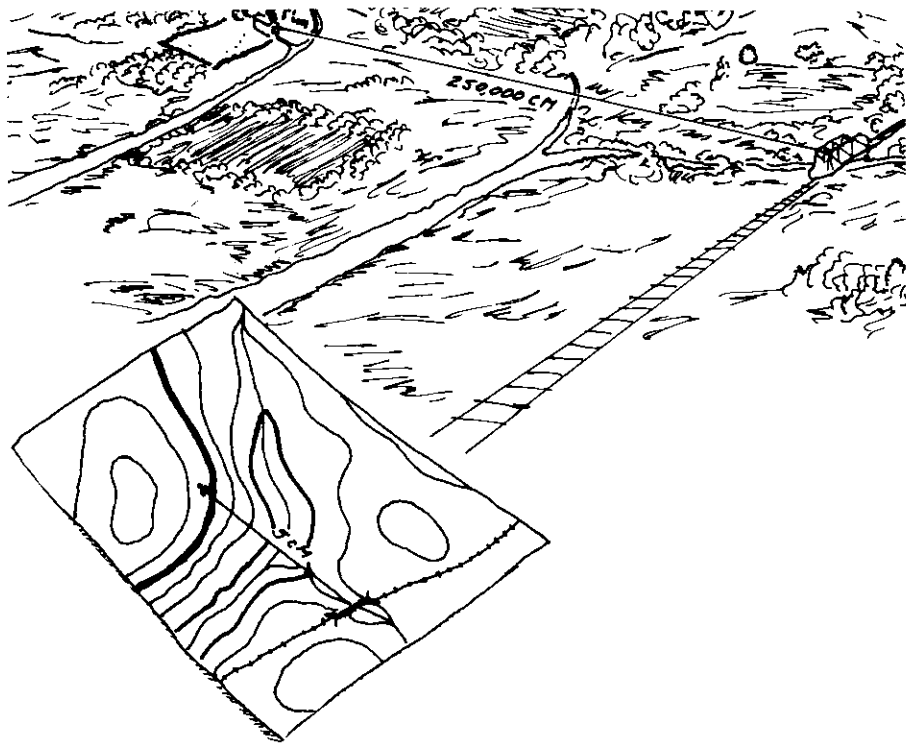


PERFORMANCE ORIENTED TRAINING

STUDENT ADVANCE SHEET



LAND NAVIGATION BY TERRAIN ASSOCIATION



JULY 1976

LAND NAVIGATION STUDENT ADVANCE SHEET

TRAINING STATION #2: Land Navigation by Terrain Association

OBJECTIVE: Given a standard military map, scale 1:50,000, and shown present location, orient the map to surrounding terrain, identify the four primary directions, compute the distance to a designated point at least 1,000 meters distant, and use the map to navigate to that point.

INSTRUCTIONS: The advance sheet for this training station contains the key teaching points for the instruction which you will receive shortly. You should read through this sheet carefully to prepare yourself for instruction in and performance testing of the objective listed above. You should bring this advance sheet to class with you. The advance sheet for this training station has been broken down into the following parts:

PART I: MAP ORIENTATION

PART II: PRIMARY DIRECTIONS

PART III: DISTANCE COMPUTATION

PART IV: LAND NAVIGATION BY TERRAIN ASSOCIATION

PART I: MAP ORIENTATION. Description of the proper methods of orienting your map by the terrain association method.

METHOD OF ORIENTATION

Terrain association method.

To orient your map by the terrain association method, pick several ground terrain features around you which are shown on the map. Hold your map in a horizontal position and rotate it until the features on the map are aligned with the same features on the ground (illustration 1).

