* faster than it produces it, you are undergoing exposure. Two things happen:

1. You voluntarily *exercise to stay warm*.
2. Your body makes involuntary adjustments to preserve *normal temperature in the vital organs*.

Either response drains your energy reserves. The only way to stop the drain is to reduce the degree of exposure...

● THE TIME TO PREVENT HYPOTHERMIA IS DURING THE PERIOD OF EXPOSURE AND GRADUAL EXHAUSTION.

STEP TWO: HYPOTHERMIA

If exposure continues until your energy reserves are exhausted:

1. Cold reaches the brain depriving you of judgement and reasoning power. *You will not realize this is happening.*
2. You will lose control of your hands.

This is hypothermia. Your internal temperature is sliding downward. Without treatment, this slide leads to stupor, collapse, and death.

YOUR FIRST LINE OF DEFENSE: AVOID EXPOSURE

1. **STAY DRY.** When clothes get wet, they lose about 90% of their insulating value. Wool loses less; cotton, down, and synthetics lose more.
2. **BEWARE THE WIND.** A slight breeze carries heat away from bare skin much faster than still air. Wind drives cold air under and through clothing. *Wind refrigerates wet clothes by evaporating moisture from the surface.* WIND MULTIPLIES THE PROBLEMS OF STAYING DRY.
3. **UNDERSTAND COLD.** Most hypothermia cases develop in air temperatures between 30 and 50 degrees. Most outdoorsmen simply can't believe such temperatures can be dangerous. They fatally underestimate the danger of being wet at such temperatures.
 - 50 degree *water* is unbearably cold. The cold that kills is *cold water* running down neck and legs, *cold water* held against the body by sopping clothes, *cold water* flushing body heat from the surface of the clothes.



● DON'T ASK, "HOW COLD IS THE AIR?" ASK INSTEAD, "HOW COLD IS THE WATER AGAINST MY BODY?"

4. **USE YOUR CLOTHES.** Put on raingear *before* you get wet. Put on wool clothes *before* you start shivering.

YOUR SECOND LINE OF DEFENSE: TERMINATE EXPOSURE

If you cannot stay dry and warm under existing weather conditions, using the clothes you have with you, *terminate exposure*.

1. **BE BRAVE ENOUGH TO GIVE UP REACHING THE PEAK OR GETTING THE FISH OR WHATEVER YOU HAD IN MIND.**
2. Get out of the *wind and rain*. Build a fire. Concentrate on making your camp or bivouac as secure and comfortable as possible.

NEVER IGNORE SHIVERING

Persistent or violent shivering is clear warning that you are on the verge of hypothermia. **MAKE CAMP.**

FORESTALL EXHAUSTION

Make camp while you still have a reserve of energy. Allow for the fact that exposure greatly reduces your normal endurance.

You may think you are doing fine when the fact that you are exercising is the only thing preventing your going into hypothermia. If exhaustion forces you to stop, however briefly:

1. Your rate of body heat production instantly drops by 50% or more.
2. Violent, incapacitating shivering may begin immediately.
3. You may slip into hypothermia in a matter of minutes.

APPOINT A FOUL-WEATHER LEADER

Make the best-protected member of your party responsible for calling a halt before the least-protected member becomes exhausted or goes into violent shivering.

YOUR THIRD LINE OF DEFENSE: DETECT HYPOTHERMIA

If your party is exposed to wind, cold, and wet, **THINK HYPOTHERMIA.** Watch yourself and others for symptoms.

1. Uncontrollable fits of shivering.
2. Vague, slow, slurred speech.
3. Memory lapses. Incoherence.
4. Immobile, fumbling hands.
5. Frequent stumbling. Lurching gait.
6. Drowsiness (to sleep is to die.)
7. Apparent exhaustion. Inability to get up after a rest.

YOUR FOURTH AND LAST LINE OF DEFENSE: TREATMENT

The victim may deny he's in trouble. Believe the symptoms, not the patient. Even mild symptoms demand immediate, drastic treatment.

1. Get the victim out of the wind and rain.
2. Strip off *all* wet clothes.
3. If the patient is only mildly impaired:
 - a. Give him warm drinks.
 - b. Get him into dry clothes and a warm sleeping bag. Well-wrapped, warm (not hot) rockers or canteens will hasten recovery.
4. If the patient is semi-conscious or worse:
 - a. Try to keep him awake. Give warm drinks.
 - b. Leave him stripped. Put him in a sleeping bag with another person (also stripped). If you have a double bag, put the victim between two warmth donors. *Skin to skin contact* is the most effective treatment.
5. Build a fire to warm the camp.

BASIC COURSE
Handout #2

1: Vertical Software Material Comparison

Material	Abrasion Resistance	Strength	Heat Resistance	Rot Resistance	Stretch	Chemical Resistance	Cost
Nylon (Perlon)	High	High	Moderate	High	Moderate	High*	High
Polypropylene	Moderate	Moderate	Low	High	High	High	Moderate
Manila	Moderate	Low	High	Low	Low	Low	Low

