

CHAPTER 15

PO 190 – PARTICIPATE IN A FIELD EXERCISE



ROYAL CANADIAN AIR CADETS

LEVEL ONE

INSTRUCTIONAL GUIDE



SECTION 1

EO M190.01 – PACK PERSONAL EQUIPMENT FOR A FIELD EXERCISE

Total Time:	60 min
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INTRODUCTION

PRE-LESSON INSTRUCTIONS

A complete list of resources needed for the instruction of this EO is located at Chapter 2 of the QSP. Specific uses for said stores are identified throughout the Instructional Guide, within the teaching point for which they are required.

Prior to instructing this lesson the instructor is required to:

- review the lesson content, and become familiar with the material;
- prepare a suitable instructional area;
- prepare a properly packed rucksack or backpack in accordance with the principles outlined in this lesson;
- ensure the rucksack or backpack includes all of the materials discussed in this lesson; and
- have a knife available.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

The interactive lecture method was chosen as it allows the instructor to make a semi-formal presentation of the material where the cadets can participate by asking or responding to questions and commenting on the material. For this lesson, this method is most effective as it matches well the taxonomic level of the material and is age-appropriate by virtue of its participatory nature.

The small group activity was selected to allow for maximum participation in the learning process. It is an interactive way to illustrate and substantiate the lesson material in a concrete manner.

The demonstration and performance method was chosen due to the practical nature of the subject matter. These methods provide the instructor the opportunity to introduce the subject matter, demonstrate procedures and observe the cadets practicing and performing the skill. The demonstration and performance methods must always be used when the taxonomic level of the material requires a performance of a skill. These methods are highly developmentally appropriate for young cadets.

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to select and pack appropriate personal equipment for field training.

IMPORTANCE

Selecting and packing the appropriate clothing is a key element of field training. Weather can be a large factor in a survival situation. Selecting the right clothing can help prevent unnecessary injury and weather-related illnesses. Improper packing techniques can cause discomfort and possible injury.

Teaching Point 1

Select Field Clothing

Time: 20 min

Method: Interactive Lecture/Activity

THE LAYERING PRINCIPLE

The Core Layer (Upper Body)

This layer lies next to the skin. It should consist of a wool or synthetic undershirt or a long-sleeved thermal top. The garment should be close fitting but not tight. It should be made of a material that will absorb perspiration and move it away from the skin. This layer must be kept as clean as possible to prevent dirt from clogging the pores of the fabric.

The Second Layer

The second layer should be loose fitting and should keep the blood vessels of the neck and wrists protected and warm. It could consist of a zip-up top with a high neck or a shirt with a collar. Sleeves should be able to be rolled up and cuffs should be able to be buttoned. In hot weather, this layer may be used as an outer layer.

The Outer Layer

The outer layer should be a jacket that is both wind-resistant and waterproof depending on the climate. For example, in the Arctic, a padded, windproof parka is required for protection against cutting winds and extreme cold. You must be able to vent your jacket to avoid becoming overheated. In temperate areas, rain is the most common cause of cold discomfort. Waterproof outerwear should be worn.

Underwear (Lower Body)

Long thermal underwear is usually necessary only in temperatures below freezing. In the Arctic a "groin patch" of impermeable material prevents wind chill in that area. If your underwear gets wet, it will eventually dry. However, this problem can be avoided by wearing waterproof pants. In mild weather, this layer may consist of cotton shorts.

Pants

Pants should allow freedom of movement and should be able to dry quickly. In very wet conditions, using a belt helps to prevent chaffing at the waist. Waterproof pants can be worn to help protect your legs from rain, but may cause overheating. In very cold conditions, quilted over-trousers should be zipped over pants and boots for added protection.



If available, the instructor shall show examples of each piece of clothing during the explanation.

ADVANTAGES AND DISADVANTAGES OF FABRICS

Wool

Advantages. Wool has insulating properties even when wet. It remains comfortable until it is soaked and smolders rather than melts when exposed to excessive heat.

Disadvantages. It is heavy when wet and takes time to dry. When it is worn next to skin, it may cause itching, and may shrink when washed.

Cotton

Advantages. Cotton is durable, breathable and absorbs moisture. It is a good fabric for underwear and items worn next to the skin in warm climates.

Disadvantages. It may be heavy when wet and can shrink if it is dried at high temperatures. It may tear and burn easily. Also, it is not windproof.

Fleece or Pile

Advantages. As an outer layer, fleece forces moisture away from the body while keeping it warm. It is lightweight, Hardwearing and does not absorb moisture.

Disadvantages. Fleece is not windproof and does not compress easily. It can collect balls of fluff on the outside after long use.

Synthetic Fabrics

Advantages. These fabrics allow sweat to evaporate while keeping rain and other moisture out. They are usually windproof and an excellent choice for an outer layer.

Disadvantages. The seams may come apart in water. In very wet conditions the fabric pores may become clogged. The evaporation of sweat from the outside of the fabric may result in heat loss.



When finished delivering the above material, the instructor may present an acronym that can be used to remember the principles to be practiced when selecting and wearing clothing in the field.

COLD: Keep the garment **C**lean, **A**void **O**verheating, **W**ear it **L**oose and **L**ayered, **K**eep it **D**ry.

FOOTWEAR

Socks

Thick socks made of either wool or fiber-pile cotton are vital. Socks keep your feet warm, dry and prevent footwear from rubbing against skin. Rubbing can cause blisters and chafing. In cold weather, two pairs of socks, an outer layer and an inner layer, should be worn. The inner layer will force moisture away from the foot and move it to the outer layer to keep the foot dry. Socks should be changed daily before bed.

Boots

Boots with a hard sole and good cushion are just as important as socks. Being comfortable and stable can make for a more enjoyable time in the field. Ankle support is important in the prevention of ankle injury.

WEATHER CONSIDERATIONS

It is important to be prepared for any type of weather. Wear a toque, scarf and mitts during cold weather. The toque will prevent heat from being lost through the head. Mitts will prevent injuries like frostbite by keeping hands warm and blood circulating. During warm conditions, it is important to wear sunscreen and a hat to be protected from the sun. Extended exposure to the sun can cause burns and sunstroke.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

- Q1. What is one advantage to wearing wool?
- Q2. What is the core layer, worn on the upper body?
- Q3. What is one disadvantage to synthetic fabrics?

ANTICIPATED ANSWERS

- A1. Wool has insulating properties even when wet, remains comfortable until it is soaked, and smolders rather than melts when exposed to excessive heat.
- A2. This layer lies next to the skin and should consist of a wool or synthetic undershirt or a long-sleeved thermal top.
- A3. Seams may come apart in water. In very wet conditions, the fabric pores may become clogged. The evaporation of sweat from the outside of the fabric may result in heat loss.

ACTIVITY

Time: 10 min

OBJECTIVE

The objective of this activity is to confirm TP1 by having the cadets dress up one of their peers in proper clothing for the field and the climate.

RESOURCES

- Clothes that represent the layering principle, to include:
 - A core layer.
 - A second layer.
 - An outer layer.
 - Underwear.
 - Pants.
- Clothing that is made of the different types of fabric listed in TP1.
- Appropriate footwear.

ACTIVITY LAYOUT

- Have the clothing laid out according to its category prior to starting the activity.

- Assign a cadet to be the “model”. The selected cadet will be the one to wear the clothing.
- Question the cadets on what piece of clothing the cadet should put on first in accordance with the layering principle.
- This should continue until the cadet is fully clothed for the field.
- When the cadet is dressed, the instructor shall question the cadets on the advantages and disadvantages of the type of clothing chosen for each layer (this might be easier when the cadet is taking each layer off).

SAFETY

N/A.

INSTRUCTOR GUIDELINES

- Ensure that the cadet selected as the model has appropriate clothing on prior to them putting on the layers of clothes. By no means shall the cadet be in undergarments before the activity commences. Clothing can be put on over the uniform or appropriate civilian clothing.
- Ensure that the questioning remains controlled.
- Another instructor may be used as the model.

