**ROYAL CANADIAN ARMY CADETS**

**RED STAR**

**INSTRUCTIONAL GUIDE**

**SECTION 9**

# EO M221.09 – MAINTAIN SECTION EQUIPMENT FOLLOWING A FIELD TRAINING EXERCISE (FTX)

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. 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.

This lesson is intended to be conducted following a weekend bivouac FTX. The equipment used on the FTX will be used as training aids, to include:

- a Coleman two-burner stove,
- a dual-mantle lantern,
- a pot set,
- a axe,
- a bow saw,
- a groundsheet,
- a bucket/wash basin, and
- rags.

Divide the cadets into groups of no more than four. Provide each group with basin of water and a rag or cloth. During each TP each group should be given a piece of the equipment being discussed. Have cadets follow along with the instruction, maintaining the equipment as it is covered.

### PRE-LESSON ASSIGNMENT

N/A.

### APPROACH

Demonstration and performance was chosen for this lesson as it allows the instructor to explain and demonstrate the cleaning and storing of section equipment while providing an opportunity for the cadets to practice these skills.



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## INTRODUCTION

### REVIEW

N/A.

### OBJECTIVES

By the end of this lesson the cadet shall be expected to maintain section equipment.

### IMPORTANCE

It is important for cadets to learn how to maintain section equipment. Cleaning and storing equipment prolongs the life of the equipment. Through regimented cleaning practices, equipment will be slow to corrode and rust ensuring a long life.

**Teaching point 1** **Explain, Demonstrate and Have the Cadets Practice Cleaning and Storing a Two-burner Stove**

Time: 10 min Method: Demonstration and Performance




Provide each group with a Coleman two-burner stove. Have cadets follow along with the instruction, cleaning equipment as it is covered.

### CLEANING SOLUTION

Cleaning the Coleman two-burner stove requires only a light mixture of dish soap and water and an old rag or cloth. To mix the solution, apply a few drops of dish soap in a wash bucket filled with warm water.

### CLEANING

After use, the Coleman two-burner stove may be left with deposits of soot (fuel exhaust) and the remnants of food. Cleaning after use will prolong the life of the stove and delay corrosion of the metal surfaces. Parts of the Coleman two-burner stove shall be wiped clean using the cleaning solution and a rag/cloth.

**The Inner and Outer Wind Baffles.** The inner baffles usually become dirty and are often dirtier than the outer baffles as a result of the burning of fuel and food splashing over the pots and pans. Thoroughly wipe clean both sides of the baffles.



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Figure 1 Wind Baffles

**The Fuel Tank.** The fuel tank shall be wiped clean. The fuel tank contains many ledges and crevices that require careful cleaning.



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Figure 2 Fuel Tank

**The Grate.** The grate becomes dirty through direct contact with cooking utensils. Food is continuously spilled and burned onto the grate. Clean the grate of any food remnants. The grate may be stained by the heat of the flames and cannot be cleaned.



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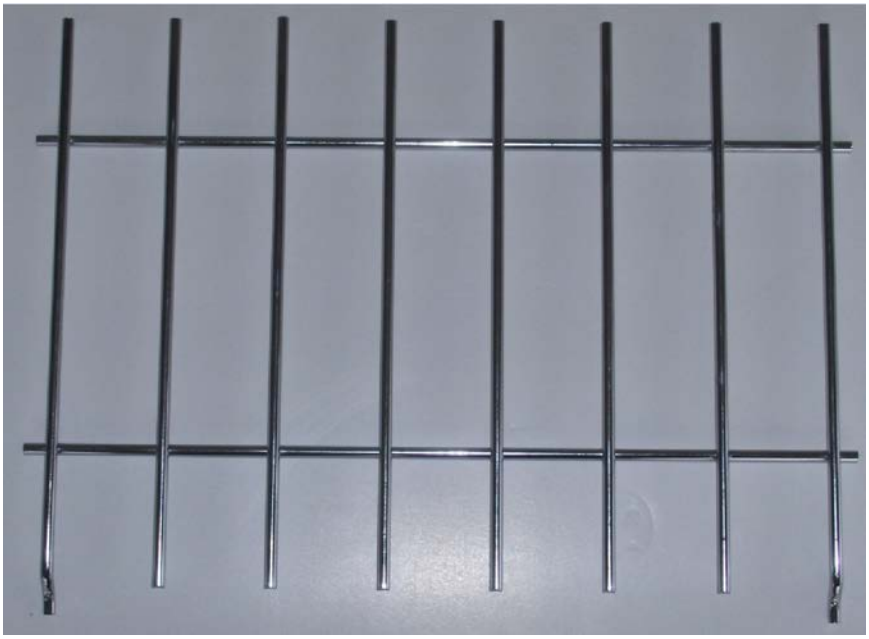