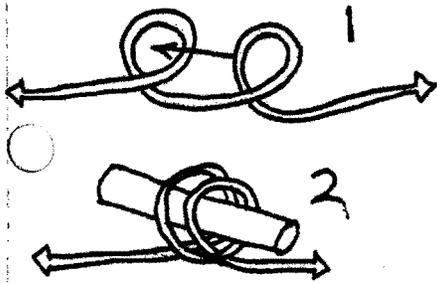
*except for phenol, cresol, and acids

2-2: Vertical Software Construction Comparison

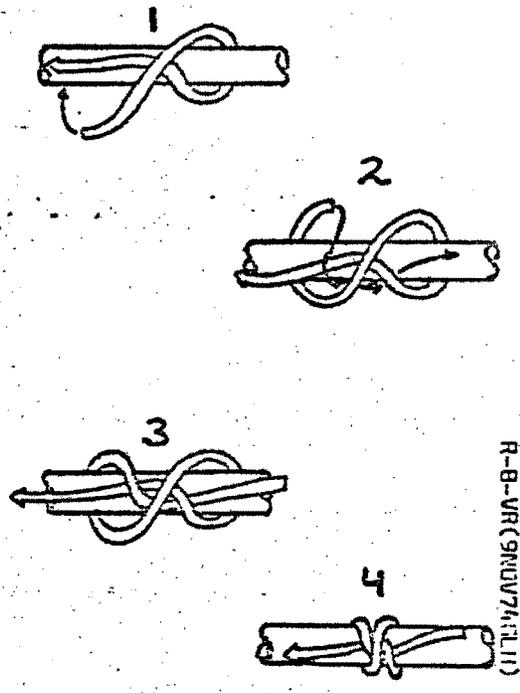
			Static Strength	Low-load Stretch	High-load Stretch	Low-abrasion Resistance	High-abrasion Resistance	Ease of Inspection	Relative Cost
ROPE	Laid	Hard (Mtn.) Lay	M	H	H	M	H	H	M
		Soft (Marine) Lay	M	H	H	L	L	H	M
	Kernmantel	Dynamic (Braided Core)	H	L	H	H	M	L	H
		Static (Parallel Core)	H	L	L	H	H	L	M
WEBBING	Flat		L	M	M	H	M	H	L
	Tubular (Spiral or chain)	Tight	L	M	M	M	L	H	L
		Loose	L	M	M	L	L	H	L

READING: draft mtn. rescue manual pp. 1-18 and supplement.

2-3a. CLOVE HITCH



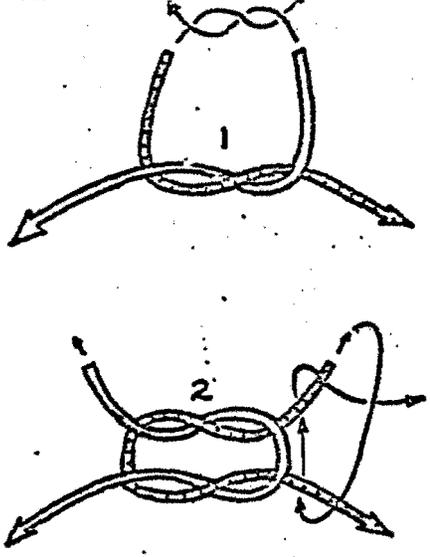
2-3c. BARREL KNOT



R-B-VR(9NOV74,RL1)

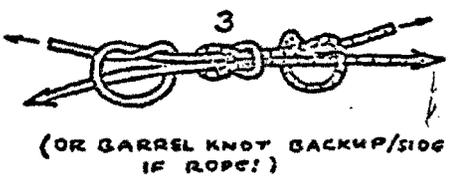
2-3 a.

SQUARE KNOT....



WITH OVERHAND KNOTS

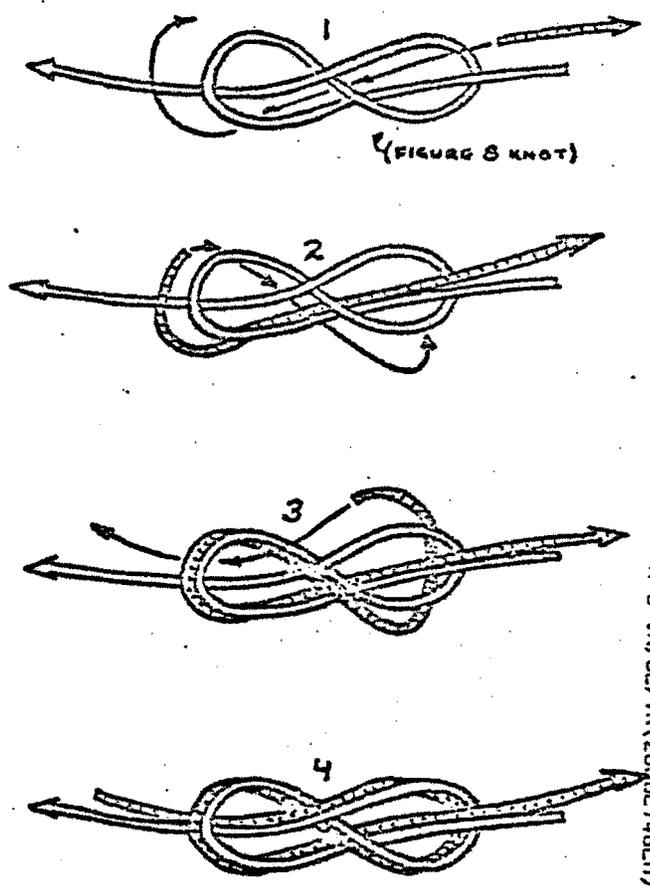
(2 ON EACH SIDE, IF WE CAN!)



(OR BARREL KNOT BACKUP/SIDE IF ROPE!)