Teaching Point 2

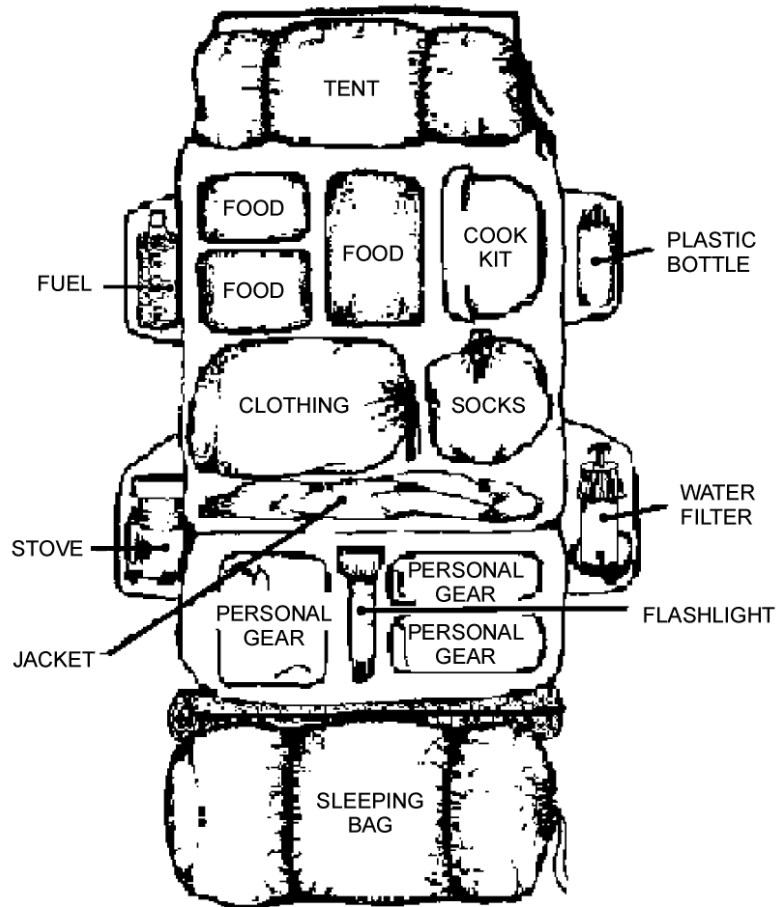
Explain, Demonstrate and Have Cadets Pack Personal Equipment for Field Training

Time: 25 min

Method: Demonstration and Performance

PACKING PERSONAL EQUIPMENT


While packing a kit, ensure to place a large plastic bag inside the pack prior to packing it. This will block moisture from reaching the contents. Each item should also be placed in a separate bag with the extra air removed to save as much space as possible. Place items in the pack by priority, with the most frequently used items on top or where easily accessible. The equipment needs to be placed in the pack so the weight is distributed and balanced appropriately. A poorly balanced pack can cause fatigue. The heaviest items should be placed near the bottom or the back of the pack to avoid back strain. Ensure all items are secured to the pack to avoid losing items and having to constantly stop for adjustments.



Basic Essentials Backpacking, Harry Roberts, 1989

Figure 15-1-1 A Well-organized Backpack

The tent should be placed on top of the pack with the sleeping bag and pad firmly attached under the backpack. Food, clothing and a cooking kit are examples of what to place in the backpack itself. Clothing should include extra socks, undergarments and polypropylene/synthetic T-shirt and pants. Personal gear could include a first aid kit, waterproofed matches, flashlight, emergency candle and hygienic items. Items such as water bottle, stove, fuel canister, flashlight and a water filter can fit in the side pouches of the bag.



Where practical, this teaching point should be conducted using the demonstration and performance method. The instructor should demonstrate the packing of a backpack with the cadets performing the skill immediately after. The following activity will assist in allowing the cadets to practice the skill. Where the instructional environment does not allow for this option, the teaching point will be delivered using the demonstration method only, with the cadet packing their bags on their own time.

ACTIVITY

Time: 15 min

OBJECTIVE

To allow the cadet to practice effective techniques of packing personal equipment prior to participating in an aircrew survival exercise.

RESOURCES

- Rucksack/backpack.
- Various personal equipment (brought by cadet).

ACTIVITY LAYOUT

- While delivering this teaching point, the instructor shall demonstrate how to effectively pack a backpack for the field.
- The cadets shall pack their own bag during this time following the instructor's example.

SAFETY

N/A.

INSTRUCTOR GUIDELINES

- Supervise the cadets' packing method closely.
- It is advisable to have other instructors assigned to provide additional supervision and feedback to cadets during this activity.
- If the cadets do not bring their own kit, ensure that an interactive demonstration of each packing step is given.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

- Q1. Why should a large plastic bag be placed inside the backpack prior to packing it?
- Q2. What does a poorly balanced backpack cause?

ANTICIPATED ANSWERS

- A1. This will block the moisture from getting at the contents.
- A2. A poorly balanced pack can cause fatigue.

END OF LESSON CONFIRMATION

This lesson shall be confirmed by verbal questioning.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

There is no formal assessment of this EO. Instructors shall confirm the cadets' comprehension of the material during the end of lesson check and during the kit inspection conducted prior to departing on the overnight aircrew survival exercise.

CLOSING STATEMENT

Cadets have identified the appropriate clothes to bring with them to the field and how to effectively pack them. Selecting and packing approximately will help prevent fatigue and cold while in the field. Weather can be a large factor influencing survival. If one selects the right clothing, unnecessary injury and weather illnesses can be prevented. Improper packing techniques can cause discomfort and possible injury. It is important to ensure that equipment is packed properly prior to leaving for an aircrew survival exercise.

INSTRUCTOR NOTES/REMARKS

N/A.

REFERENCES

- C3-003 (ISBN 1-896713-00-9) Tawell, P. (1996). *Camping and Wilderness Survival: The Ultimate Outdoors Book*. Green Valley, ON: Fifteenth Printing.
- C3-021 (ISBN 0-7715-9035-0) McManners, H. (1994). *The Complete Wilderness Survival Manual*. Somewhere, BC: McMillan Canada.
- C3-024 (ISBN 0-7627-0476-4) Roberts, H. (1989). *Basic Essentials Backpacking*. Guildford, CT: The Globe Pequot Press.



ROYAL CANADIAN AIR CADETS

LEVEL ONE

INSTRUCTIONAL GUIDE



SECTION 2

EO M190.02 – MAINTAIN PERSONAL EQUIPMENT AND HYGIENE IN THE FIELD

Total Time: 30 min

INTRODUCTION

PRE-LESSON INSTRUCTIONS

A complete list of resources needed for the instruction of this EO is located at Chapter 2 of the QSP. Specific uses for said stores are identified throughout the Instructional Guide, within the teaching point for which they are required.

Prior to instructing this lesson the instructor is required to:

- review the lesson content, and become familiar with the material;
- prepare a suitable instructional area;
- prepare a properly packed rucksack/backpack in accordance with the principles delivered in this lesson; and
- prepare resources for practicing field hygiene.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

The interactive lecture method was chosen as it allows the instructor to make a semi-formal presentation of the material where the cadets can participate by asking or responding to questions and commenting on the material. For this lesson, this method is most effective as it matches well the taxonomic level of the material and is age-appropriate by virtue of its participatory nature.

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadets shall be expected to care for their own personal equipment, care for a knife and maintain hygiene while in the field.

IMPORTANCE

Caring for personal equipment and knowing how to safely use a knife will prevent unnecessary injury. Practicing field hygiene principles will contribute to the successful conduct of an aircrew survival exercise by preventing illness and maintaining a safe environment.

Teaching Point 1**Explain How to Care for Personal Equipment While in the Field**

Time: 7 min

Method: Interactive Lecture

CARE FOR CLOTHING

All articles of clothing shall be kept as clean as possible. Dirt can get through some clothing and reach the skin. Sweat and dirt may cause skin irritation. The dirt may also get into the fibres of the fabric and destroy the insulation value. This potential loss of insulation is why undergarments must be changed daily.

Change socks as often as possible. Wet or dirty socks can cause blisters and other skin irritations. Wash socks in lukewarm water. Carefully rinse out all of the soap, squeeze out the water, and stretch the socks back into shape. Socks should be kept in good repair and holes mended as soon as they appear.

Boots should be properly maintained by keeping them dry and soft. Boots should never be placed too close to the fire.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

- Q1. Why must undergarments be changed daily?
- Q2. What are the steps to take when laundering socks?

ANTICIPATED ANSWERS

- A1. Dirt can get through some clothing and reach the skin. Combined with sweat, the dirt may cause considerable irritation.
- A2. When laundering socks, use lukewarm water. Carefully rinse out all of the soap, squeeze out the water, and stretch the socks back into shape.

