ROYAL CANADIAN AIR CADETS

PROFICIENCY LEVEL TWO

INSTRUCTIONAL GUIDE

SECTION 6

EO M290.06 – OPERATE A HAND-HELD RADIO

Total Time:	30 min

PREPARATION

PRE-LESSON INSTRUCTIONS

Resources needed for the delivery of this lesson are listed in the lesson specification located in A-CR-CCP-802/PG-001, 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.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

An interactive lecture was chosen for TP1 to introduce a new subject and describe parts of a radio.

Demonstration and performance was chosen for TP2, TP4 and TP5 as it allows the instructor to explain and demonstrate the skill the cadet is expected to acquire, while providing and opportunity for the cadets to practice operating a hand-held radio under the supervision of an instructor.

Demonstration was chosen for TP3 as it allows the instructor to explain and demonstrate the skills the cadet is expected to acquire.

INTRODUCTION

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to identify parts, change channels, operate the push-to-talk button and change batteries in a hand-held radio.

IMPORTANCE

It is important for cadets to know how to operate hand-held radios in order to communicate between groups in the field.

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Teaching point 1 **Identify the Parts of the Radio**

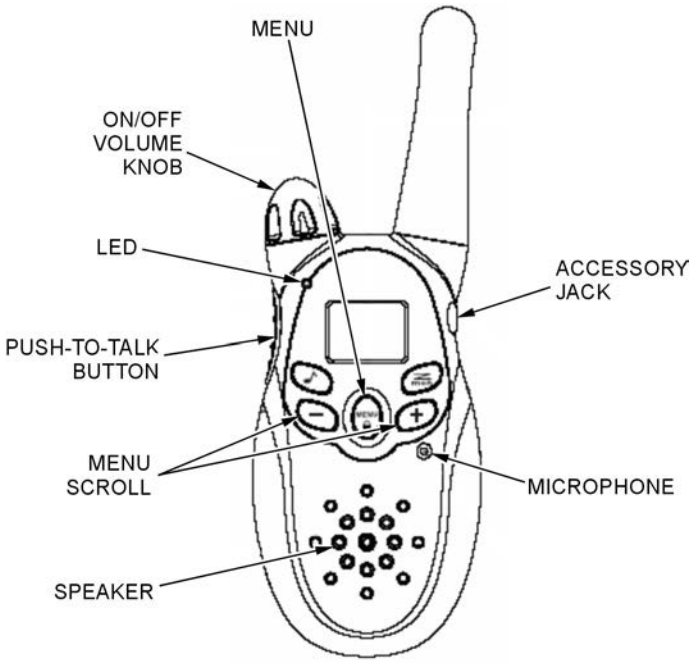
Time: 5 min Method: Interactive Lecture

Radios presented in this lesson are the Talkabout FRS/GMRS Recreational Two-way Radios Models T5000, T5500, and T5550. Models may vary in each squadron. Refer to the user's guide as required.

Divide cadets into groups to a maximum of four and assign each group a radio.

Cadets will point to specific parts as they are explained.

PARTS OF THE RADIO AND THEIR FUNCTIONS



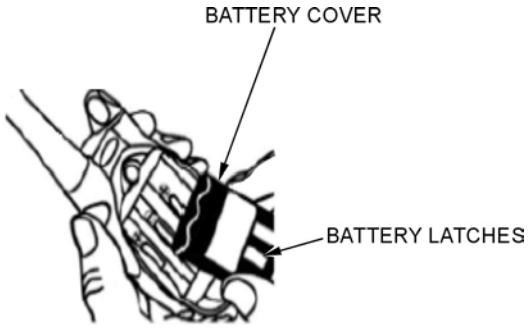
Motorola Inc., Talkabout FRS/GMRS Recreational Two-way Radios Models T5000, T5500, T5550 User's Guide, Motorola, Inc. (p. 11)

Figure 1 Hand-held Radio

- **On/Off Volume Knob.** Controls volume and power to the unit.
- **Light Emitting Diode (LED).** This light will be illuminated when the radio is on.
- **Push-To-Talk (PTT) Button.** A depressible button that allows transmissions.

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- **Speaker.** Converts electric current into audible sound.
- **Antenna.** An electrical device designed to transmit or receive radio waves.
- **Accessory Jack.** This is used to insert accessory items such as a headset.
- **Microphone.** Converts sound into an electrical signal.
- **Menu Scroll.** Push to scroll through the menu options and channels. Use the "+" and "-" symbol in order to scroll through the menu options.