R-D-VR/CL/TR(20JUL74GLH)

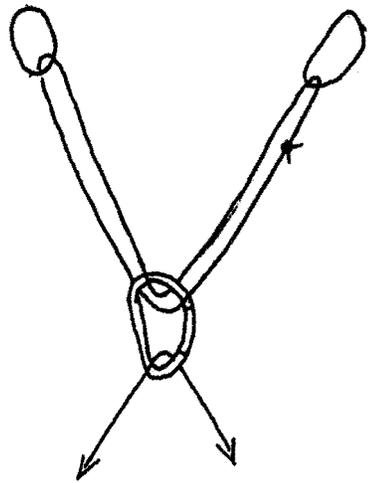
2-3b. FIGURE 8 BEND



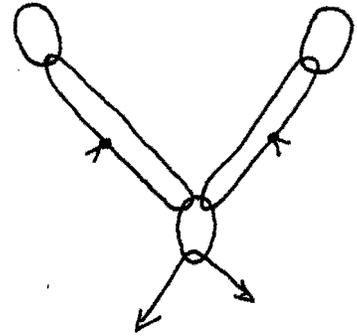
(FIGURE 8 KNOT)

R-D-VR/CL/TR(20JUL74GLH)

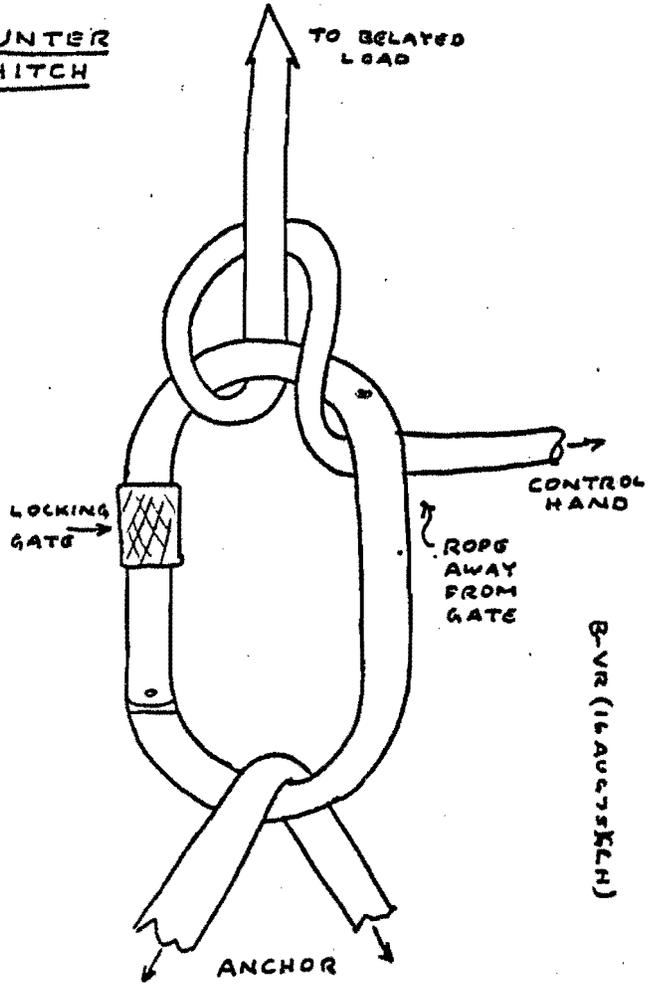
2-4a. "EQUALIZING" SLINGS



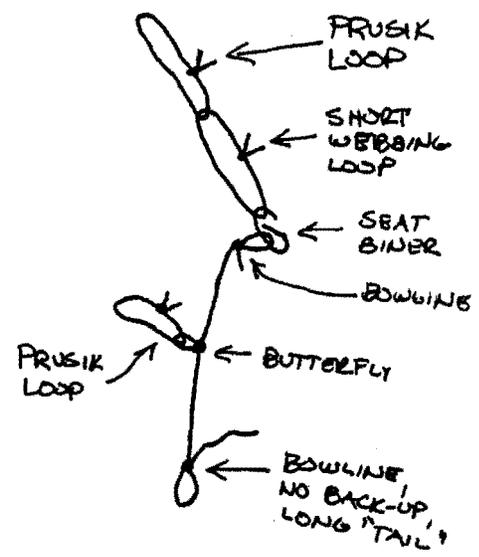
2-4b. NON-EQUALIZING SLINGS



2 MUNTER HITCH

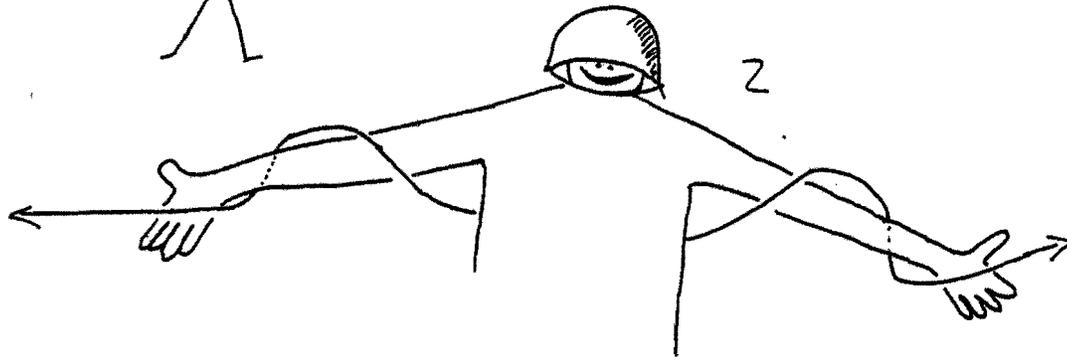
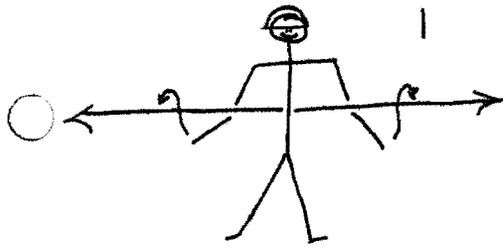