Teaching Point 2**Use a Knife in the Field**

Time: 9 min

Method: Interactive Lecture

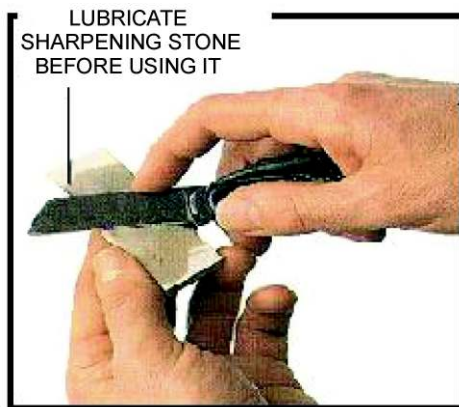
CARE OF KNIVES IN THE FIELD**Safety Precautions**

A knife should be kept sharp and carried in a suitable sheath. It should be returned to its sheath immediately after use and remain there when not in use. Always position the sheath on a waist belt towards the back of the hip. This positioning will prevent the knife from being driven into the groin during a fall. Never angle the blade in another person's direction or at yourself. Always pass a knife closed or by presenting the handle to the person receiving it. Ensure the person receiving the knife is ready to accept the knife before letting go. Ensure that the sharp side of the blade is facing up when passing the knife. Always ensure knives are put away or safely stored.

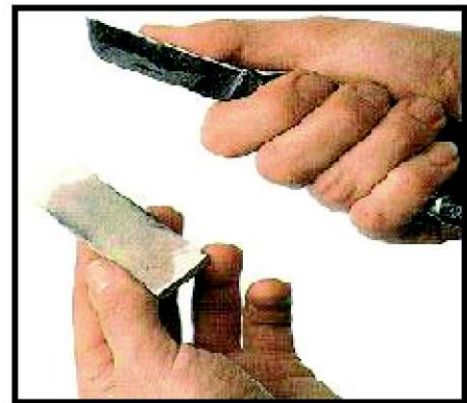
Sharpening

Use a quality sharpening stone and apply a lubricant as specified for the stone. Place the blade on the stone and pull it toward you in a circular motion and repeat this action. Ensure that this motion is completed an equal number of times on both sides. When sharpening the blade, try to maintain the original angle of the cutting

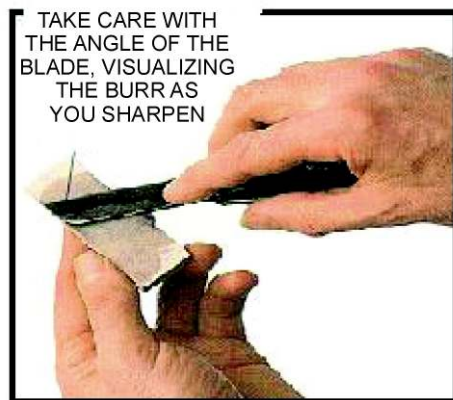
edge. Sharpen the knife blade when it becomes dull. To polish a blade that has stains on it, use wood ash found in a fire pit. Wood ash rubbed on a stained blade will remove the stains without scratching the blade.



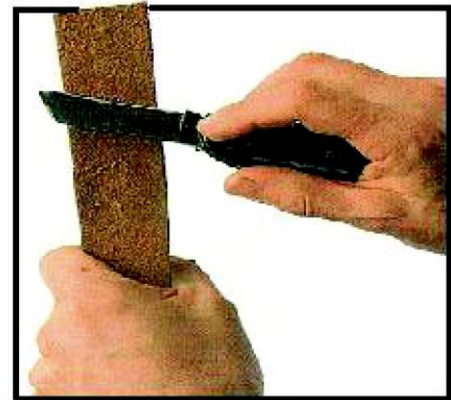
1. Moisten the sharpening stone with water. Stroke the knife on the stone, away from the edge of the blade.



2. After sharpening the knife on one side, feel the other side for the burr of metal turned up by the abrasion.



3. Smooth the other side of the blade, realigning the burr to the centre. More water may be needed.



4. Strop the knife (sweep it up and down) on a leather belt. This will help smooth off and strengthen the edge.

The Complete Wilderness Survival Manual, Hugh MacManners, 1994

Figure 15-2-1 Steps to Knife Sharpening

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

- Q1. What is the proper action to take when sharpening a knife?
- Q2. Where should the knife blade not be pointed?
- Q3. When passing the knife, which way should the blade be facing?

ANTICIPATED ANSWERS

- A1. Place the blade on the stone and pull it toward you in a circular motion and repeat this action many times. Ensure that this motion is completed an equal number of times on both sides.
- A2. In another person's direction or at yourself.
- A3. Up.

Teaching Point 3**Explain How to Maintain Hygiene in the Field**

Time: 10 min

Method: Interactive Lecture

FIELD HYGIENE REQUIREMENTS

Keeping healthy is an important factor for survival in the field. Strict hygiene routines should be practiced personally and at the survival site. Garbage and latrines shall be kept away from the site to avoid the threat of insects and illness. Proper hygiene practices will also ensure drinking water is not contaminated.

WASHING IN THE FIELD

In order to keep clean, use soap and water while in the field. Special attention should be given to the crotch, scalp and between the toes. These areas are susceptible to rash and fungus infections. A daily shower with hot water and soap is ideal. If a shower is not feasible, keep hands as clean as possible. The face, armpits, crotch and feet should be washed and dried at least once a day. If soap is unavailable, wood ash can be used as a substitute. Washing daily can prevent the growth and spread of germs.

DENTAL CARE IN THE FIELD

Teeth should be cleaned with a toothbrush and toothpaste after every meal and before bed. Table salt or baking soda can be used as a substitute for toothpaste. If a toothbrush is not available, a green twig can be chewed to a pulpy consistency. The mouth should be rinsed with water after every meal.

DISPOSAL OF WASTE

It is very important to manage waste effectively. Wet and dry garbage shall be separated into different sealed containers. It should be stored downwind and a suitable distance from the site. Water that is used to clean dishes, bodies, teeth or clothes is called grey water. This water must be disposed of by placing it in containers located near the washstands or latrines. Solid garbage shall be packed out of the site. If it is packed in, it should be able to be packed out. It is the responsibility of each member to ensure that no trace of waste is left behind.



Where appropriate, the instructor shall indicate the locations associated with this teaching point. These include but are not limited to:

- washstand;
- latrines;
- port-o-potties;
- grey water disposal area; and
- wet and dry garbage disposal area.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

- Q1. If a shower is not available, what parts of the body should one ensure to clean?
- Q2. What can be used as a substitute for toothpaste?
- Q3. What is grey water?

ANTICIPATED ANSWERS

- A1. Hands, faces, armpits, crotch and feet.
- A2. Table salt or baking soda.
- A3. Water that has been used to clean clothes, dishes, teeth, bodies etc.

END OF LESSON CONFIRMATION

This lesson shall be confirmed by verbal questioning.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

There is no formal assessment of this EO.

CLOSING STATEMENT

Cadets have learned how to care for their personal equipment, use a knife and maintain personal hygiene in the field. Caring for personal equipment and safely using a knife while in the field is of the utmost importance.

INSTRUCTOR NOTES/REMARKS

N/A.

REFERENCES

- C3-003 (ISBN 1-896713-00-9) Tawell, P. (1996). *Camping and Wilderness Survival: The Ultimate Outdoors Book*. Green Valley, ON: Fifteenth Printing.
- C3-021 (ISBN 0-7715-9035-0) McManners, H. (1994). *The Complete Wilderness Survival Manual*. BC: McMillan Canada.

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ROYAL CANADIAN AIR CADETS

LEVEL ONE

INSTRUCTIONAL GUIDE



SECTION 3

EO M190.03 – OBSERVE SITE POLICIES AND PROCEDURES

Total Time: 60 min

INTRODUCTION

PRE-LESSON INSTRUCTIONS

A complete list of resources needed for the instruction of this EO is located at Chapter 2 of the QSP. Specific uses for said stored are identified throughout the Instructional Guide, within the teaching point for which they are required.

Prior to instructing this lesson the instructor shall:

- review the lesson content, and become familiar with the material; and
- gather flipchart paper and markers.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

The interactive lecture method was chosen as it allows the instructor to make a semi-formal presentation of the material where the cadets can participate by asking or responding to questions and commenting on the material. For this lesson, this method is most effective as it matches well the taxonomic level of the material and is age-appropriate by virtue of its participatory nature.

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to observe all site policies and procedures during an aircrew survival exercise.

IMPORTANCE

It is important to know and follow established site policies and procedures to ensure the site is maintained and functioning in a smooth and safe manner.

Teaching Point 1**Describe Safety Issues Related to Field Training**

Time: 10 min

Method: Interactive Lecture

GENERAL SAFETY

Cadets should be aware that running, engaging in horseplay or wandering off from the group is not acceptable behaviour during field training.



Other general safety concerns should be presented to the cadets at this point. These other concerns will be specific to the site where the activity is being conducted and will be contained in the operation order for the exercise.

MEDICAL PROCEDURES

In case of a medical emergency, all members need to be aware of actions that need to be taken. Members need to know where the first aid area is located, where to get medications, what to do if they come across a medical emergency, the muster point in case an evacuation needs to take place and who is in charge of, or trained in, first aid.



