ROYAL CANADIAN ARMY CADETS

RED STAR

INSTRUCTIONAL GUIDE

SECTION 6

EO M224.06 – IDENTIFY METHODS OF SIGNALLING

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-702/PG-001, Chapter 4 of. 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.

Prepare a ground-to-air message signal for cadets to see as a visual aid.

Permission will be obtained for a signal fire from the local authorities (e.g. local police, forestry service, and/or airport authority). The following information will be provided:

1. the organization;
2. a contact name;
3. a contact number;
4. the location including grid reference (GR);
5. the estimated time of lighting; and
6. the duration the fire is expected to be lit.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

An interactive lecture was chosen for TP1 and TP2 to introduce and allow the cadets an opportunity to practice signalling methods.

A practical activity was chosen for TP3 as it is an interactive way to introduce cadets to methods of signalling. This activity contributes to the development of survival skills in a fun and challenging setting.

INTRODUCTION

REVIEW

N/A.

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OBJECTIVES

By the end of this lesson the cadet shall be expected to identify methods of signalling.

IMPORTANCE

It is important for cadets to know how to signal for help so they can increase their chances of being located more quickly, if they become lost.

Teaching point 1 **Discuss Signalling Devices**

Time: 10 min Method: Interactive Lecture



This TP focuses on signalling devices that can be used in the field. Ask the cadets if they know of anyone who was lost and was found through the use of a signalling device.

Discuss the way in which the individual signalled for help. Point out any key reasons why the individual was found because of the signal.

If there is no story provided by the cadets, a story has been provided below. Read the story and have the cadets brainstorm for a moment and ask them what they think Dave can use to signal for help.

Keep in mind the cadets have no idea what materials Dave has or what he brought with him. Assume he has everything and get the cadets to think about what can be used to signal search and rescuers.

Continue with the TP, describing the signals and how they can be employed.

Survival Story

It is a beautiful summer day and Dave decides to go for a hike. Before leaving his house he writes a note to his wife saying where he is going and that he expects to be back by suppertime (1700hrs).

Leaving his home and arriving at the base of his normal hiking trails he decides to take a new route that he has never travelled before. The hiking trails in this area are usually safe and easy. The trails are always marked and the route is easy to follow. As the day wears on, Dave finds he is running a little behind on his timings and decides to speed up his pace.

Cutting across some rough, rocky ground, Dave suddenly loses his footing, jams his foot between two rocks and falls over. Hearing a loud snap and feeling a sudden rush of pain spreading up from his ankle, Dave realizes he has broken his ankle.

After freeing himself and splinting his ankle, Dave knows he will not be able to walk out of the woods. Preparing for a night in the woods, Dave applies the S.T.O.P. principles and thinks about the five elements of survival. Dave finds a natural, tree hollow shelter suitable for a night's stay in the field. Dave knows his wife will send for help. However, he is not on his normal hiking routes.

Determining that he may have to signal for help, he begins to think about what options he has.

SIGNALLING

Signalling for help is essential for increasing the chances of being located quickly. Establishing contact with, or attracting the attention of search and rescuers should be the main objective after all vital survival needs have been addressed.

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When preparing signals keep the following points in mind.

- Be sure to have signals ready and place them in open areas that are readily seen from the ground and the air.
- Prepare as many types of signals as possible.
- Protect signals and equipment from moisture and cold.
- Any unusual sign or colour contrast is visible from the air, even a trail in the snow.
- Care for all signalling equipment to prolong its use.

SIGNALLING DEVICES

Flares. Flares are small rockets that ascend to a high altitude of approximately 45-60 metres and burn for approximately 7-15 seconds. The flare emits a single Red Star. This bright light can be seen for many miles depending on the weather. When choosing a signal flare, be sure to try to deploy it from an elevated position where no obstructions exist overhead.

Mirrors. Mirrors can reflect sunlight beyond the horizon up to seven million candlepower. Hold the mirror in your hand with your arm outstretched. Sight along your arm to aim the mirror, flash at particular points along the horizon. Send three flashes.

Whistles. Whistles emit a loud piercing sound. They are designed to be heard above ambient noise, the roar of engines, breaking waves and gale force winds. Blowing a whistle three times in succession, signals anyone who hears this that someone requires help.



A series of three signals (whistles, flashes, etc.) in a row represents the universal distress call. It is similar to the S.O.S. morse code signal.

Radios and Cell Phones. These items can provide a direct link to help immediately. Location may hinder or completely restrict a signal. Move to higher ground that is close by and attempt an emergency call again. Communications dealing with distress, urgency, or safety have priority over other radio traffic. Identify who is calling, speak clearly and keep communications as brief as possible. Arrange a check in time and turn off the phone to save battery life in emergency situations.

Fire and Smoke. Fire and smoke can be used to attract the attention of search and rescuers. Three evenly spaced fires, 35 metres or 100 feet apart, arranged in a triangle or in a straight line, serve as an international distress signal. One signal fire will usually work. During the night, the flames should be as bright as possible and during the day, the fire should produce as much smoke as possible.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

Q1. What are three points you should keep in mind when preparing signals?

Q2. Name five signalling devices.

Q3. If you found yourself lost in the woods what could produce a very loud piercing sound to signal that you are in trouble?