2-6 TEXAS PRUSIK RIG



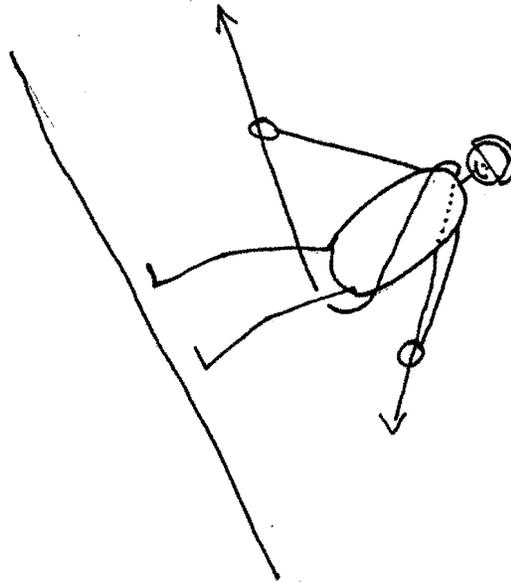
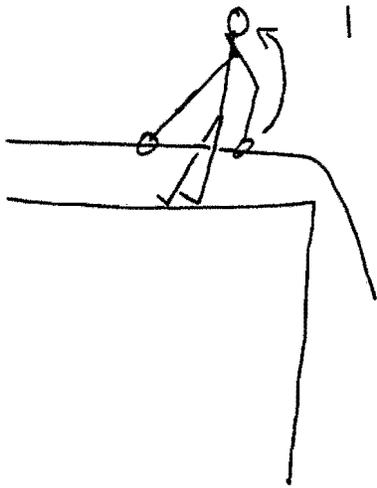
2-7a.

ARM RAPPEL



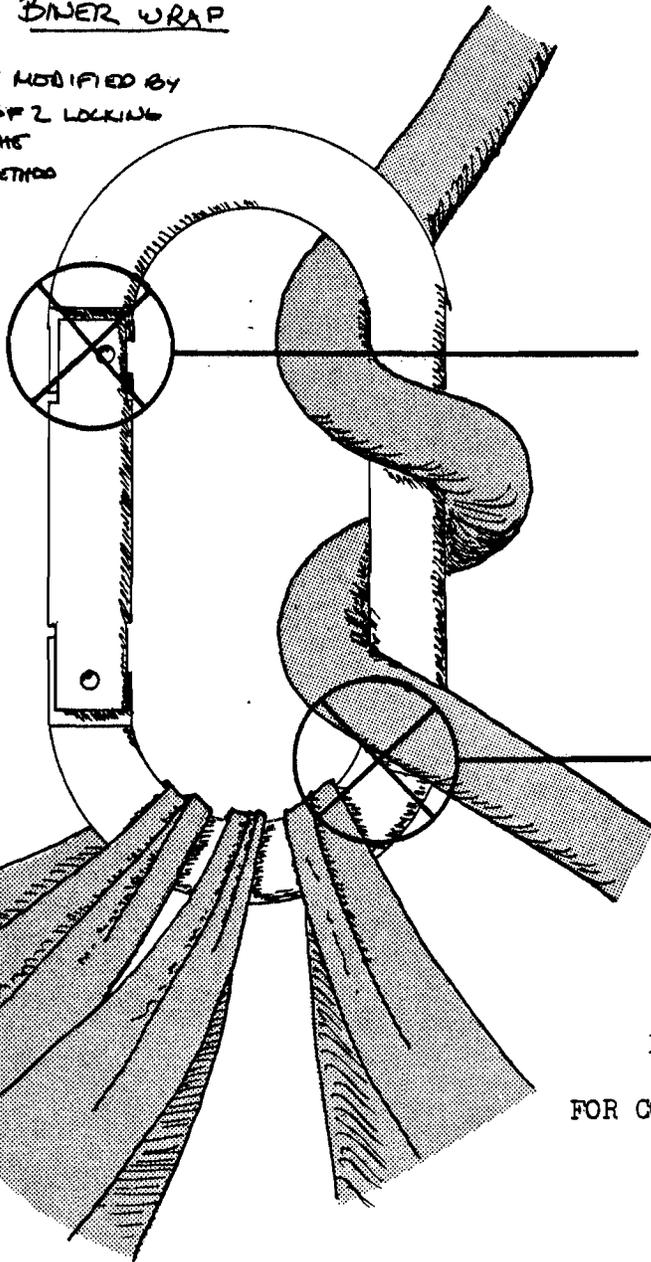
2-7b.

BODY RAPPEL



2-7c. BINER WRAP

(NOTE: IF MODIFIED BY
THE USE OF 2 LOCKING
BINERS, THE
RAPPEL METHOD
IS SAFE)



Non-locking carabiner may unclip
from rope or seat.