Other medical procedures should be presented to the cadets at this point. These other procedures will be specific to the site where the activity is being conducted and will be contained in the operation order for the exercise.

ENVIRONMENTAL PROCEDURES

It is extremely important that the environment is respected while conducting a weekend exercise. Garbage and grey water should be disposed of in designated areas. Cutting down live trees, including breaking branches is not acceptable. Doing this may hinder the growth of the tree. In case of an environmental spill, cadets should advise staff members immediately and local authorities should be contacted.



Other environmental procedures should be presented to the cadets at this point. These other procedures will be specific to the site where the activity is being conducted and will be contained in the operation order for the exercise.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

- Q1. What behaviour is not acceptable in the field?
- Q2. What medical procedures need to be known by personnel?
- Q3. Why should one not break branches off of a live tree?

ANTICIPATED ANSWERS

- A1. Running, engaging in horseplay and wandering off from the group.

A2. Where the first aid area is located, what to do if they come across a medical emergency, the muster point in case an evacuation needs to take place and who is in charge of, or trained in, first aid.

A3. It may hinder the growth of the tree.

Teaching Point 2

Explain the Fire Regulations in Place at the Training Site

Time: 10 min

Method: Interactive Lecture

FIRE PROCEDURES

All personnel need to be aware of what to do in case of a fire. If a member notices a fire they should shout “fire, fire, fire” and use a siren or whistle to sound an alarm. Upon hearing the alarm, all personnel should meet at the designated muster point. The member who noticed the fire should present themselves to the senior officer on site.

MUSTER POINT

The muster point is the area designated for all people at the site to gather together in case of a fire or other emergency. It should be located away from hazardous areas and near the best route out of the campsite.

FIRE FIGHTING EQUIPMENT

The fire pit location should contain basic fire fighting equipment such as fire extinguishers, fire brooms and buckets.



The instructor should take the class to each area presented above and ensure everyone is clear on the fire regulations.

ACTIVITY

Time: 5 min

OBJECTIVE

The objective of this activity is to conduct a fire drill.

RESOURCES

N/A.

ACTIVITY LAYOUT

1. Choose a cadet to “find” the fire.
2. Have that cadet carry out the proper procedures when locating a fire.
3. The rest of the group should carry out the proper procedures (report to the muster point) upon hearing the cadet shout “fire, fire, fire.”

SAFETY

Ensure the area is free of obstacles that may cause cadets to fall or hurt themselves during the fire drill.

INSTRUCTOR GUIDELINES

During the drill, the instructor shall supervise and ensure all cadets are carrying out the proper procedures for a fire.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

- Q1. What is the muster point?
- Q2. What fire fighting equipment should be present at the campsite?
- Q3. What should one do when noticing a fire?

ANTICIPATED ANSWERS

- A1. The muster point is the area designated for all people who are at the campsite to gather together in case of a fire or other emergency.
- A2. Basic fire fighting equipment such as extinguishers, fire brooms and buckets.
- A3. Shout "fire, fire, fire" and move to the muster point. The member who noticed the fire should present themselves to the senior officer.

Teaching Point 3

Give an Overview of Layout of the Bivouac Site

Time: 10 min

Method: Interactive Lecture



This teaching point should be presented at each of the locations listed.

COMMAND POINT/HEADQUARTERS

The command tent should be located in a centralized area and all personnel at the site should know its location.

FIRST AID AREA

The first aid area must be equipped with at least one stretcher, a well-stocked first aid kit and any additional equipment needed when treating minor injuries.

TENT/SHELTER AREAS

Tents are usually divided into two groups, one for males and one for females. All tents should be erected at least 10 feet apart with the doors opposite the prevailing winds.

FIRE PIT

Fire pits must be at least 100 meters away from the campsite and strictly in open areas. Permission to have a fire pit must be granted by local authorities and the forest fire rating must be of a safe nature.

LATRINES

If at all possible, before building a latrine, make use of an outhouse that may already be available. If a latrine must be built, construct it as least 100 meters away from the campsite and not too close to the source of water. Local regulations should be consulted before building latrines.

PETROLEUM, OIL AND LUBRICANT (POL) POINT

POL stands for Petroleum, Oils and Lubricants. The storage area for these materials must be located at a reasonable distance from the bivouac site. Access to this area is limited.

WATER POINT

Drinking water should be obtained from a reliable source. Always boil water that is collected in the field to purify it. If collecting water from a fast moving stream, always get water upstream away from washing and laundry areas.

WET AND DRY GARBAGE AREAS

Garbage should be bagged and removed from the bivouac site. There should be separate areas for wet and dry garbage and these areas should be marked clearly. Grey water should be disposed of in this area as well.



At this point, the instructor should identify any other areas that may be used during the exercise.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

- Q1. What does POL stand for?
- Q2. Where should the fire pit be located?
- Q3. If collecting water from a fast moving stream, where should it be collected?

ANTICIPATED ANSWERS

- A1. Petroleum, oils and lubricants.
- A2. Fire pits must be at least 100 meters away from the campsite and strictly in open areas.
- A3. Upstream away from the washing and laundry areas.

Teaching Point 4

Discuss Safety Measures With Regards to Animals

Time: 15 min

Method: Interactive Lecture

POTENTIAL ANIMALS

There is potential to run into many different animals when in the wilderness. Some of these animals could include:

- bears;

- cougars;
- rattlesnakes;
- moose;
- bison;
- elk; and
- wolves.

With each of these animals, it is important to be aware of preventative measures to avoid them. One should also be aware of actions to take if an encounter occurs.

BEARS

Preventative measures to avoid an encounter with a bear include:

- looking for signs that a bear may be close. Signs include tracks and scat in the area;
- have the kitchen separate from the training site. Bears are attracted to food so having the kitchen separate will deter the bear from entering the training site; and
- making noise to deter the bear from coming in the general area.

Defence measures to take in an encounter with a bear include:

- using pepper spray;
- using a shotgun;
- grouping everyone together to expand presence; and
- playing dead versus fighting fiercely.

COUGARS

Preventative measures to avoid an encounter with a cougar include:

- hiking in groups; and
- making noise to deter the cougar from coming in the general area.

Defence measures to take in an encounter with a cougar include:

- not running;
- grouping together to expand presence;
- speaking loudly;
- providing an escape route for the animal;
- facing the cat and maintaining eye contact;
- fighting back if attacked; and
- if attacked from behind, throwing the cat overhead and forward.

RATTLESNAKES

Preventative measures to avoid an encounter with a rattlesnake include:

- watching where steps are taken;
- looking closely before parting bushes;
- using a stick, not hands, when turning over stones or rocks;
- wearing stout boots; and
- checking bedding and clothes packs before using.

Defence measures to take in an encounter with a rattlesnake include:

- do not tease or pick up;
- do not make sudden movements, back off slowly and remain calm; and
- if bitten, back away immediately and immobilize the bitten area, below the heart if possible; and
- do not tie a tourniquet or attempt to suck out the venom. Report to the nearest hospital as soon as possible.

WOLVES

Preventative measures to avoid an encounter with a wolf include:

- cooking and washing dishes away from campsite;
- hanging food and garbage away from sleeping area; and
- keeping pets close at all times.

Defence measures to take in an encounter with a wolf include:

- looking larger, raising and waving arms;
- making noise;
- throwing objects, like sticks, rocks, pots and pans;
- backing away slowly, do not turn away from the animal especially if your head is lowered; and
- keeping direct eye contact.

MOOSE, ELK AND BISON

Moose, elk and bison are only likely to charge when threatened or crowded. To prevent an attack, distance should be kept from the animal.

ACTIVITY

Time: 10 min

OBJECTIVE

The objective of this activity is for the cadets to discuss the preventative and defence procedures for the animals presented in this teaching point.

RESOURCES

- Flipchart paper.
- Flipchart markers.

ACTIVITY LAYOUT

- Divide the group into five teams.
- Give each team a piece of flipchart paper and a marker.
- Designate each group as an animal discussed in the teaching point.
- Have each group discuss and write the preventative and defence measures for their animal.
- After five minutes, have each group present their animals.

SAFETY

N/A.

INSTRUCTOR GUIDELINES

During the activity, supervise and ensure all cadets are participating in the activity. Praise and correct the cadets as necessary.

END OF LESSON CONFIRMATION

The end of lesson confirmation will consist of the class walking to each of the locations and explaining each of them. A different cadet should be chosen to explain each of the locations.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

There is no formal assessment of this EO.

CLOSING STATEMENT

It is important to know and follow established site policies and procedures to ensure the site is maintained and functioning in a smooth and safe manner. Knowing what to do in case of a fire and knowing where the different areas of the bivouac/training site are located will ensure the weekend exercise runs as smoothly as possible.