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Figure 3 Grate

**The Stove Box.** The stove box protects the burner from dirt and debris; however, when in use, the box will collect dirt and debris. The inside of the box is subject to the spillage of food, dirt and dust. The inside and outside of the stove box shall be cleaned thoroughly because the settling of debris and dirt will speed corrosion.




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Figure 4 Stove Box

**INSPECTING FOR DAMAGE**

After the stove has been cleaned, it must be inspected for damage. Check the following parts and report any damages:

- stove box;
- control valve assembly;



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- main burner head;
- auxiliary burner head;
- pump assembly;
- wind baffles;
- stove grate; and
- fuel tank.

Damages should be recorded on a piece of coloured paper, preferably red, and attached to the damaged part. If the equipment is not suitable for use, remove it from usable equipment and report to the designated quartermaster to have the item replaced or repaired.

**ENSURING THE FUEL TANK IS EMPTY PRIOR TO STORAGE**

Ensure the tank is stored with no remaining pressure. To release the pressure loosen the filler cap until pressure is gone, then retighten the cap.

The fuel tank must be emptied prior to storage. Any remaining fuel should be drained into a fuel container. To drain the fuel tank, use a funnel and pour the remaining contents of the fuel tank into a fuel container. Then allow the remaining fuel to evaporate by placing the open fuel tank outside in a well ventilated area.

Drain the fuel tank outside and use a spill pan in case spillage occurs.

**STORING**

Store the Coleman stove in a cool, dry location away from moisture.

**CONFIRMATION OF TEACHING POINT 1**




The cadet's participation in cleaning the Coleman two-burner stove will serve as the confirmation of this TP. Questions have been provided if additional confirmation is required.

**QUESTIONS**

Q1. What should be used as a cleaning solution?

Q2. What areas of the wind baffles usually become dirty?

Q3. How should damages be recorded?



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**ANTICIPATED ANSWERS**

A1. A mild solution of dish soap and water.

A2. The inner baffles usually become dirty as a result of the burning of fuel and food splashing over from the pots and pans.

A3. Damages should be recorded on a piece of coloured paper, preferably red, and attached to the damaged part.

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**Teaching point 2** — **Explain, Demonstrate and Have the Cadets Practice Cleaning and Storing a Dual-mantle Lantern**

Time: 10 min — Method: Demonstration and Performance

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Provide each group with a dual-mantle lantern. Have the cadets follow along with the instruction, cleaning equipment as it is covered.

**CLEANING SOLUTION**

Cleaning the Coleman dual-mantle lantern requires only a light mixture of dish soap and water and an old rag/cloth. To mix the solution, apply a few drops of dish soap in a wash bucket filled with water.

**CLEANING**

After use, the Coleman dual-mantle lantern is left with deposits of soot (fuel exhaust) and possibly dirt or mud from being placed on the ground. Cleaning after use will prolong the life of the lantern and delay corrosion of the metal surfaces. Some parts of the Coleman dual-mantle lantern shall be wiped clean using the cleaning solution and a rag/cloth.

**The Ventilator and Bail Assembly.** The ventilator allows heat and exhaust to escape from the lantern. The exhaust builds up a residue on the ventilator, bail (handle) assembly and its metal parts. This residue over time becomes very greasy and dirty in appearance. Remove the ventilator and bail assembly by unscrewing the ventilator screw or uncoupling the handle and lifting clear the ventilator and bail assembly. Wipe clean the complete ventilator and bail assembly using the cleaning solution and a rag/cloth.