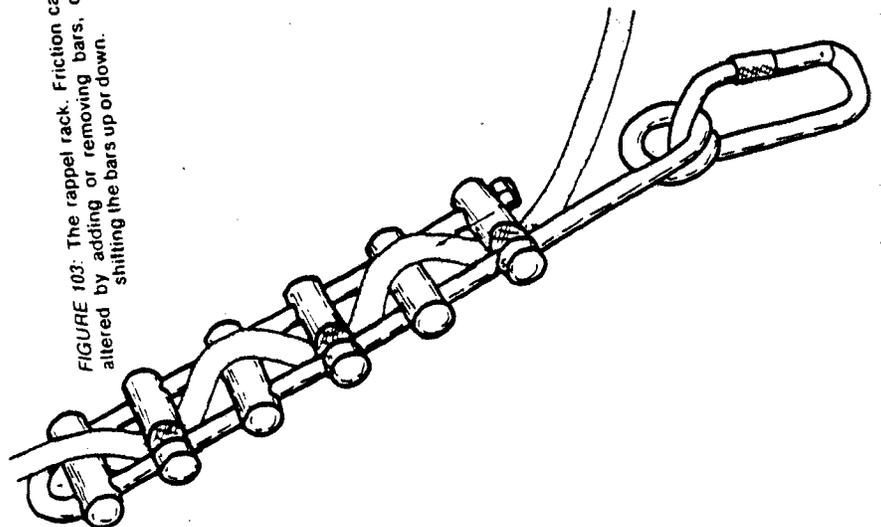
Rope may cause weld abrasion
on the seat, and cut through
the seat in a manner of
seconds.

FIGURE 11-1: The Ranger Rappel

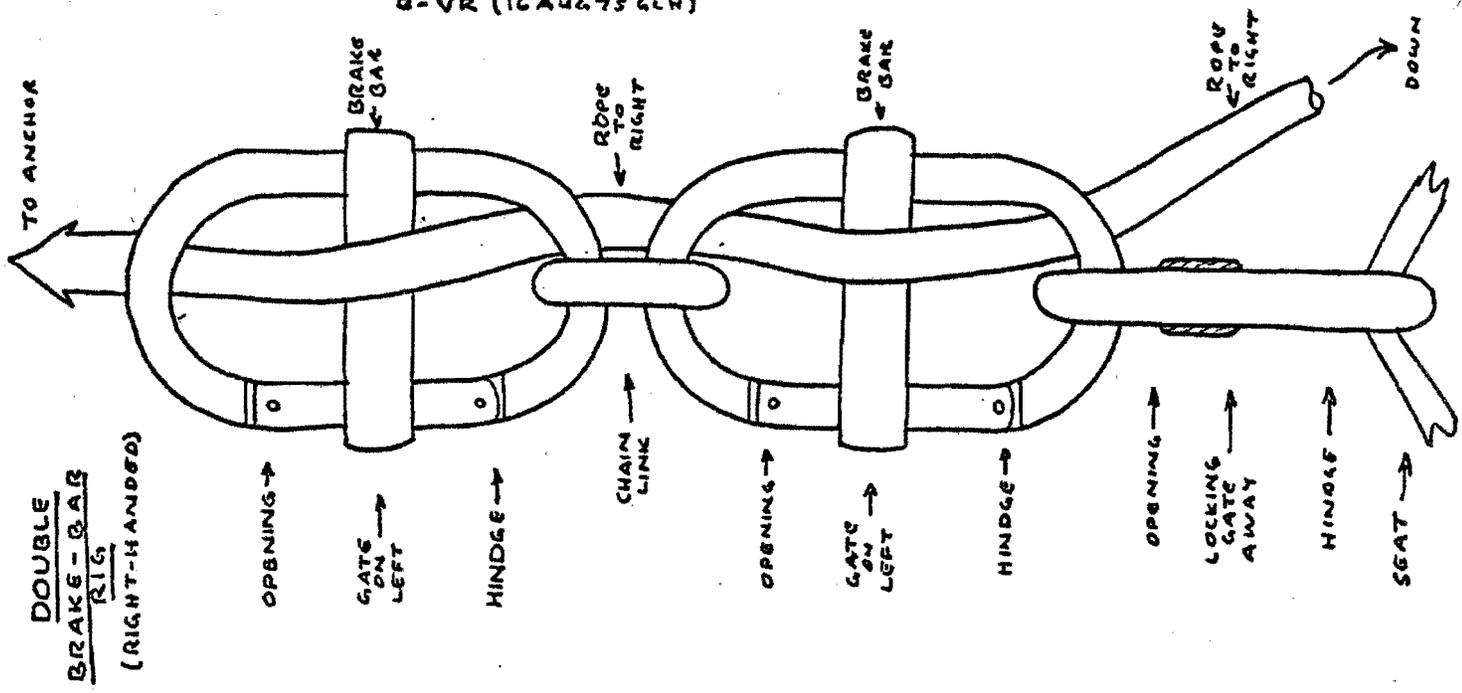
FOR COMBAT-RELATED USE ONLY!

2-7f. RAPPEL RACK

FIGURE 103: The rappel rack. Friction can be
altered by adding or removing bars, or by
shifting the bars up or down.