INSTRUCTOR NOTES/REMARKS

N/A.

REFERENCES

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ROYAL CANADIAN AIR CADETS

LEVEL ONE

INSTRUCTIONAL GUIDE



SECTION 4

EO M190.04 – DISCUSS SURVIVAL PSYCHOLOGY

Total Time:

60 min

INTRODUCTION

PRE-LESSON INSTRUCTIONS

A complete list of resources needed for the instruction of this EO is located at Chapter 2 of the QSP. Specific uses for said stores are identified throughout the Instructional Guide, within the teaching point for which they are required.

Prior to instructing this lesson the instructor shall:

- review the lesson content, and become familiar with the material;
- prepare the case study material for the activity in TP3; and
- prepare the role-play material for the activity in TP4.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

The interactive lecture method was chosen as it allows the instructor to make a semi-formal presentation of the material where the cadets can participate by asking or responding to questions and commenting on the material. For this lesson, this method is most effective as it matches well the taxonomic level of the material and is age-appropriate by virtue of its participatory nature.

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to identify:

- the role of fear in a survival situation;
- the actions to be taken when lost, to include the STOP acronym;
- the survival pattern and how to employ it; and
- the seven enemies of survival and how to combat them.

IMPORTANCE

One of the most important requirements for someone in a survival situation is the ability to accept the reality of the situation and react appropriately. Knowing how to react in a survival situation will give an individual confidence to survive. The cadets should know what they would experience physically and emotionally if they were lost and in a survival situation. Knowing the procedure when lost and how to deal with fear will promote survival in the situation.

Teaching Point 1

Explain the Role of Fear in a Survival Situation

Time: 5 min

Method: Activity/Interactive Lecture



The following activity is designed to get the cadets thinking about fear. Ensure the following points that produce fear are discussed during the activity: death, being alone, animals/bugs, darkness, weakness, failure, discomfort, the unknown, and unidentified sounds.

ACTIVITY

Time: 5 min

OBJECTIVE

The objective of this activity is to have cadets think about things they could be afraid of in a survival situation.

RESOURCES

N/A.

ACTIVITY LAYOUT

1. As a whole group, brainstorm things cadets may be afraid of in a survival situation.
2. Discuss how equipment, knowledge, and task focus can help reduce fear.

SAFETY

N/A.

INSTRUCTOR GUIDELINES

Ensure all cadets participate in the discussion.

REACTIONS TO FEAR

Fear is a normal reaction when in a survival situation. Fear can aid or hinder individuals depending on their reaction to it. It can lead to hopelessness and decreased self-confidence as well as reducing the will to survive. Fear, however, can release adrenaline, giving greater strength and stamina, reducing the sensation of pain, giving the ability to think clearly and helping one to act purposefully. Accepting fear as a natural reaction to a threatening situation will lead to productive behaviour. Because of this, fear can greatly increase chances for survival.

DEALING WITH FEAR

The factors most commonly reported to help decrease or control fear are:

- having confidence in a leader, if in a group, or in one's self, if alone;
- having confidence in one's equipment; and
- concentrating on the job to be done.

Teaching Point 2

Explain the Actions to Take When Lost

Time: 10 min

Method: Activity/Interactive Lecture

THE "STOP" ACRONYM

Taking immediate action when lost in the wilderness is critical to dealing with fear. In such a situation, the STOP acronym should be employed.

STOP

When one becomes lost, stopping will prevent the person from possibly moving further away from the area a search crew may cover. It is also important to stop so one can think effectively. By stopping to think, one may avoid making errors due to hasty decisions.

THINK

It is critical to think about what actions should be taken once a person realizes they are lost. One should think of the danger and consequences of either staying put or moving on. One should think about the possible dangers that could occur. Analyzing the weather, terrain and available resources should also be taken into account when deciding on the actions to be taken.

OBSERVE

Conduct a self-analysis to identify possible symptoms of physical ailments such as fatigue, increased heart rate, or shivering. Also, look for psychological ailments such as extreme stress or fear. Observe surroundings for resources, weather potential, terrain, and possible landmarks that can provide information on one's current location.

PLAN

After thinking of and observing all aspects of the situation, plan a course of action that will best use the available resources.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

- Q1. What are the four main actions to take when lost in the wilderness?
- Q2. Why is it important to stop if you are lost?
- Q3. During the thinking portion of STOP, what are some important things to keep in mind?

ANTICIPATED ANSWERS

- A1. Stop, think, observe, plan.
- A2. So one can think effectively as well as avoid making errors due to otherwise hasty decisions.

- A3. To identify immediate and future dangers as well as weighing the pros and cons of staying put versus continuing on.

Teaching Point 3**Explain the Survival Pattern and How to Employ it in a Survival Situation**

Time: 15 min

Method: Interactive Lecture/Activity

GENERAL

The survival pattern is a procedure used in a survival situation. It is a way of prioritizing tasks.



The pattern is presented in a particular sequence during this lesson; however, the pattern can vary depending on the situation and changes in priority. For example, if you become lost while hiking with a group, the first procedure in the pattern should be to signal (blow your whistle) because there are people nearby.

FIRST AID

The most important thing to address in a survival situation is any injury that may have been sustained. Treating injuries can prevent conditions from worsening, and reduce pain. Treating injuries allows for more involvement in survival activities.

FIRE

Fire serves many purposes in a survival situation. It can provide warmth, boost morale, and provide a sense of security. It is a method for creating signals and can help purify water and cook food.

SHELTER

Shelter allows a person to be warm and dry by providing protection from the elements. Even if the current weather conditions are favourable, it is not always possible to know when and how the weather conditions may change. Therefore, building a shelter early is very important. It also provides the psychological comfort of having a home base.

SIGNALS

Signals should be constructed to attract search teams. Signals can take many different forms. Signal fires with heavy amounts of dark smoke are visible from a long distance away during the day or night. Other ground to air signals should be large and stand out from the surroundings, or be placed in nearby open areas. A mirror or other reflecting object is an excellent tool for signalling.

FOOD AND WATER

Survival without water will only last a few days. Lack of water can lead to mild dehydration, which can reduce the ability to concentrate. This in turn can be dangerous, as clear thinking is essential in a survival situation. Water from any ground source should be purified before drinking.

A person can live for weeks without food. Excessive hunger can cause confusion and lack of judgement. Prolonged starvation will result in loss of energy, loss of mental clarity, increased susceptibility to disease, difficulty maintaining body temperature, and eventually death. A balanced and varied diet can improve morale in a survival situation.

ACTIVITY

Time: 10 min

OBJECTIVE

The objective of this activity is to have cadets think about how to apply STOP and the survival pattern in a provided scenario.

RESOURCES

One copy of a survival scenario per group, found in Annex A (laminated, if possible).

ACTIVITY LAYOUT

1. The instructor will divide the cadets into two groups.
2. The instructor will give each group a survival scenario.
3. Cadets will be given five minutes to read the scenario and answer the questions provided.
4. Each group will share their scenario.

SAFETY

N/A.

INSTRUCTOR GUIDELINES

- Ensure all cadets participate in the scenario discussion.
- Provide coaching as necessary.

Teaching Point 4

Explain the Seven Enemies of Survival and How to Combat Them

Time: 15 min

Method: Interactive Lecture/Activity

GENERAL

Pain, cold, thirst, hunger, fatigue, boredom, and loneliness are enemies of survival. In a survival situation, these feelings are more severe and more dangerous than in normal situations. Having knowledge of these feelings and their effects can assist in overcoming and controlling them.

PAIN

Pain is nature's way of identifying problems. Pain can however, subside if one is preoccupied. Pain may go unnoticed if one's mind is occupied with plans of survival. Once a person gives into pain, it will weaken the drive to survive. A special effort should be made to keep one's hopes up and keep working.

COLD

Cold lowers the ability to think and will to complete necessary tasks for survival. Focusing on being cold can interfere with the goal of survival. Cold can numb both the mind and body. It can also lead to serious medical problems. Find ways to get and stay warm, like building a fire, getting dry, layering clothes, and keeping busy.

THIRST

Water is vital for survival. Dehydration can lead to serious medical problems, and can eventually be fatal. Even when thirst is not extreme, it can dull the mind. Drink regularly, and try to find sources of water.

HUNGER

Hunger is dangerous because it can lessen the ability for rational thought. Both thirst and hunger increase a person's susceptibility to the weakening effects of cold, pain and fear. Prolonged hunger can lead to serious medical problems and can eventually be fatal. Manage food supplies, set snares, fish, and collect edible plants.

