

— WRITING SAMPLE —
(training guide)

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About this Unit

Reading maps and aerial photographs can be a matter of life and death. If other crew members are injured, it may be up to the field assistant to find the way out of the area, or to call in a rescue plane or helicopter.

The topics covered in this unit are:

- Reading forest-cover codes on a field map.
- Reading contour lines on a topographic map.
- Using a scale rule and a protractor to find distance and bearing on a map.
- How and why maps are made from aerial photographs.
- Using a map to roughly estimate the average scale of an aerial photograph.
- Using a stereoscope to identify basic land features from a stereo pair of aerial photographs.

Performance Objectives

When a participant has successfully completed this unit, they will be able to:

- Identify the parts of the code in a forest-cover label.

- Using a reference guide, describe the trees in a forested polygon from reading the forest-cover label on the field map.
- Calculate the elevation between selected contour lines on a topographic field map.
- State the six laws of contour lines.
- Use a scale rule to find the ground distance between two locations marked on a field map.
- Use a protractor to find the azimuth between locations marked on a field map.
- Explain why aerial photographs are used by field sampling crews.
- Explain why aerial photographs are *not* used for finding distances.
- Describe how to use a map to roughly estimate the average scale of an aerial photograph.
- Operate and maintain a stereoscope.
- Use a stereoscope to identify basic land features from a stereo pair of aerial photographs.

Pre-Testing

Remember that in this tailored program, participants may be able to challenge some units of the course by taking the skills test. If a participant thinks they already know the material in this unit, give them an opportunity to participate in the Skills Test first, without taking the course unit.

Make sure their story is believable. A written confirmation from an employer or other responsible person is recommended.

Before They Begin

The skills needed before starting Unit 3 are:

- Successful completion of Unit 2, *Describe Basic Inventory Practices*
- Successful completion of Level 1 *Resource Inventory Skills Training Program*

Before a participant begins this unit, check that they have all the Level 1 skills needed for safe and successful completion of it. A detailed list of Level 1 skills is given in Unit 1 Course Introduction.

This unit builds on the map reading skills in Level 1. So have the participant take time now to review the Level 1 skills they should have.

Also have the participant complete the Unit 3 Skill Assessment Exercise which follows. It will give both of you a better idea of the participant's skill level.

If you find that they don't have all the Level 1 skills needed to begin this unit, work out a plan for developing these skills. This way the participant will have a better chance of successfully completing it.

Skill Assessment Exercise

Guide the candidate through these simple tests:

1. Given a tape measure or ruler, measure something to the nearest millimeter.
2. Given two numbers, calculate the ratio of one to the other.
3. Given a compass, find the azimuth from your position to an object pointed out by the Facilitator.
4. On a map, find the scale of the map and explain what it means.
5. Describe map features by reading the map's legend. [Point out selected features for them to identify.]
6. State the approximate UTM coordinates of the features pointed out on the map.

Pre-Delivery Checklist

Make sure the following equipment and materials are on hand before the participants arrive for training:

1. Aerial photo pairs and corresponding field map and topographic map for the sampling location “dummy site” that has been designated for the field exercise for this unit. These are also used for classroom exercises.

These sites and corresponding photos and maps have been pre-determined by the Ministry of Forests and the Resource Inventory Committee (RIC) Training Secretariat. There will be separate training sites designated for each Provincial Region. The required maps and photos for each Region are readily available from the Ministry of Forests Resource Inventory Division. Order one set for each participant.

2. Training Guides - order from the RIC Training Secretariat.
3. At least one copy of the Facilitator’s *answer photo* for the photo feature identification exercise. Order it from the RIC Training Secretariat, along with the guides.
4. Another stereo pair of aerial photos showing several broad areas such as urban, rural, and wild lands. These should be obtained by the Facilitator if possible. Otherwise, these pairs may be available through the RIC Training Secretariat. Order them from the RIC Training Secretariat, along with the guides. One copy can be re-used for at least one group of participants.
5. Photocopied sections of a selected field map and topographic map (to use for the Skills Test). These you can find yourself, and customize where needed to reflect a particular inventory.
6. Stereoscopes
7. Scale rules

Level 2

8. Protractors
9. Grease pencils
10. Colored pencils or felt-tip markers (3 different colors)

Site Setup

Sampling Location - Two Trips

A sampling location “dummy site” has been designated for the field exercises for this unit. This site and corresponding photos and maps has been pre-determined by the Ministry of Forests and the Resource Inventory Committee (RIC) Training Secretariat.

Go to the site and select two different appropriate areas in the vicinity to practice the first and second field exercises.

Choose areas that are *not* covered in Unit 4, *Navigating*.

Transportation

For this unit, transportation must be arranged in order to make two trip to the remote training field site (described above) with several participants as a group.

Practical Exercises

Section 1 - Reading Field Maps

Classroom Exercises

Tools needed are a protractor and a scale rule.

In reference to the topographic contours included in the Participant Guide Figure FR3-12, *Contour Test*, ask the following questions, and discuss their answers:

- What is the highest contour elevation?
- What is the lowest contour elevation?
- What is the contour interval?
- Is the ground steepest in the north, south, east, or west portion of the map?

Next, provide the participant with a copy of the field map and matching topographic map from the designated field exercise site, as obtained from the MOF Resource Inventory Division. Arrange time to work with these maps and photos for the following exercises.