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ANTICIPATED ANSWERS

A1. Any of the following:

- Be sure to have signals ready and place them in open areas that are readily seen from the ground and the air.
- Prepare as many types of signals as possible.
- Protect signals and equipment from moisture and cold.
- Any unusual sign or colour contrast is visible from the air, even a trail in the snow.
- Care for all signalling equipment to prolong its use.

A2. Five signalling devices are:

- Flares.
- Mirrors.
- Whistles.
- Radios and cell phones.
- Fire and smoke.

A3. A whistle could produce a very loud piercing sound.

Teaching point 2 **Discuss Ground-to-air Signals Employed to Communicate With Aircraft**

Time: 15 min Method: Interactive Lecture



Start this lesson by showing the cadets the previously prepared ground-to-air signal. While instructing this TP, refer to aspects of the prepared signal as a visual aid.

Orient the signal to take advantage of the sun and the casting of a shadow. Making use of shadows will greatly enhance the signal. Reinforce the importance of having a correctly oriented and developed signal.

Typically, when a person becomes lost a search will commence around the last known position. These parameters will expand when nothing is found along the intended route. Searchers will be looking for anything out of the ordinary and their eyes will be drawn to unnatural features of the ground. Make the site as conspicuous as possible by preparing ground-to-air signals.

SIGNAL DIMENSIONS

A signal should be as large as possible. To be the most effective, the signal should have lines no less than 1 m wide (3 feet) and 8 m long (26 feet). Care should be taken to ensure symbols are laid out exactly as depicted. From the air, symbols will appear close together as altitude increases. Ensure each symbol is at least 3 m apart (10 feet).

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CONTRASTING SHADES OR COLOURS



Illustrating and defining a shadow created from a ground-to-air signal may be difficult.

Ensure that the signal is parallel to the sun's direction of travel (e.g. east to west) and be sure to make the signal large enough to produce a shadow.

A signal should stand out sharply against its background. This helps to make the signal appear larger. Everything must be done to disturb the natural look of the ground. This can be accomplished by:

- stamping down grass or turning it over to allow the signal to be easily seen from the air;
- burning a pattern in the grass;
- trampling out a signal in the snow, using only one path to and from the signal; and
- considering the shadow created by the sun and maximizing the shadow created by stamped foot markings or snow piles.



The signal should be located so it can be seen from all directions. Make sure the signal is located away from shadows and overhangs. A large, high, open area is preferable.

GROUND-TO-AIR SIGNALS

The following symbols are to be used to communicate with aircraft when an emergency exists. Symbols 1 to 5 are internationally accepted; 6 to 9 are for use in Canada only.

NO.	MESSAGE	CORE SYMBOL
1.	Require Assistance	V
2.	Require Medical Assistance	X
3.	No or Negative	N
4.	Yes or Affirmative	Y
5.	Proceeding In This Direction	↑
6.	All Is Well	LL
7.	Require Food and Water	F
8.	Require Fuel and Oil	L
9.	Need Repairs	W

D Cdts 3, 2007, Ottawa, ON: Department of National Defence

Figure 1 Ground-to-Air Signals

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

Q1. What should the dimensions of a ground-to-air signal be?

Q2. If you were asked to make the symbol V on the ground, what would it mean to an aircraft above?

Q3. How does one create a contrasting shade on the ground?

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ANTICIPATED ANSWERS

A1. A ground-to-air signal should be 1 m wide by 8 m long.

A2. The symbol V means someone requires assistance.

A3. To create a contrasting shade on the ground:

- stamp down grass or turn it over to allow the signal to be easily seen from the air;
- burn a pattern in the grass;
- tramp out a signal in the snow, using only one path to and from the signal; and
- consider the shadow created by the sun and maximize the shadow created by stamped foot markings or snow piles.

Teaching point 3 **Construct a Ground-to-air Signal**

Time: 25 min Method: Practical Activity

ACTIVITY

OBJECTIVE

The objective of this activity is to construct a ground-to-air signal capable of being seen from aircraft.

RESOURCES

Objects and debris from the surrounding environment.

ACTIVITY LAYOUT

N/A.

ACTIVITY INSTRUCTIONS

- Divide the cadets into groups of no more than four.
- Assign the groups one of the five ground-to-air signals to construct.
- Give the cadets 20 minutes to seek out materials and create their signal.
- Upon completion, inspect the signals and confirm they meet the dimensions.
- Disassemble all signals and return materials to original locations.

SAFETY

Establish boundaries for the cadets who are gathering materials.

CONFIRMATION OF TEACHING POINT 3

The cadets' participation in this activity will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

The cadets' participation in the activity in TP3 will serve as the confirmation of this lesson.

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CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

N/A.

CLOSING STATEMENT

Signals provide a cadet in distress with the means to gain the attention of search and rescuers. Cadets who become lost can employ the actions to take when lost through completing the S.T.O.P. acronym and include in their plans a method of signalling for help.

INSTRUCTOR NOTES/REMARKS

N/A.

REFERENCES

C2-016 (ISBN 0-517-88783-5) Curtis, R. (1998). *The Backpacker's Field Manual: A Comprehensive Guide to Mastering Backcountry Skills*. New York, NY: Three Rivers Press.

C2-044 Department of Transportation. (2007). *Ground-to-Air Signals*. Retrieved 9 February 2007, from http://www.tc.gc.ca/CivilAviation/publications/tp14371/SAS/4-0.htm.

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