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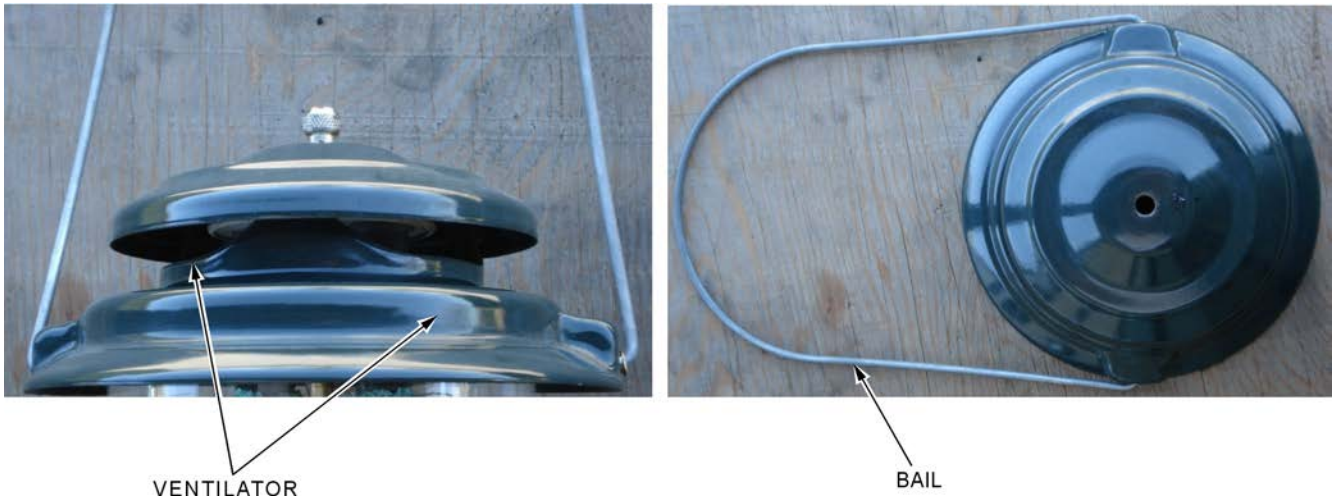


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Figure 5 Ventilator and Bail Assembly

**The Globe.** The globe, which protects the mantles, is made of glass. This glass becomes dirty during use. It also becomes dirty from bugs, dirt and dust that constantly come in contact with the glass. The glass becomes smudged reducing the amount of light that is emitted from the lantern. Remove the globe from the lantern, carefully lifting it over the mantles. Clean the globe using the cleaning solution and a rag/cloth.