FATIGUE

Even a moderate amount of fatigue can reduce mental ability. Fatigue can make people careless as it becomes increasingly easy to adopt the feeling of just not caring. This is one of the biggest dangers in survival. While fatigue can be caused by overexertion, it may also be caused by hopelessness, losing sight of goals, dissatisfaction, frustration or boredom. Fatigue may represent an escape from a situation that has become too difficult. Recognizing the dangers of a situation can provide the strength to go on. Watch exertion levels, set goals, and stay busy.

BOREDOM AND LONELINESS

Boredom and loneliness represent the final two enemies of survival. They are perhaps two of the toughest enemies of survival, mainly because they are unexpected. When nothing happens, when something is expected and does not happen, or when one must stay still, quiet, and alone, these feelings develop. They can cause discouragement and a lack of will to go on. Invent games, stay active, and create projects.

ACTIVITY

Time: 5 min

OBJECTIVE

The objective of this activity is to have cadets act out the seven enemies of survival.

RESOURCES

- Slips of paper with one of the seven enemies of survival on each.
- Container to draw the slips from (e.g. bag, hat, etc.).

ACTIVITY LAYOUT

1. Randomly select a cadet to draw the first slip.
2. The cadet will silently act out the enemy of survival shown on their slip.
3. The rest of the cadets will guess which enemy is being acted out.
4. The instructor will select another cadet, until all the enemies have been portrayed.

SAFETY

As the activity is being conducted, ensure the cadets are constantly aware of their surroundings so they do not trip, fall, etc.

INSTRUCTOR GUIDELINES

Ensure all cadets participate in the acting and/or the guessing.

END OF LESSON CONFIRMATION

QUESTIONS

- Q1. What factors cause fear?
- Q2. What factors reduce fear?
- Q3. What does STOP stand for?
- Q4. What elements make up the survival pattern?
- Q5. What are the seven enemies of survival?

ANTICIPATED ANSWERS

- A1. Hopelessness and helplessness.
- A2. Confidence in your equipment, yourself (or your leader), and focusing on the tasks at hand.
- A3. Stop, Think, Observe, Plan.
- A4. First aid, shelter, fire, water, food.
- A5. Pain, cold, thirst, hunger, fatigue, boredom and loneliness.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

There is no formal assessment of this EO.

CLOSING STATEMENT

One of the most important requirements for someone in a survival situation is the ability to accept the reality of the situation and react appropriately. If cadets are able to react calmly to a survival situation and develop a sensible plan, they are more likely to experience success.

INSTRUCTOR NOTES/REMARKS

N/A.

REFERENCES

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ROYAL CANADIAN AIR CADETS

LEVEL ONE

INSTRUCTIONAL GUIDE



SECTION 5

EO M190.05 – IDENTIFY TYPES OF SHELTERS

Total Time:

30 min

INTRODUCTION

PRE-LESSON INSTRUCTIONS

A complete list of resources needed for the instruction of this EO is located at Chapter 2 of the QSP. Specific uses for said stores are identified throughout the Instructional Guide, within the teaching point for which they are required.

Prior to instructing this lesson the instructor shall:

- review the lesson content, and become familiar with the material;
- select two sites, as described in the activity section of TP1;
- survey the survival site to see if there are fallen trees or caves present to use as visual aids during the lesson;
- create an A-frame shelter and a lean-to shelter for demonstration purposes during the class;
- if the materials are available, erect an arctic bell tent, modular tent section and/or commercial tent for demonstration purposes during the class.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

The interactive lecture method was chosen as it allows the instructor to make a semi-formal presentation of the material where the cadets can participate by asking or responding to questions and commenting on the material. For this lesson, this method is most effective as it matches well the taxonomic level of the material and is age-appropriate by virtue of its participatory nature.

The small group activity was selected to allow for maximum participation in the learning process. It is an interactive way to illustrate and substantiate the lesson material in a concrete manner.

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to:

- describe factors in site selection;

- identify types of natural shelters;
- identify types of improvised shelters; and
- identify types of tentage/commercial shelters.

IMPORTANCE

In a survival situation, it is very important to be able to construct an effective shelter. A shelter will protect a person from weather, animals and insects. Shelters can also provide warmth, shade, and comfort. Furthermore, as previously learned, being able to identify various types of shelters is an important component of the survival pattern.

Teaching Point 1

Explain the Importance of Site Selection

Time: 10 min

Method: Interactive Lecture/Activity



Before presenting the information provided below, ask the cadets what they feel is important when selecting a site for a shelter. Do not confirm or correct their responses at this time. It is simply a lead off question to get them thinking.

LAND CONSIDERATIONS

Site selection should begin, if possible, before dark. The shelter should be built near a source of water, building materials (trees, boughs) and fuel. Specific land considerations include:

- the area must be large enough for the type of shelter planned;
- the area should not be at the bottom of a hill because of possible water runoff;
- the area should be relatively flat, but slightly sloped to allow drainage; and
- dry river gullies should be avoided, because of possible water collection in the gully.

WATER CONSIDERATIONS

Water plays an important role in site selection. Specific water considerations include avoid building too close to:

- water, to avoid insects; and
- the drinking water source, to prevent contamination.

ANIMAL AND INSECT CONSIDERATIONS

Animals and insects can also cause problems to your site. Specific animal and insect considerations are:

- avoid setting up a shelter where there are animal trails or standing water;
- fast flowing streams will have fewer insects than still water; and
- avoid areas infested with ants or bees.

OTHER CONSIDERATIONS

Other considerations to keep in mind when selecting a site include:

- there should be an open area nearby to construct signals;

- the entrance of the shelter should face the sun to add warmth and increase morale;
- avoid collecting thick wood for creating fires because it is harder to dry;
- try to find a natural windbreak or a place that is away from strong wind currents;
- avoid swampy terrain; and
- if a fire is to be built, it should be located at the opening of the shelter, and it should be done at a distance.

ACTIVITY

Time: 5 min

OBJECTIVE

The objective of this activity is to allow cadets to identify a good site for shelter construction.

RESOURCES

N/A.

ACTIVITY LAYOUT

- Show the cadets two sites; one will be a good site and the other a poor site.
- Ask the cadets to choose the best site and to provide information as to why they made that choice.
- After the cadets have properly identified the good site, have them identify faults for shelter construction in the poor site.

SAFETY

As the activity is being conducted, ensure the cadets are constantly aware of their surroundings to avoid injury.

INSTRUCTOR GUIDELINES

- Before teaching this class, the instructor is to have selected two sites to show the cadets in this activity.
- The instructor must ensure that one site is a good site for constructing a shelter (e.g. follows the important factors listed above).
- The instructor must also ensure that the other site selection has a number of areas that can easily be identified as concerns by the cadets.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

- Q1. Why should the site not be located at the bottom of a hill?
- Q2. Why should the site not be built too close to the drinking water source?
- Q3. Why should there be an open area near the shelter when selecting the site?

ANTICIPATED ANSWERS

- A1. To avoid possible water runoff.

A2. To avoid contamination of the drinking water source.

A3. To maintain an area to construct signals.

Teaching Point 2

Describe Natural Shelters

Time: 5 min

Method: Interactive Lecture



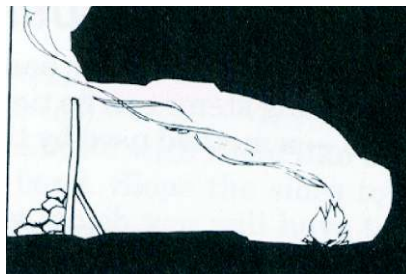
Before conducting the lesson, the instructor should find examples of each type of natural shelter on the training site. Also, if possible, conduct this teaching point by the shelters themselves. The instructor should have pictures of the shelters to show the class, in case one or both of the natural shelters cannot be found in the area.

NATURAL SHELTERS

Natural shelters are effective to use in situations where you have limited resources. Different types of natural shelters can be used for short-term and/or long-term shelters.

CAVES

Caves may serve as long-term shelters and do not take energy to build. They can also be great waterproof shelters. The entrance should be sealed off with items such as rocks, logs, or wattle (boughs and broken branches). When building a fire, ensure to place it at the back of the cave so smoke will go out the opening. If the fire is placed by the opening, the smoke will blow back into the cave.



The SAS Survival Handbook, John Wiseman, 1999

Figure 15-5-1 Cave Shelter

FALLEN TREE

A fallen tree can make a great temporary shelter. When using a fallen tree as a shelter, ensure that the tree is stable and will not fall further. Also, be aware of other falling trees in the area. Coniferous trees with pine branches are best because of their dense branch structure. The branches can be woven for protection.



The SAS Survival Handbook, John Wiseman, 1999

Figure 15-5-2 Fallen Tree Shelter

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

- Q1. Name two types of natural shelters.
- Q2. When lighting a fire inside a cave, what should be kept in mind?

