ROYAL CANADIAN ARMY CADETS

GOLD STAR

INSTRUCTIONAL GUIDE

SECTION 8

EO C422.05 – DETERMINE LOCATION USING RESECTION

Total Time: 60 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-704/PG-001, *Gold Star Qualification Standard and Plan*, Chapter 4. Specific uses for said resources are identified throughout the instructional guide within the TP for which they are required.

Review the lesson content and become familiar with the material prior to delivering the lesson.

Photocopy the Steps to Determine Location Using Resection handout located at Attachment A for each cadet.

Select a location where three prominent objects are easily identifiable and can be seen both on the map and on the ground. Ensure compasses and topographical maps of the local area are available.

PRE-LESSON ASSIGNMENT

Nil.

APPROACH

A demonstration and performance was chosen for this lesson as it allows the instructor to explain and demonstrate the skill of determining location using resection while providing an opportunity for the cadet to practice the skill under supervision.

INTRODUCTION

REVIEW

Nil.

OBJECTIVES

By the end of this lesson the cadet shall be expected to determine their location using resection, within +/- 500 m.

IMPORTANCE

It is important for cadets to know how to determine their location using resection as it provides the cadet an opportunity to enhance their map and compass skills. If a cadet is required to find their location and / or report their location, they will be able to do so quickly and effectively.

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Teaching point 1 **Explain, demonstrate and have the cadets determine their location using resection.**

Time: 50 min Method: Demonstration and Performance



This TP demonstrates to the cadet how to determine location using resection. For this skill TP, it is recommended that instruction take the following format:

(1) Explain and demonstrate the complete skill of determining location using resection while cadets observe, to include:

a. calculating the current declination of the topographical map;

b. setting the current declination on the compass;

c. locating three prominent objects; and

d. identifying the location of the three prominent objects on the topographical map;

e. marking the three prominent objects on the topographical map;

f. determining the magnetic bearing to each prominent object using a compass;

g. determining the back bearing for each prominent object;

h. plotting each back bearing on the topographical map; and

i. determining location based on the intersection of the lines or the centre of the triangle created.

(2) Explain and demonstrate each step required to determine location using resection.

(3) Have the cadets practice each step.

(4) Have the cadets practice the complete skill.

Provide guidance to the cadets as they learn how to determine location using resection.

Distribute a copy of the Steps to Determine Location Using Resection Information Sheet located at Attachment A for each cadet, as a reference.



Refer to B-GL-382-005/PT-001, *Maps, Field Sketching, Compasses and the Global Positioning System*, for further information on determining location using resection.

DETERMINE LOCATION USING RESECTION

In the absence of local details and contours on a map, location can be determined from distant objects such as hilltops, corners of woods, other natural features, or buildings. When determining location using resection, it is better to select three points so that a triangle is formed and the location will be inside the triangle.

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The steps to determining location using resection are:

1. Calculate the current declination of the topographical map.

2. Set the current declination on the compass.

3. Locate three prominent objects that can be seen from the current location. The three surrounding points should form a triangle.



Ensure that the three prominent objects are readily identifiable objects that can be seen both on the map and on the ground.

4. Identify the location of the three prominent objects on the topographical map.

5. Mark the three prominent objects on the topographical map.

6. Determine the magnetic bearing to each prominent object using a compass.

7. Determine the back bearing for each prominent object.

8. Plot each back bearing on the topographical map by:

    a. placing the compass on the topographical map, without disturbing the dial setting, so that one side of the base plate intersects the symbol of the object and the compass is pointing in the direction of travel;

    b. keeping an edge of the compass base on the symbol of the object, lining up the meridian lines on the compass with the easting lines on the map by rotating the compass and ensuring that the edge of the compass is always in contact with the prominent object;



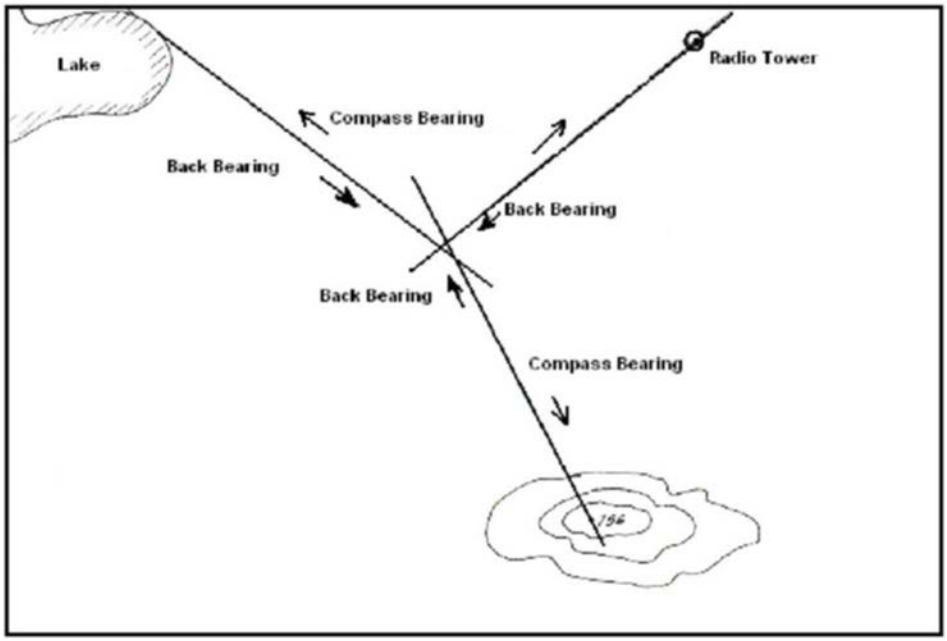
Keep the compass meridian lines that are on the bottom of the dial parallel to the eastings on the map, so the orienting arrow points up or north on the map.

    c. drawing a line along the edge of the compass that intersects and extending the line from the symbol of the object, in the direction of the back bearing; and

    d. repeating Steps a–c for the second and third prominent objects.