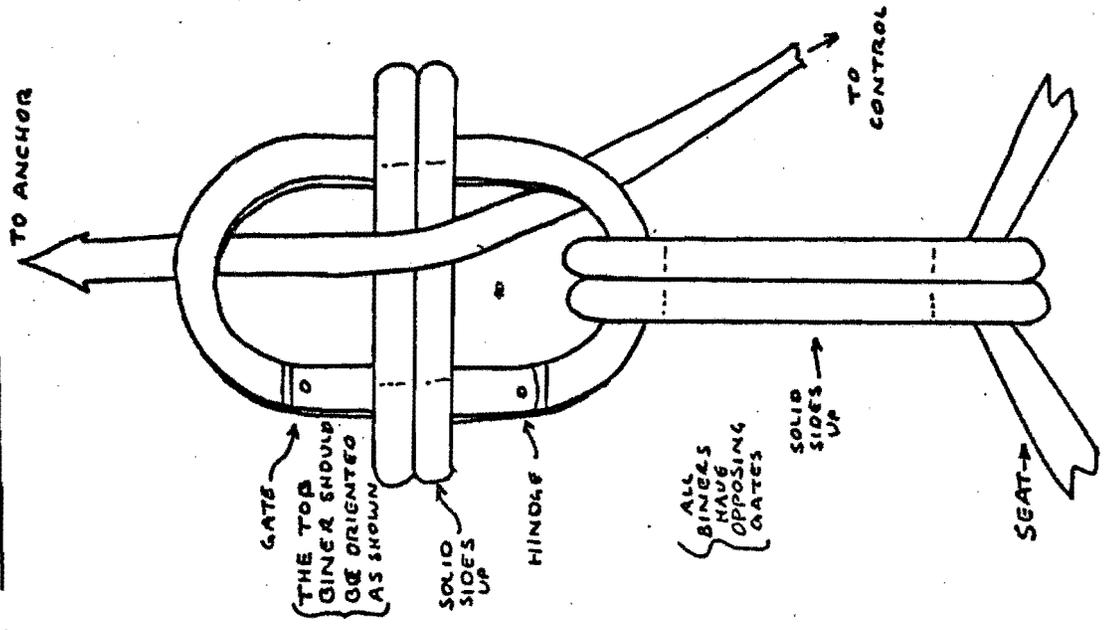


B-VR (16A46756LN)



**DOUBLE
BRAKE-BAR
RIG**
(RIGHT-HANDED)

2-7e



G-BINGER RIG

2-7d

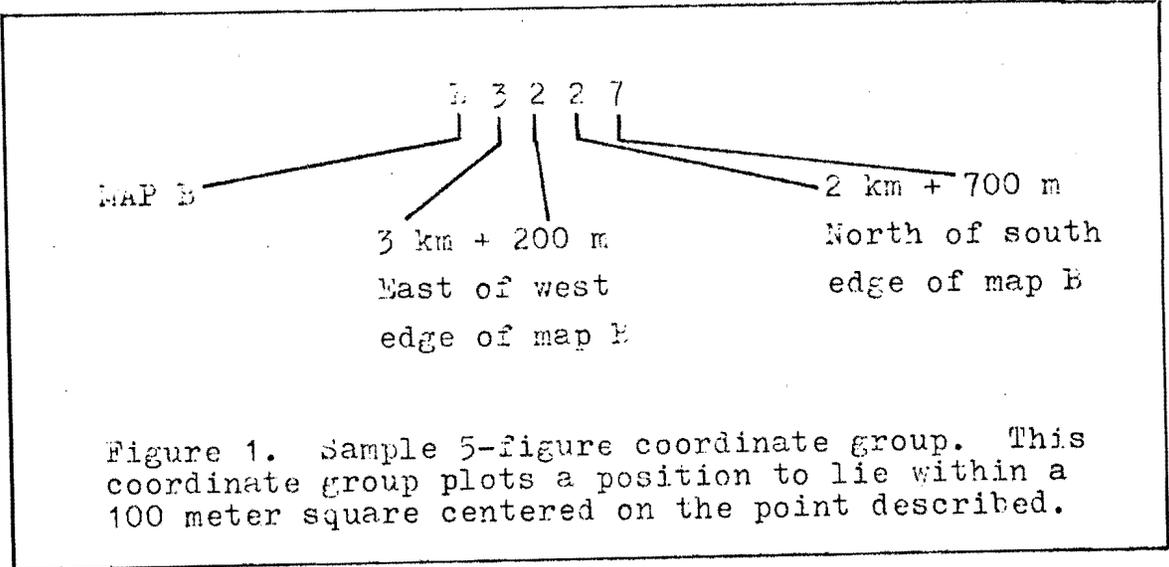
THE ASRC GRID SYSTEM

In order to assure accurate, unambiguous and efficient reporting of positions in the field, the ASRC uses a grid coordinate system similar to that employed by the U.S. Army. Since gridded maps are unavailable in large quantities to the ASRC, gridded Xerox copies of a single original map are used. An 8½X11 inch acetate overlay with a coordinate grid drawn or photographed on it is placed on the original during Xeroxing so that all the copies carry identical grids. Since the use of Xeroxed maps is the norm, this step poses little inconvenience to the person procuring maps. Using the grid system, a position report accurate to within 70 meters may be unambiguously made with only five figures, and a position report accurate to seven meters may be made using seven figures. Although the system is designed for use with maps at a scale of 1:24000 (e.g. the USGS 7½' topos), it may be used effectively with any kind of map.

A sample gridded map is attached. The hachures on the borders are spaced 500 meters apart and labeled every kilometer. The hachures on the map itself are spaced one kilometer apart. Note that the origin of the grid is always in the southwest corner of the map. The overlay is reversible to get the long axis of the sheet north-south or east-west, whichever is more appropriate. On the left margin is a box containing the name of the map, which is a letter designating which run of photocopying the map was taken from. All maps with the same letter designator are thereby assured of having the same grid. The declination is given in the box below the letter designator. When the copies are made, the overlay is best placed so that grid north and true north are identical, but this is not absolutely essential. In any event, the deviation between grid north and magnetic north (the GM angle) must be checked for each run of photocopying and noted on each sheet.