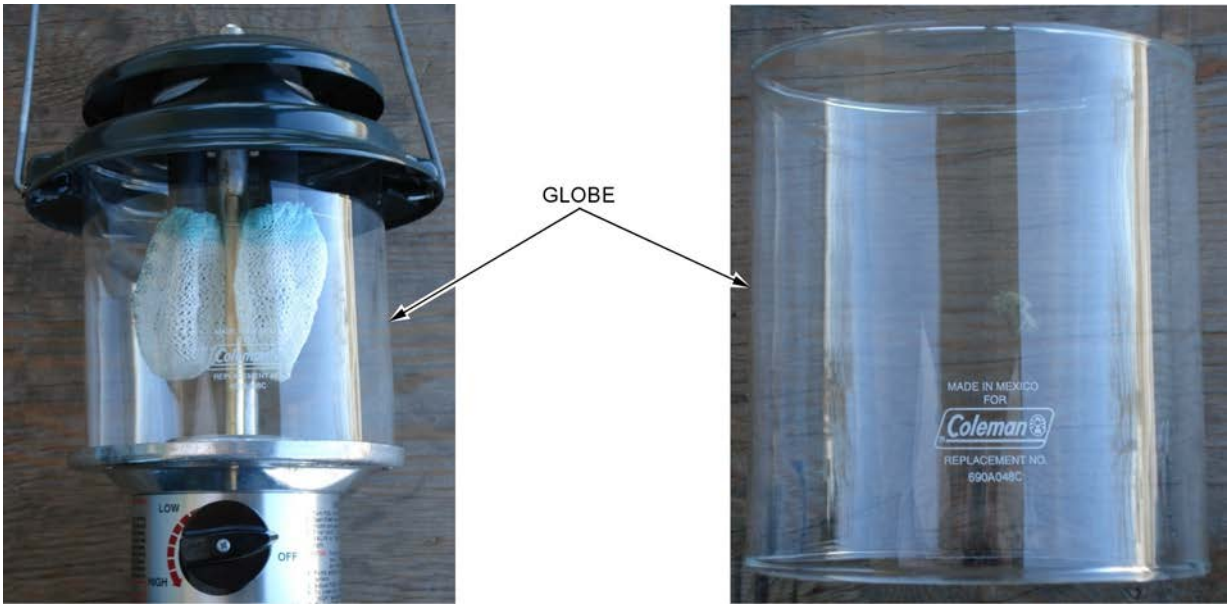


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Figure 6 Globe

**The Fuel Tank.** The fuel tank is the reservoir that stores fuel, otherwise known as the font. The fuel tank is used to rest the lantern on flat surfaces, whether it be the ground or a table. This area collects little residue from the exhaust of the lantern; however, it is exposed to moisture and dirt. Cleaning the outside of fuel tank with the cleaning solution is important to slow the corrosion of the metal.



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Figure 7 Fuel Tank

**INSPECTING FOR DAMAGE**

After the lantern has been cleaned, it must be inspected for damage. Check the following parts and report any damages:

- ventilator;
- mantle;
- bail;
- globe;
- filler cap;
- control knob;
- fuel tank; and
- pump.

Damages should be recorded on a piece of coloured paper, preferably red, and attached to the damaged part. If the equipment is not suitable for use, remove from usable equipment and report to the designated quartermaster to have the item replaced or repaired.

**ENSURING THE FUEL TANK IS EMPTY PRIOR TO STORAGE**

Ensure the fuel tank is stored with no remaining pressure. To release the pressure, loosen the filler cap until the pressure is gone, then retighten the cap.

The fuel tank must be emptied prior to storage. Any remaining fuel should be drained into a fuel container. To drain the fuel tank, use a funnel and pour the remaining contents of the fuel tank into a fuel container.



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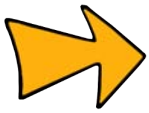

Drain the fuel tank outside and use a spill pan in case spillage occurs.

**STORING**

Store the Coleman lantern in a cool, dry location away from moisture.

**CONFIRMATION OF TEACHING POINT 2**




The cadets' participation in cleaning the lantern will serve as the confirmation of this TP. Questions have been provided if additional confirmation is required.

**QUESTIONS**

Q1. How does the globe become dirty?

Q2. What causes the ventilator to become dirty?

Q3. What parts should be checked for damage?

**ANTICIPATED ANSWERS**

A1. The globe becomes dirty from bugs, dirt and dust that constantly come in contact with the glass.

A2. The ventilator becomes dirty from the exhaust. The exhaust builds up a residue on the ventilator, bail (handle) assembly and its metal parts. This residue over time becomes very greasy and dirty in appearance.

A3. The following parts should be checked for damage:

- ventilator;
- mantle;
- bail;
- globe;
- filler cap;
- control knob;
- fuel tank; and
- pump.



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**Teaching point 3** **Explain, Demonstrate and Have the Cadets Practice Cleaning and Storing a Pot Set**

Time: 10 min Method: Demonstration and Performance




Provide each group with a pot set. Have cadets follow along with the instruction, cleaning equipment as it is covered.

## CLEANING SOLUTION

Cleaning a pot requires only a light mixture of dish soap and water and an old rag/cloth. To mix the solution, apply a few drops of dish soap in a wash bucket filled with water.

## CLEANING

After use, the pot set may be left with deposits of food, soot from burning flames and possibly dirt or mud from being placed on the ground. Cleaning the inner and outer walls after use will prolong the life of the pot set and keep it sanitary.