NOTE: Linear features are better to use with this method. If point features are used, at least three

ILLUSTRATION REINFORCEMENT

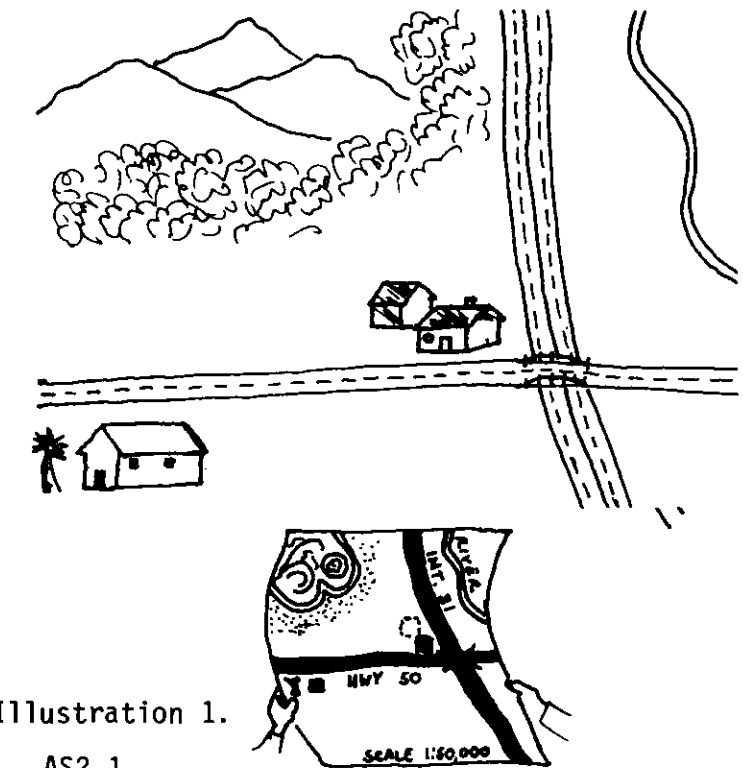


Illustration 1.

widely separated features have to be used to improve accuracy. You should practice orienting your map so that you can orient it to within 5° of true orientation.

PART II: PRIMARY DIRECTIONS. Description of the method for identifying the four primary directions after orienting a map.

DIRECTIONS

Once the map is oriented correctly, the four primary directions can be identified and pointed out very easily. Once the map is oriented, the top of the map will be aligned in a northerly direction. If you were standing at the bottom of the map and facing toward the top as it lies on the ground, north would be to your front, east to your right, west to your left, and south directly to your rear (illustration 2).

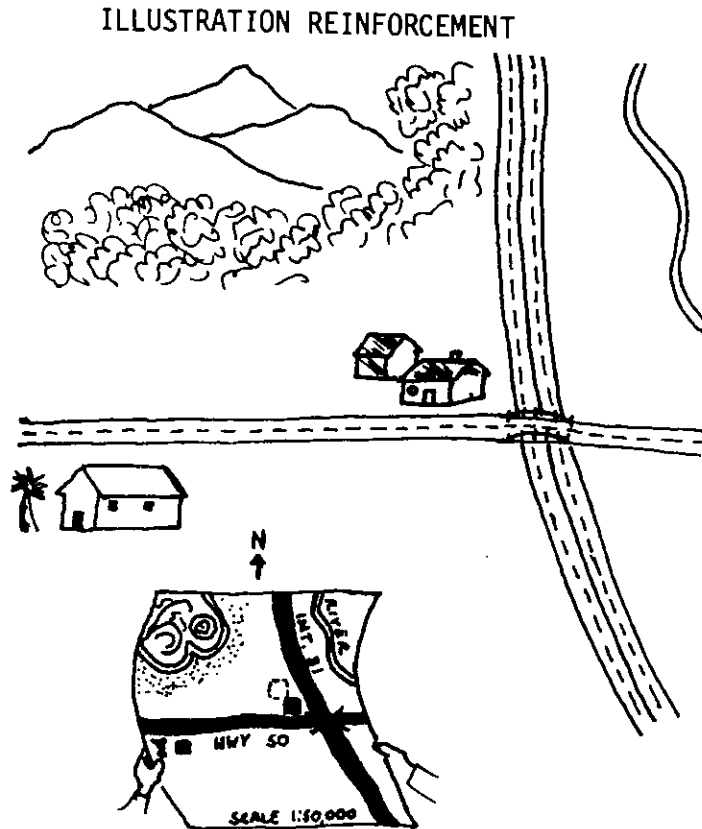


Illustration 2.