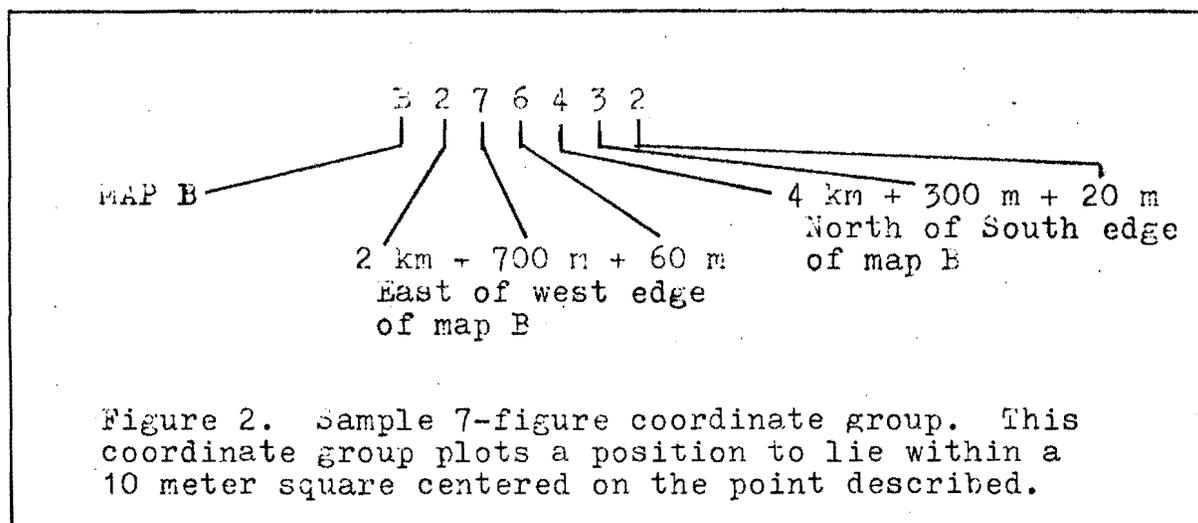
Above the name block is a conversion table from meters on the ground to millimeters on the map. This table is calculated for a map with a scale of 1:24000. Xerox machines enlarge slightly (usually less than 1%), so the table will not precisely match the Xerox map, but it will be close enough for all practical work. No attempt is made to correct for this enlargement simply because different machines enlarge different amounts, and the correction is negligible over 500 meters anyway. The purpose of the scale is to allow more precise plotting than can be done by eye, although the grid can be interpolated by eye to within 100 meters quite accurately.

A position report has three parts comprising a total of either five or seven figures. A five figure coordinate group plots a position to lie inside a 100 meter square and a seven figure group plots the position to lie inside a 10 meter square. Figure 1 illustrates an example plotted on the attached map.



It should be noted that any position within the 100 meter square will be described by the coordinate group

B3227. Consequently the maximum error will be 70 meters. To specify the position to within a 10 meter square (which is only 0.42x0.42 mm on the map!), the coordinates can be taken to seven figures as shown in figure 2.

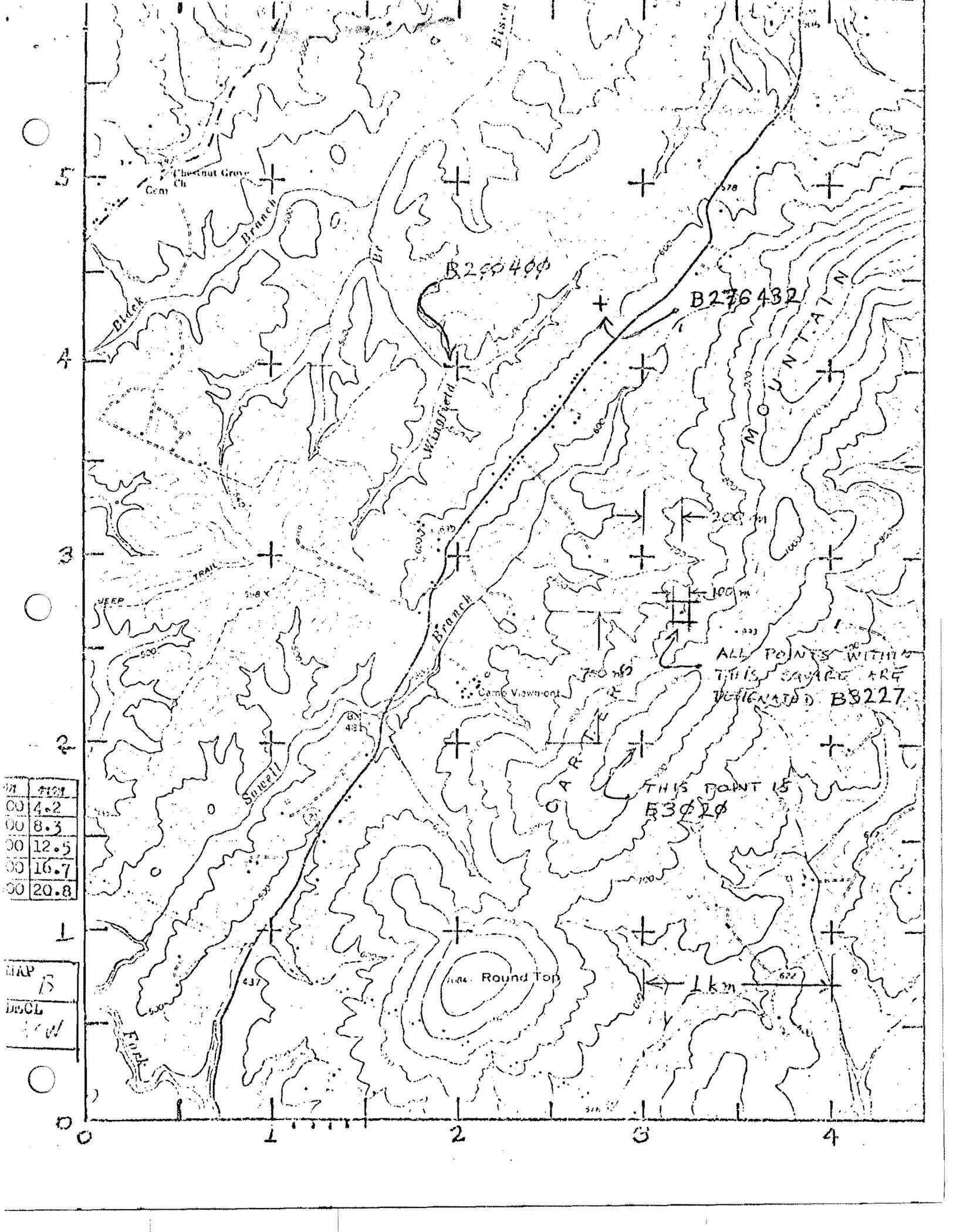


To keep the order of the figures correct, remember the mnemonic, "Read right up." Five figure coordinates are accurate enough for almost all field work.