## DRYING

Once all parts have been washed it is important to dry the set. To dry the set, air dry or use a dry cloth to absorb the remaining moisture. Storing a wet pot set can be dangerous and unsanitary. A pot set that is stored wet may eventually become mouldy. This may result in someone becoming sick.



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Figure 8 Pot Set

## INSPECTING FOR DAMAGE

After the pot set has been cleaned and dried it must be inspected for damage. Check the following parts and report any damages:

- pot walls;
- handle;
- handle hinge;



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- cover; and
- additional smaller pots, if included.

Damages should be recorded on a piece of coloured paper, preferably red, and attached to the damaged part. If the unit is not suitable for use, remove from usable equipment and report to the designated quartermaster to have the item replaced or repaired.

**STORING**

Store the pot set in a cool dry, location away from moisture.

**CONFIRMATION OF TEACHING POINT 3**




The cadets' participation in cleaning the pot set will serve as the confirmation of this TP. Questions have been provided if additional confirmation is required.

**QUESTIONS**

Q1. What parts of the pot must be cleaned?

Q2. Why should a pot set be dried?

Q3. What parts of a pot set must be checked for damage?

**ANTICIPATED ANSWERS**

A1. The inner and outer walls and the cover must be cleaned.

A2. A pot set that is not dried and is stored wet may become mouldy and unsanitary to use for cooking.

A3. The following parts should be checked for damage:

- pot walls;
- handle;
- handle hinge;
- cover; and
- additional smaller pots, if included.



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**Teaching point 4** — **Explain, Demonstrate and Have the Cadets Practice Cleaning and Storing the Following Field Tools**

Time: 10 min — Method: Demonstration and Performance




Provide each group with field tools. Have cadets follow along with the instruction, cleaning equipment as it is covered.

**AXE**

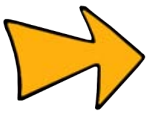
**Washing and Drying**

Cleaning an axe with a cleaning solution is only required when the axe is noticeably covered in dirt or clay. If the axe must be washed, ensure to thoroughly dry the surfaces as left over moisture may rust the axe head and degrade the wooden handle.

**Applying Storage Oil**

To avoid rusting, rub a few drops of oil on the axe head. It will reduce the chances of corrosion to the axe blade. Oil type is not important.

The axe handle should be rubbed with linseed oil. Linseed oil helps wood retain its natural moisture content which retards cracking, chipping, and shrinking. Linseed oil also repels water.



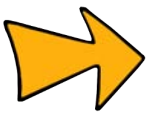
To keep the handle well oiled drill a one quarter inch diameter hole three inches into the butt of the handle. Fill with linseed oil and plug the hole with a wood stopper.

**Inspecting for Damage**

After the axe has been cleaned and oiled it must be inspected for damage.

**Handle.** The handle should be inspected for chipping, cracks or splits that may weaken the wood of the handle. Look around the area where the head of the axe and the handle meet. It is common to find splits and cracks here.

**Axe Head.** The axe head should be checked to ensure it is tight and does not wobble or move. Check the blade for any dents or chips and feel the sharpness of the blade by gently rubbing the thumb across the blade.



Damages should be recorded on a piece of coloured paper, preferably red, and attached to the damaged part. If the unit is not suitable for use, remove from usable equipment and report to the designated quartermaster to have the item replaced or repaired.

**Storing**

Store the axe in a cool, dry location away from moisture.



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Figure 9 Single-bit Axe

**BOW SAW**

**Washing and Drying**

Cleaning a saw with a cleaning solution is only required when the saw is noticeably covered in dirt or clay. If the saw must be washed, ensure to thoroughly dry the surfaces as left over moisture may rust the saw handle and blade.

**Applying Storage Oil**

To avoid rusting, put a few drops of oil on the blade. It will reduce the chances of corrosion to the saw blade. Oil type is not important. If there is a buildup of tree sap on the blade use kerosene to remove the deposits.

**Inspecting for Damage**

After the saw has been cleaned and oiled it must be inspected for damage.