Motorola Inc., Talkabout FRS/GMRS Recreational Two-way Radios Models T5000, T5500, T5550 User's Guide, Motorola, Inc. (p. 13)

Figure 2 Battery Compartment

- **Battery Cover.** Covers the storage compartment of the battery (located on the reverse side of the radio).
- **Battery Cover Latches.** Secures the cover to the radio (located on the reverse side of the radio).

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

Q1. Name the parts of the radio.

Q2. What function does the antenna perform?

Q3. What function does the microphone perform?

ANTICIPATED ANSWERS

A1. The 10 parts of the Talkabout radio are: on-off/volume knob, LED, PTT, speaker, antenna, accessory jack, menu scroll, microphone, battery cover, and battery cover latches.

A2. It transmits and receives radio waves.

A3. It converts sound into an electrical signal.

Teaching point 2 **Demonstrate Turning the Radio On and Off**

Time: 5 min Method: Demonstration and Performance



Radio operations differ from model to model. Refer to the user's guide for operating instructions.

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Explain and demonstrate turning a hand-held radio on and off and have cadets practice.

TURNING THE RADIO ON/OFF

- To turn the radio **ON**, turn the on-off/volume knob clockwise. The radio will beep and the radio display will briefly show all feature icons of the radio.
- To turn the radio **OFF**, turn the on-off/volume knob counterclockwise. A clicking sound will indicate the radio is turned off.

CONFIRMATION OF TEACHING POINT 2

The cadets' participation in TP2 will serve as the confirmation of this lesson.

Teaching point 3 **Demonstrate Adjusting Frequencies**

Time: 5 min Method: Demonstration



Explain and demonstrate selecting and changing radio stations.

ADJUSTING FREQUENCIES

Selecting a Channel (Frequency)

The radio operates on a group of frequencies that are accessed through radio channels. To set the channel of the radio, push the Menu button, this will cause the current channel to flash. Using the Menu scroll button, scroll through the channels and push the PTT button to select the desired channel.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

Q1. How are the frequencies accessed on a hand-held radio?

Q2. If channel eight was desired, how would one change the channels?

ANTICIPATED ANSWERS

A1. The radio operates on a group of frequencies that are accessed through radio channels.

A2. To set the channel of the radio, push the Menu button, this will cause the current channel to flash. Using the Menu scroll button, scroll through the channels and push the PTT button to select the desired channel.

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Teaching point 4 **Demonstrate Operating the Push-To-Talk (PTT) Button**

Time: 5 min Method: Demonstration and Performance

OPERATING THE PTT BUTTON

To send and receive messages, check the channel activity by pressing the push-to-talk (PTT) button. Static will be heard if the channel is clear to use. Do not transmit if someone is talking on the channel.

- To send messages, press the PTT button, pause, speak into the microphone, pause, and then release (to maximize clarity, hold the radio three to five centimetres from the mouth).
- The LED will glow continuously when sending messages.
- To listen to messages, release the PTT button.

ACTIVITY

Time: 3 min

OBJECTIVE

The objective of this activity is to allow cadets to become familiar with sending and receiving transmissions.

RESOURCES

One hand-held radio per group of four cadets.

ACTIVITY LAYOUT

Divide cadets into groups (maximum of four per group). Separate groups from each other giving enough room to avoid radio feedback.

ACTIVITY INSTRUCTIONS

- Provide each group of cadets with a radio.
- Assign each cadet in each group a number (one through four).
- Pair the groups and assign each pair of groups a frequency.
- Cadet one from the sending group will transmit any message to cadet one in their receiving group.
- Cadets will go in turn until all have had a turn.
- The message should be enunciated clearly and spoken at a moderate pace and at a volume that is readable.

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The intent of this activity is for the cadets to operate the radio while transmitting and receiving radio message. Be cognizant of the process the cadets use when speaking into the radio. Ensure the cadets press the PTT button, wait two to three seconds before speaking, and release the PTT button after the message is fully transmitted.

Considering the cadets have yet to be trained on voice procedures, this activity will not focus on the rules of radio procedures. A few sample messages have been provided here for the cadets to transmit to their peers:

Message 1 – The sun shines very brightly at noon.

Message 2 – During the night you can see the Big Dipper.

Message 3 – The best method to start a fire is a box fire.