ANTICIPATED ANSWERS

- A1. Cave and fallen trees.
- A2. The fire should be lit towards the back of the cave so that smoke will go out the opening.

Teaching Point 3

Describe Improvised Shelters

Time: 5 min

Method: Interactive Lecture



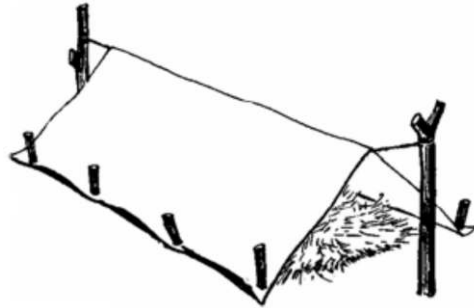
Prior to instructing the lesson, the instructor must ensure there is an A-frame shelter and a lean-to shelter on site to use as visual aids to the class. Directions as to how to properly set up the shelters listed below are provided in Annex C.

IMPROVISED SHELTERS

Improvised shelters are used in situations where immediate protection from the element is required. They are shelters that can be constructed quickly from various materials. The A-frame and lean-to are two types of improvised shelters that are very effective in protecting against the elements. A type of A-frame shelter is the hootchie style shelter.

A-FRAME SHELTER

An A-frame shelter is a simple shelter that can be constructed with a ground sheet or a waterproof poncho. The ground sheet or poncho can be tied to two wood stakes with twine or roots found on the site. The construction of this shelter will be further detailed in an upcoming lesson.

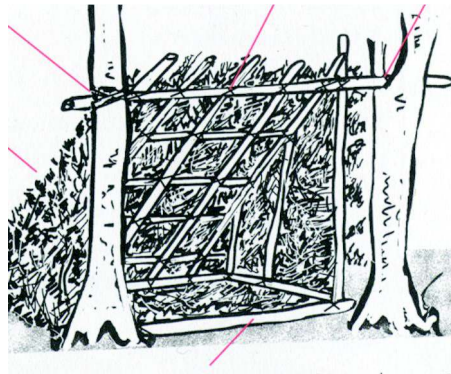


The SAS Survival Handbook, John Wiseman, 1999

Figure 15-5-3 A-frame Shelter

LEAN-TO SHELTER

A lean-to shelter is constructed by using a horizontal crosspiece between two trees, with a panel of boughs or saplings used as a roof.



Camping and Survival Wilderness, Paul Tawrell, 2002

Figure 15-5-4 Lean-to Shelter

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

- Q1. When are improvised shelters important to use?
- Q2. What materials are needed to construct an A-frame shelter?
- Q3. What are the main components of a lean-to shelter?

ANTICIPATED ANSWERS

- A1. When permanent shelters are not available. In situations where immediate protection from the elements are required.
- A2. A ground sheet/waterproof poncho and twine/roots.
- A3. A lean-to shelter is composed of a horizontal crosspiece between two trees, with a panel of boughs or saplings used as a roof.

Teaching Point 4**Describe Tentage**

Time: 5 min

Method: Interactive Lecture

TENTAGE

Tentage is a permanent type of shelter that is useful for coping with the elements.



The instructor is encouraged to emphasize certain types of tentage, based on what types of tents are available to the squadron during this exercise. When setting up the types of tentage mentioned below to use as training aids, the instructor is encouraged to refer to Annex C for proper directions.

ARCTIC TENT

An arctic tent is a tent that can provide adequate shelter for up to 10 people. It is composed of a center pole, which goes through the top of the tent. The tent is then pegged down on all corners and tightened to provide optimal space inside.

MODULAR TENT

Modular tentage is often used as a sleeping or classroom setting for a large number of people. It is also effective in providing shade during hot days. It is erected in sections by using a combination of metal frames and canvas coverings.

COMMERCIAL TENTS

Commercial tents are a third type of tentage that can be used for sleeping quarters. Commercial tents vary in shape and size and are constructed to accommodate anywhere between 1 and 10 people.

CONFIRMATION OF TEACHING POINT 4

QUESTIONS

- Q1. For how many people can an arctic shelter provide shelter?
- Q2. What are the uses of modular tents?

ANTICIPATED ANSWERS

- A1. It is composed of a center pole, which is erected through a hole in the top of the tent. The tent is then pegged down on all corners and tightened to provide optimal space inside.
- A2. Modular tentage can be used as sleeping quarters, a classroom setting, and can also provide shade during hot days.

END OF LESSON CONFIRMATION

All cadets will be required to assist in the construction of various shelters throughout the weekend. Since this class is a lead up to the construction of an A-frame style shelter, no formal end of lesson confirmation activity will be conducted. However, the instructor should pose questions to the group to confirm that the information presented in this EO was understood.

QUESTIONS

- Q1. What are the various types of factors that need to be remembered when selecting a site?
- Q2. When are natural shelters effective to use?
- Q3. What are two types of improvised shelters?
- Q4. What are three types of tentage?

ANTICIPATED ANSWERS

- A1. Land considerations, water considerations, animal and insect considerations and other considerations.
- A2. In a situation where limited resources are available.
- A3. A-frame shelter and lean-to shelter.
- A4. Arctic tents, modular tents, and commercial tents.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

There is no formal assessment of this EO. Instructors will confirm cadets' comprehension of the material while constructing a hootchie style shelter in EO M190.06 (Section 6).

CLOSING STATEMENT

Constructing shelter is a key component of a successful survival pattern. In such a situation, protection against the elements and against wildlife or insects is extremely important. Knowing how to properly select a site, as well as how to construct a shelter effectively will assist someone significantly in such a scenario.

INSTRUCTOR NOTES/REMARKS

N/A.

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ROYAL CANADIAN AIR CADETS

LEVEL ONE

INSTRUCTIONAL GUIDE



SECTION 6

EO M190.06 – CONSTRUCT A HOOTCHIE STYLE SHELTER

Total Time:	90 min
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INTRODUCTION

PRE-LESSON INSTRUCTIONS

A complete list of resources needed for the instruction of this EO is located at Chapter 2 of the QSP. Specific uses for said stores are identified throughout the Instructional Guide, within the teaching point for which they are required.

Prior to instructing this lesson the instructor is required to:

- review the lesson content, and become familiar with the material;
- prepare a suitable instructional area;
- prepare all materials required for the construction of a hootchie-style shelter for each group of cadets; and
- prepare an example hootchie style shelter.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

The demonstration and performance method was chosen due to the practical nature of the subject matter. These methods provide the instructor the opportunity to introduce the subject matter, demonstrate procedures and observe the cadets practicing and performing the skill. The demonstration and performance methods must always be used when the taxonomic level of the material requires a performance of a skill. These methods are highly developmentally appropriate for young cadets.

REVIEW

The pertinent review for this lesson will include site selection factors EO M190.04 (Section 4), including:

- land considerations;
- water considerations;
- animal and insect considerations; and
- other considerations.

OBJECTIVES

By the end of this lesson the cadet shall be expected to construct a hootchie style shelter.

IMPORTANCE

In a survival situation, it is very important to be able to construct an effective shelter. A shelter will protect a person from weather, animals and insects. Shelters can also provide warmth, shade and comfort. The hootchie style shelter provides an effective shelter for squadron aircrew survival exercises.

Teaching Point 1

Explain and Demonstrate the Correct Procedure for Constructing a Hootchie Style Shelter

Time: 25 min

Method: Demonstration



The following teaching point should be delivered as the instructor is constructing a hootchie style shelter. A demonstration should occur for each step. A shelter may also be built prior to the lesson for illustration purposes.

OBTAIN THE APPROPRIATE SUPPLIES

In order to effectively build a hootchie style shelter, the following supplies will be needed:

- Two military style ground sheets that properly zip together (these can also be called half shelters or utility sheets).
- A generous length of twine or thin rope.
- Several pegs or small twigs.
- Spade or small shovel.
- Knife or scissors.



Cadets Canada Photo, 2006

Figure 15-6-1 Two Military Style Ground Sheets



Cadets Canada Photo, 2006

Figure 15-6-2 Appropriate Supplies

SELECTING A SITE

Principles of selecting a site reviewed in the introduction portion of the lesson should be applied when selecting a site to construct the hootchie. In addition to these principles, the site shall include:

- Two trees spread approximately 10 feet apart (or the length of the ground sheets allowing for approximately two feet for the entrance).

- Ground that is suitable for pegging.
- Clear of wet leaves and other foliage.

CHECKING MATERIAL

Prior to commencing construction, all materials should be checked for fatigue and wear, especially the two ground sheets. They should not have holes that would allow rain and other objects into the completed shelter. Also ensure on either end of the ground sheets that the two zippers match up and will form a sufficient bond. Grommets on each ground sheet should be in good repair so they can hold pegs effectively.