Have the participant look at the codes in all of the polygons with forest-cover labels and do their best to recall what they mean without referring to the Participant Guide. After that, they can open their guide and double check them.

At the participant's own pace, have them perform the following activities in reference to the maps, correcting errors for them as they proceed:

1. Describe the trees in a selected polygon. Repeat this with at least two more polygons.

2. For each polygon discussed, identify the highest elevation in the polygon. State the UTM coordinates of that point.
3. Identify and give UTM coordinates for as many of the following as possible:
 - steep slopes
 - ridges
 - depressions
 - valleys/draws
4. Find the size of a marked feature on the map. This will require using the scale rule.
5. Find the bearing and ground distance between two points on the map. This will require using both the scale rule and protractor.
6. Mark on the field map a starting location and a destination. Ask the participant to determine the best route to get to the destination. They must determine all bearings and horizontal distances, as well as estimate the amount of vertical travel.

NOTE: Choose a route that has a major barrier such as a canyon or a river, so that the participant must choose an indirect route and make multiple bearings and measurements.

Field Exercises - Sampling Location Trip #1

When ready, arrange for all participants to travel as a group to the inventory site that is covered by your map (MOF designated site).

They will be using the same maps for the field exercise that were used in the classroom. Outline on these maps the area you chose for the first field exercise.

Ask the participants to look at the delineated area on their maps, and determine the following things *without going there yet*:

- bearing to the center of the selected area,
- distance to the center of the selected area
- size of the selected area

- tree type in the selected area,
- elevation of the selected area.

Then, take the group to the selected area and let them check their answers against the real thing.

Section 2 - Reading Aerial Photographs

Classroom Exercises

Tools include stereoscope and grease pencil.

Turn to the photo pair at the back of the Participant Guide. Ask participants to outline at least four major land features that they can recognize under the stereoscope. Have them delineate the features and write on the photo what they think each feature is.

When they have finished, show them the “answer photo” pair. This pair of photos has most of the major land features outlined and named.

Field Exercises - Sampling Location Trip #2

Tools needed are the field map with photo centers marked, the corresponding pair of stereoscopic aerial photographs, and a stereoscope.

1. During course setup, choose an area in the site vicinity as a focus for this second field exercise. It should be a prominent land feature on the photograph that is seen somewhere near the sampling location. *Most importantly, that feature should NOT appear on the map.* Mark that area on each participant’s photograph, just before embarking.
2. Before travelling into the site area, get the participants to predict what they will see when they arrive, as follows:

- Using the map as a reference, estimate the actual size of the



3 Read Maps and Aerial Photos

feature, such as its longest dimension.

-- Describe what you think the feature looks like from a position on the ground.

3. Take the group to the area marked.
4. On the ground, have them discuss how the photographed land feature appears in reality before them.

Skills Test

Instructions

Once a participant has studied and practiced reading maps and aerial photographs, it is time to test performance.

The Skills test for this unit is entirely classroom based. It includes the following activities:

- Coloring a segment of a field map (no legend)
- Working with a topographic map
- Marking an aerial photograph, while using a stereoscope
- Answering questions

Evaluate performance according to the *Skills Evaluation Checklist*. Comments may also be included on the checklist form so that participants can better understand their performance.

Procedures

1. Give the participant a photocopied section of a field map with no legend present, some colored pencils, and a color code to use. They must color in the areas of the map to show:
 - a) older and taller trees (old growth)
 - b) younger and shorter trees (second growth)
 - c) wet areas and water

The wet areas will require them to recognize swamps from the symbols, without having the legend to refer to.

You are encouraged to customize the map and/or choose maps so

as to emphasize the areas that may be encountered in the particular inventory that a participant is likely to be working for.

2. On the same map, they must pick a forest cover code and state the meaning of the parts of that code.
3. Given the topographic map segment, a protractor, and a scale rule, they must:
 - a) state the elevation of selected peaks
 - b) state the contour interval
 - c) find the azimuth and distance between two selected points
 - d) locate a ravine
4. Ask them to state the six laws of contours.
5. Give them the pair of aerial photographs, a stereoscope, and a grease pencil. Ask them to outline, on one photograph, broad areas such as urban, rural, and wild lands, etc., as specified.
6. Ask them to explain why aerial photographs are used by field sampling crews.
7. Ask them to explain why aerial photographs are not used for finding distances.
8. Ask them to describe how to use a map to roughly estimate the average scale of an aerial photograph.

Facilitator's Checklist

UNIT 3 - READ MAPS AND AERIAL PHOTOS

SKILLS EVALUATION FORM

YES / NO

The participant:

1. Identified the 3 different areas on the field map to 75% accuracy
2. Correctly described the parts of the selected forest-cover code
3. Correctly read elevations
4. Correctly identified the contour interval
5. Used appropriate scale on scale rule
6. Measured azimuth to 1% accuracy
7. Measured distance to 1% accuracy
8. Identified a ravine
9. Correctly stated at least 5 of the 6 laws of contours
10. Outlined all of the correct areas on the photograph
11. Gave two reasons why aerial photos are used in the field
12. Explained scale distortion on photos adequately
13. Adequately described how to use a map to estimate photo average scale