Message 4 – CF-18s are very loud when they take off.

SAFETY

Make sure the cadets do not hold the hand-held radio too close to their ears while receiving messages.

CONFIRMATION OF TEACHING POINT 4

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

Teaching point 5 **Demonstrate Changing Batteries**

Time: 5 min Method: Demonstration and Performance

BATTERIES

A battery is a device that stores chemical energy and makes it available in an electrical form. Radios require batteries to operate. Batteries are everywhere – in cars, remote controls, laptops, and cell phones to name a few places.



Explain to the cadets what type of battery is required to operate the hand-held radio. Consult the user's guide to ensure the proper size and type of battery is being used. The Talkabout radios discussed in this lesson use three AA batteries.

CHANGING THE BATTERY

Many hand-held radios will use three AA batteries for power. To insert or replace these batteries, follow these steps:

1. Turn the radio so the back is facing up. Lift the battery latch to release the battery cover.
2. Remove the battery cover.
3. Insert three AA batteries as shown on the inside of the battery compartment.
4. Replace the battery cover and clip the battery latch to secure.

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Motorola Inc., Talkabout FRS/GMRS Recreational Two-way Radios Models T5000, T5500, T5550 User's Guide, Motorola, Inc. (p. 13)

Figure 3 Batteries



Motorola Inc., Talkabout FRS/GMRS Recreational Two-way Radios Models T5000, T5500, T5550 User's Guide, Motorola, Inc. (p. 13)

Figure 4 Changing the Batteries



Batteries may corrode over time if left in radios and can cause permanent damage; therefore, they should be removed before storing radios for extended periods of time.

BATTERY METER

The battery icon shows the battery charge level, from full to empty. When the battery is empty, the radio chirps periodically after releasing the PTT button. The radio powers off when the voltage drops below a predetermined level.

SAFELY DISCARDING SPENT BATTERIES

Batteries are made of various materials comprised of heavy metals including nickel cadmium, alkaline, mercury, nickel metal hydride, and lead acid. These elements can harm the environment if not properly discarded. As such, batteries are one of the most complex items to dispose of or recycle.

Batteries, if not properly disposed of, may cause:

- the pollution of lakes and streams as the metals vaporize into the air when burned;
- the leaching of heavy metals from solid waste landfills;
- exposure of the environment and water to lead and acid;
- corrosion from the strong acid; and
- burns or other injury to eyes and skin.

Batteries are not all the same and each have specific instructions for their proper disposal and/or recycling. The batteries most people use are household types; however, due to the variety of different rules and regulations, check with the local community recycling facility to determine the household battery recycling options or supporting unit/base POL/HAZMAT section.



This is a good opportunity to encourage cadets to care for their environment. By developing a unit battery-recycling program, the unit can collect spent batteries from cadets' households and deliver the batteries to the local community recycling depot or supporting unit/base HAZMAT section.

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ACTIVITY

Time: 3 min

OBJECTIVE

The objective of this activity is to allow the cadets to change the batteries of a hand-held radio.

RESOURCES

- One hand-held radio per group of four cadets, and
- Batteries.

ACTIVITY LAYOUT

Divide cadets into groups (maximum of four per group).

ACTIVITY INSTRUCTIONS

One or two cadets in the group (depending on time) will change the batteries of a hand-held radio IAW the user's guide.

SAFETY

N/A.

CONFIRMATION OF TEACHING POINT 5

The cadets' observation and/or participation in the activity will serve as the confirmation of this TP.

END OF LESSON CONFIRMATION

The cadets' participation in TPs 2, 4 and 5 will serve as the confirmation of this lesson.

CONCLUSION

HOMEWORK/READING/PRACTICE

Cadets should be encouraged to recycle discarded batteries and contact recycling centres for appropriate methods for discarding/recycling household batteries.

METHOD OF EVALUATION

N/A.

CLOSING STATEMENT

Radios are used during field exercises and other cadet activities. Proper use of this equipment is essential to ensure effective communication.

INSTRUCTOR NOTES/REMARKS

Hand-held radio models may vary from region to region. The instructor will be responsible for consulting the user's guide for detailed instructions on radio operation.

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Dispose/recycle the batteries in accordance with local regulations.

REFERENCES

C0-069 Motorola Inc. (2004). *Talkabout FRS/GMRS Recreational Two-way Radios Models T5000, T5500, T5550 User's Guide.* Motorola Inc.

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