PART III: DISTANCE COMPUTATION. Description of the two methods of measuring map distances, the conversion of map distance to ground distance, and the average pace and rate of march.

DISTANCE COMPUTATION.

1. Straight-line measurement is the first method used to establish a ground distance from the map. Once two points have been identified on the map sheet, it is a simple matter to use a straightedge of paper to tick off the distance between the two points. When making map measurements, it is important that all measurements be made from the center of the topographic symbol concerned as that point most accurately designates the true location of that feature on the ground (illustration 3).

ILLUSTRATION REINFORCEMENT

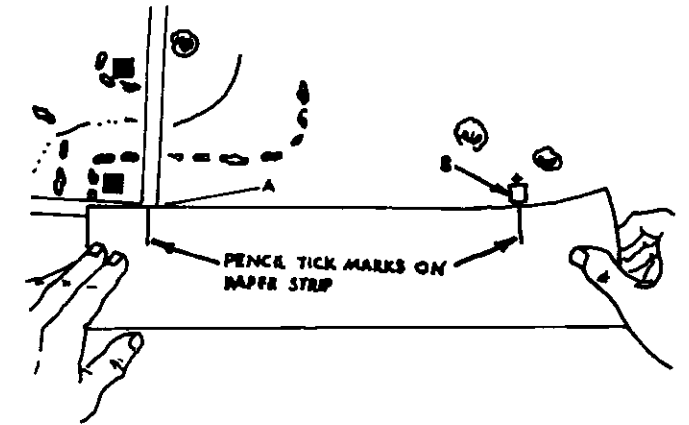


Illustration 3.

2. Irregular or road distance is the second method used to establish ground distance from the map. To measure irregular distance along a road, stream, or any other irregular route, place a tick mark on the map at one end of the irregular route to be measured. Place a paper strip or other material with a straightedge along the center of the irregular feature, and extend the map tick mark onto the paper strip. The straightedge will eventually leave the center of the irregular feature. At the exact point where this occurs, place a tick mark on the map and extend it onto the paper. Rotate the paper strip until its straightedge once again is running along the center of the linear feature. Be sure to align the last tick mark on your straightedge with the last tick mark on the irregular feature again. Place a tick mark where the straightedge leaves the center of the irregular feature. Repeat this procedure until you have ticked off the desired distance (illustration 4).

ILLUSTRATION REINFORCEMENT

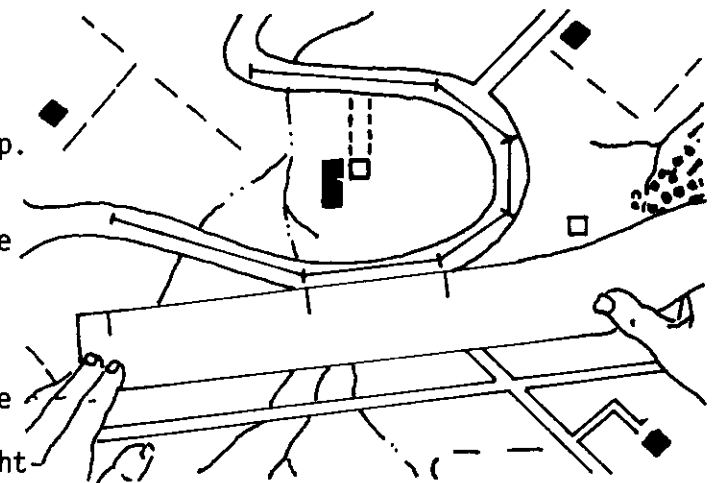


Illustration 4.

3. To convert the map distance to ground distance, place the paper strip with the tick marks along the appropriate graphic scale at the bottom of the map sheet and determine the ground distance (illustration 5).