**Blade.** Inspect the blade for dull or missing teeth and if it has lost shape. If any of these damages exist, the blade must be replaced.

**Handles or "Cheeks".** Inspect the handles to ensure they are still in good repair. Ensure the metal has not become fatigued (weak in areas) or no major dents are apparent that may weaken the saw.

**Frame.** Much like the handles, inspect the frame for any metal fatigue or dents that may weaken the saw.

Damages should be recorded on a piece of coloured paper, preferably red, and attached to the damaged part. If the equipment is not suitable for use, remove from usable equipment and have the item replaced or repaired.

**Storing**

Store the bow saw in a cool, dry location away from moisture.



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Figure 10 Bow Saw

**CONFIRMATION OF TEACHING POINT 4**

The cadets' participation in cleaning field tools will serve as the confirmation of this TP. Questions have been provided if additional confirmation is required.

**QUESTIONS**

Q1. What should be used to remove a buildup of tree sap on the blade?

Q2. When inspecting for damage to the blade, what should a person look for?

Q3. What should be placed on the blade to prevent rusting or corrosion?

**ANTICIPATED ANSWERS**

A1. Kerosene is to be used when removing tree sap from the blade.

A2. Inspect the blade for dull or missing teeth and if it has lost its shape.

A3. A light coating of any type of oil will prevent rusting or corrosion of the metal blade.

**Teaching point 5** **Explain, Demonstrate and Have the Cadets Practice Cleaning and Storing Groundsheets**

Time: 10 min Method: Demonstration and Performance

Provide each group with a groundsheet. Have cadets follow along with the instruction, cleaning and folding the groundsheet as it is covered.



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**WASHING AND DRYING**

Cleaning a groundsheet is only required when it is noticeably covered in dirt or clay. If the groundsheet must be washed, use only water. Any type of cleaning solution will remove the waterproofing elements of the groundsheet. Ensure to thoroughly dry the surfaces, as left over moisture may break down and weaken the groundsheet.

**FOLDING**

To fold the groundsheet complete the following steps:

1. Ensure the groundsheet is completely dry.
2. Lay the groundsheet out, with the inside facing up (Step 1, Figure 11).
3. Fold the ends in to make a rectangle (Step 2, Figure 11).
4. Fold in half by bringing the right side to the left side (Step 3, Figure 11).
5. Fold the ends to the centre – right end to the centre, left end to the centre (Step 4, Figure 11).
6. Fold in half bringing right side to the left side (Step 5, Figure 11).
7. If the storage bin is smaller make more folds following the same pattern to reach the desired size for storage.



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STEP 1



STEP 2



STEP 3

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Figure 11 (Sheet 1 of 2) Folding a Groundsheet



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**STEP 4**



**STEP 5**

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Figure 11 (Sheet 2 of 2) Folding a Groundsheet



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**STORING**

The groundsheet should be stored in a cool, dry location out of direct sunlight. Storage bins or large plastic containers work well to organize and store groundsheets.

## CONFIRMATION OF TEACHING POINT 5




The cadets' participation in folding a groundsheet will serve as the confirmation of this TP. Questions have been provided if additional confirmation is required.

**QUESTIONS**

Q1. What should be used to clean a groundsheet?

Q2. What would a cleaning solution do to a groundsheet?

Q3. Where should a groundsheet be stored?

**ANTICIPATED ANSWERS**

A1. Water should be used to clean a groundsheet.

A2. A cleaning solution may damage or remove the waterproofing of the groundsheet.

A3. A groundsheet should be stored in a cool dry location out of direct sunlight.

## END OF LESSON CONFIRMATION

The cadets' participation in cleaning and inspecting the equipment will serve as the confirmation of this lesson.

## CONCLUSION

**HOMEWORK/READING/PRACTICE**

N/A.

**METHOD OF EVALUATION**

N/A.

**CLOSING STATEMENT**

The ability to maintain section equipment after use in the field will prolong its life. Allowing cadets to clean and maintain section equipment will develop a sense of ownership, ensure the items are well cared for and will ensure they last for others to use.

**INSTRUCTOR NOTES/REMARKS**

N/A.



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