9. The lines should meet in a small triangle. Determine the location from the centre of the triangle created.

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Note. From Royal Canadian Army Cadet Reference Book (p. 5-56), by Director Cadets 3, 2003, Ottawa, ON: Department of National Defence.

Figure 1 Three-Point Resection

CONFIRMATION OF TEACHING POINT 1

QUESTIONS:

Q1. In the absence of local detail and contours on a map, what type of objects can be used when determining location using resection?

Q2. When determining location using resection, what are the first two steps that must be completed?

Q3. After completing the resection, what shape has been created and how do you determine your location?

ANTICIPATED ANSWERS:

A1. Answers may vary. Some examples may include hilltops, corners of woods, other natural features, or buildings.

A2. The first two steps are:

(1) Calculate the current declination of the topographical map.

(2) Set the current declination on the compass.

A3. The lines should meet in a small triangle. Location is then determined from the centre of the triangle created.

END OF LESSON CONFIRMATION

The cadets' determining their location using resection will serve as the confirmation of this lesson.

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CONCLUSION

HOMEWORK / READING / PRACTICE

Nil.

METHOD OF EVALUATION

Nil.

CLOSING STATEMENT

Knowing how to quickly and effectively complete a resection will enhance map and compass skills and will allow location to be determined, while navigating during field training exercises.

INSTRUCTOR NOTES / REMARKS

Nil.

REFERENCES

A2-041 B-GL-382-005/PT-001 Directorate of Army Doctrine 8. (2006). *Maps, field sketching, compasses and the global positioning system*. Ottawa, ON: Department of National Defence.

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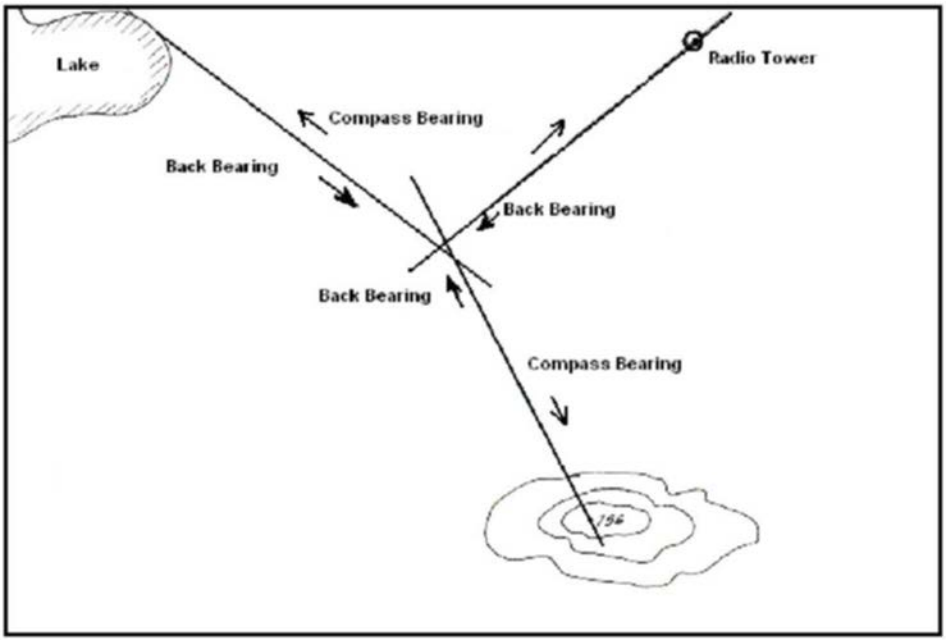
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STEPS TO DETERMINE LOCATION USING RESECTION

The steps to determining location using resection are:

1. Calculate the current declination of the topographical map.
2. Set the current declination on the compass.
3. Locate three prominent objects. The three surrounding points form a triangle.
4. Identify the location of the three prominent objects on the topographical map.
5. Mark the three prominent objects on the topographical map.
6. Determine the magnetic bearing to each prominent object using a compass.
7. Determine the back bearing for each prominent object.
8. Plot each back bearing on the topographical map by:
    a. placing the compass on the topographical map, without disturbing the dial setting so that one side of the base plate intersects the symbol of the object and the compass is pointing in the direction of travel;
    b. keeping an edge of the compass base on the symbol of the object, lining up the meridian lines on the compass with the easting lines on the map by rotating the compass and ensuring that the edge of the compass is always in contact with the prominent object;
    c. drawing a line along the edge of the compass that intersects and extending the line from the symbol of the object, in the direction of the back bearing; and
    d. repeating Steps a–c for the second and third prominent objects.
9. The lines should meet in a small triangle. Determine location based on the centre of the triangle created.



Note. From Royal Canadian Army Cadet Reference Book (p. 5-56), by Director Cadets 3, 2003, Ottawa, ON: Department of National Defence.

Figure A-1 Three-Point Resection

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