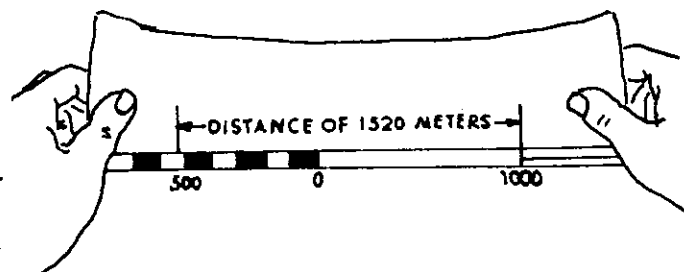


Illustration 5.

4. The average pace count of a Marine is 120 paces to each 100 meters. The average rate of march for the individual Marine is 4 kilometers per hour. These averages will vary to some degree according to the individual and terrain, but may be used as a guide until each Marine has established an individual pace count and rate of march.

PART IV: LAND NAVIGATION BY TERRAIN ASSOCIATION

NAVIGATION

1. The terrain association method of navigation is very simple after the steps contained in PARTS I, II, and III have been completed. You must remember that terrain association can be used only where there are visible terrain features on the ground which you can identify on your map.

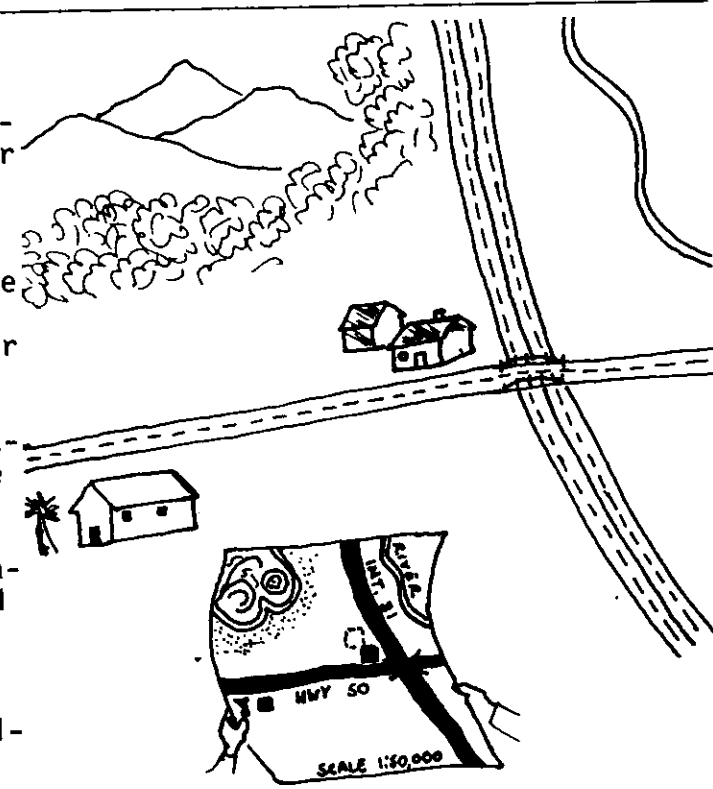


Illustration 6

2. In employing terrain association, the following points should be remembered:

a. Always begin from a location you can identify on the map and the ground.

b. Orient your map before each terrain association is made (illustration 6).

c. Before you start any portion of your march, complete a mental picture of the prominent terrain features you will encounter and the approximate distances between them.

d. As you move along, remember that the actual distance between two points should equal the ground distance determined from the map. For example, if the map indicates you should cross a stream 200 meters after passing a hill, you should in fact cross a stream at that distance. If you go only 100 meters and come to a stream, you know that it is not the right one and is not shown on the map. This emphasizes that an accurate distance determination, through pacing, is very important when navigating by terrain association.

e. When you arrive at a check point or the objective, conduct a detailed comparison between the ground position and the map position to make sure you are in the right place. Use three or more terrain features to check your position.

f. Navigation by terrain association depends on your ability to visualize what a terrain feature on the ground looks like from its representation on the map.