A typical radio position report might go like this:

TEAM CHARLIE, THIS IS BASE.
 BASE, THIS IS TEAM CHARLIE. GO AHEAD.
 WHAT IS YOUR LOCATION? OVER.
 STAND BY. (PTL Charlie consults his map and compass).
 BASE, THIS IS TEAM CHARLIE. OUR LOCATION IS, FIGURES,
 BRAVO, THREE, TWO, TWO, SEVEN. OVER.
 ROGER. BASE, CLEAR.
 TEAM CHARLIE, CLEAR.

When 7½' quads are not available, the grid may still be superimposed on any map and used to plot and report positions, but the grid squares will not be one kilometer wide.



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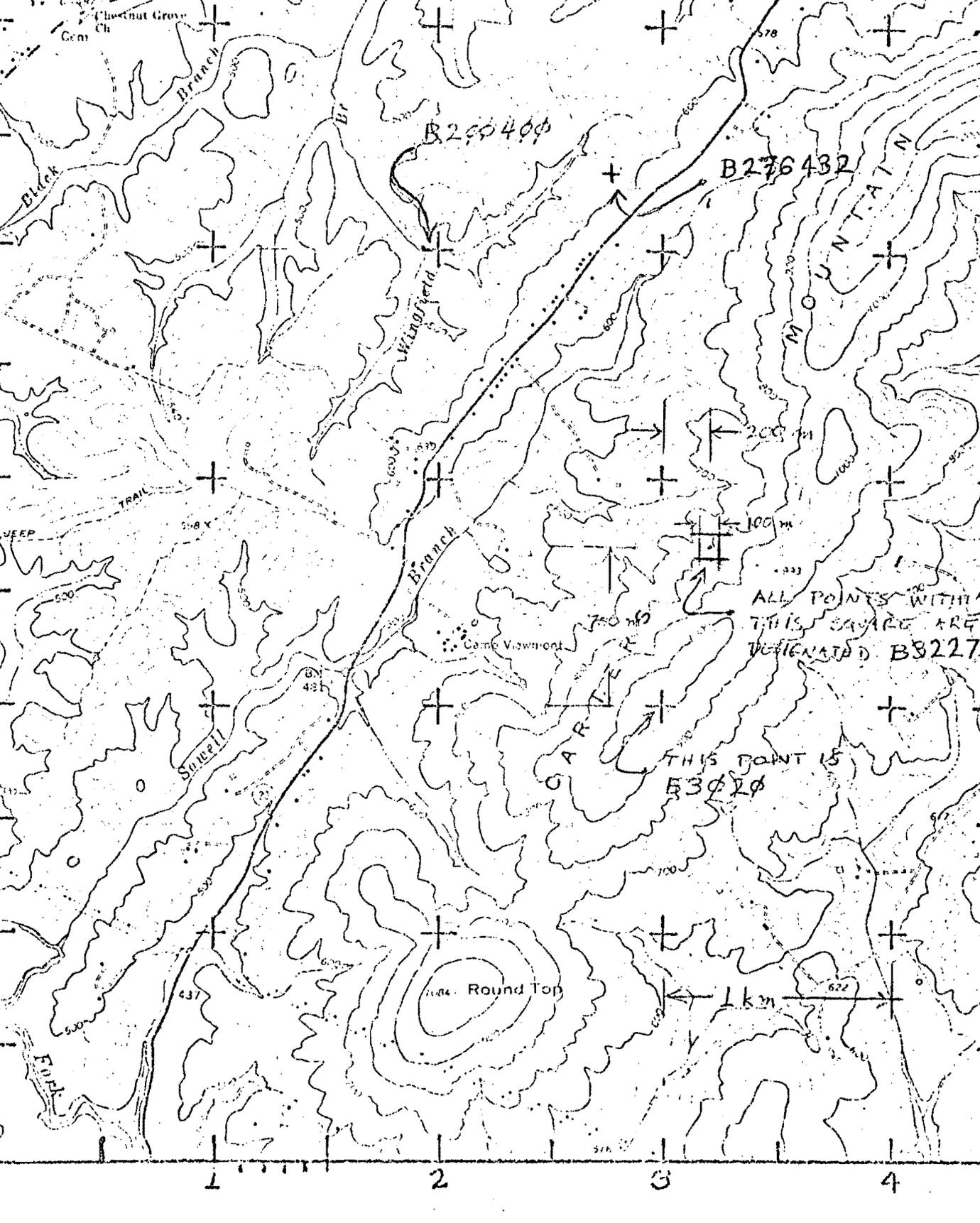
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00	4.2
00	8.3
00	12.5
00	16.7
00	20.8

MAP B
DEGL
1/1



ALL POINTS WITHIN THIS SQUARE ARE DESIGNATED B8227

THIS POINT IS B3020

1 km

Black Branch
Wagon Road
Camp Viewmont
Round Top
MOUNTAIN
TRAIL
JEOP
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