Cadets Canada Photo, 2006

Figure 15-6-3 Grommet

The twine used should be strong enough to hold the two ground sheets up and allow enough give for the fatigue that will be experienced when cadets get in and out of the shelter.

ZIPPING THE GROUND SHEETS

The two ground sheets should be zipped together to form a sufficient bond. Ensure that the two zippers are the same length and are not worn out because the bond may be compromised.



Cadets Canada Photo, 2006

Figure 15-6-4 Zipping Ground Sheets



Cadets Canada Photo, 2006

Figure 15-6-5 Two Ground Sheets Zipped Together

TYING THE SHELTER TO TREES

Tie each end of the zipped together ground sheets to the two trees by passing the twine through the grommets located at each end of the zipper. A knot that is reliable and will provide stability shall be used. The shelter should be tied as high as the waist of the tallest occupant.



Cadets Canada Photo, 2006

Figure 15-6-6 Tying Shelter to a Tree

This height will allow enough head room when the shelter is complete. The two ground sheets should be pulled as tight as possible between the two trees. This tightness will prevent rain from collecting and will stop the shelter from sagging after extended use. When tying the shelter, ensure that the flap at the peak of the shelter covers the zipper. Make certain there is enough room on one end for an entrance and exit.



Cadets Canada Photo, 2006

Figure 15-6-7 Shelter Tied to Two Trees

PEGGING

Using an appropriate length of string, pull the string through the grommets that run along the bottom of the ground sheets. Tie the string together to form a loop. Using these loops, tightly pull each corner of the ground sheets out from the centre and peg them using small twigs.



Cadets Canada Photo, 2006

Figure 15-6-8 Pulling Pegs Tight



Cadets Canada Photo, 2006

Figure 15-6-9 Pegged Grommet

Leave the edge of the ground sheet about 5 centimetres above the ground for ventilation.



Cadets Canada Photo, 2006

Figure 15-6-10 Shelter 5 Centimetres Above the Ground

Any objects that will secure each corner of the ground sheets 5 centimetres above the ground will be sufficient to use as pegs. After the corners are pegged, peg the remaining grommets in between the two corners on each side. When each side of the shelter is pegged, it should result in a flush, tight surface with no wrinkles. This tight surface will allow for efficient runoff of rain.



Cadets Canada Photo, 2006

Figure 15-6-11 Flush, Tight Surface

Ensure that the flaps for the doors are tied together prior to pegging. If the doors are not tied, they may not tie together properly when the shelter is tightly pegged.



Cadets Canada Photo, 2006

Figure 15-6-12 Doors Tied Together

Two grommets are located down the centre of each ground sheet. Twine can be used to tie these grommets to surrounding trees or pegged into the ground to create more space in the shelter.

DIGGING TRENCHES

When all of the previous steps have been completed, dig small trenches 10 centimetres away from the sides of the shelter to allow for effective drainage of rainwater. Trenches should be approximately 10 centimetres in width and 5 to 10 centimetres deep. When the shelter is complete, dry grass or hay can be used as bedding.



Cadets Canada Photo, 2006

Figure 15-6-13 Completed Hootchie Style Shelter

ACTIVITY

Time: 60 min

OBJECTIVE

To allow cadets to apply the skills learned in TP1. They will construct a hootchie style shelter.

RESOURCES

The following resources will be required for each group of cadets:

- Two ground sheets that properly zip together.
- A generous length of twine or thin rope.
- Several pegs or small twigs.
- Spade or small shovel.
- Knife or scissors.
- Flagging tape.

ACTIVITY LAYOUT

- Divide cadets into groups of two. Each group member should be of the same gender.
- Direct cadets to find a suitable site to build a hootchie style shelter based on the principles learned in TP1.
- Issue required resources to each group of cadets.
- Direct each group to construct a hootchie style shelter in their site based on the steps learned in TP1.

SAFETY

Remind cadets to be careful when using knives or any device used to cut the twine. Twine used to hold the shelter up should be marked with flagging tape so it may be easily seen.

INSTRUCTOR GUIDELINES

- Ensure effective supervision during this activity. If available, other qualified instructors can be used to assist cadets in the construction of the shelters.
- Check that the site selected is appropriate before issuing the supplies.
- Each shelter should be checked when complete for deficiencies that will result in the shelter not being effective (allow in rainwater, collapse, etc.).
- This activity is best completed during an survival exercise when cadets are required to build shelters to sleep in.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

- Q1. What supplies are required to construct a hootchie style shelter?
- Q2. How high should the two ground sheets be tied to the trees?

Q3. How high should the edge of the ground sheets be pegged above the ground?

ANTICIPATED ANSWERS

- A1. Two ground sheets that properly zip together, a generous length of twine/thin rope, pegs or small twigs, a spade or small shovel, and a knife or scissors.
- A2. As high as the waist of the tallest shelter occupant.
- A3. Approximately 5 centimetres.

END OF LESSON CONFIRMATION

Each shelter shall be checked by the instructor to ensure that all of the steps have been followed and that the shelter is sound.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

There is no formal assessment of this lesson.

CLOSING STATEMENT

The cadets have had the opportunity to construct a hootchie style shelter. In a survival situation, it is very important to be able to construct an effective shelter. A shelter will protect a person from the weather, animals and insects. Shelters can also provide warmth, shade and comfort. The hootchie style shelter provides an effective shelter for squadron aircrew survival exercises.

INSTRUCTOR NOTES/REMARKS

N/A.

REFERENCES

- C3-002 (ISBN 0-00-653140-7) Wiseman, J. (1986). *The SAS Survival Handbook*. London: Harper Collins Publishers.
- C3-003 (ISBN 1-896713-00-9) Tawell, P. (1996). *Camping and Wilderness Survival: The Ultimate Outdoors Book*. Green Valley, ON: Fifteenth Printing.

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ROYAL CANADIAN AIR CADETS

LEVEL ONE

INSTRUCTIONAL GUIDE



SECTION 7

EO M190.07 – LIGHT, MAINTAIN AND EXTINGUISH A FIRE

Total Time:

90 min

INTRODUCTION

PRE-LESSON INSTRUCTIONS

A complete list of resources needed for the instruction of this EO is located at Chapter 2 of the QSP. Specific uses for said stores are identified throughout the Instructional Guide, within the teaching point for which they are required.

Prior to instructing this lesson the instructor shall:

- review the lesson content, and become familiar with the material;
- prepare an example fire ready to be lit; and
- prepare examples of types of fires.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

The interactive lecture method was chosen as it allows the instructor to make a semi-formal presentation of the material where the cadets can participate by asking or responding to questions and commenting on the material. For this lesson, this method is most effective as it matches well the taxonomic level of the material and is age-appropriate by virtue of its participatory nature.

The demonstration and performance methods were chosen due to the practical nature of the subject matter. These methods provide the instructor the opportunity to introduce the subject matter, demonstrate procedures and observe the cadets practicing and performing the skill. The demonstration and performance methods must always be used when the taxonomic level of the material requires a performance of a skill. These methods are highly developmentally appropriate for young cadets.

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to apply fire safety principles as well as light, maintain and extinguish a fire.

IMPORTANCE

Safety is a key concern when dealing with fire. Cadets must understand and apply principles of fire safety before they begin the steps in lighting. Fire is also the second step in the survival pattern and may be the difference between living and dying while in a survival situation.

Teaching Point 1

Identify Principles of Fire Safety

Time: 5 min

Method: Interactive Lecture

OBEDY FOREST FIRE DANGER RATING SYSTEM

In cooperation with various fire management agencies, the Canadian Forest Service manages the Forest Fire Danger Rating System. The system uses weather, fuel and topographic data to rate the potential for forest fire ignition and to predict forest fire behaviour. The Forest Fire Danger Rating System must be at a suitable level prior to starting a fire. Never light a fire when the rating is high, very high or extreme. The slightest spark could cause a forest fire.

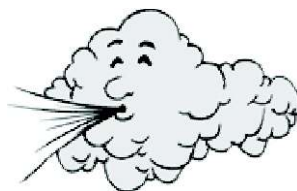


Tripod Photo Website, <http://www.members.tripod.com>

Figure 15-7-1 Forest Fire Danger Rating System

AVOID STRONG WINDS

If wind speed is high, the fire will be at risk of spreading if not properly managed. Strong winds can carry sparks away from the fire pit and start an unwanted fire. The fire should be placed in a location where it is effectively sheltered from strong winds.



Impression Photo Website, <http://www.impression5.org>

Figure 15-7-2 Strong Wind

SIZE OF FIRE

The fire shall be a suitable size so control can be maintained at all times. Never allow a fire to get larger than four feet wide and three feet high. Fires that are too large can burn out of control, and cause forest fires or personal injury. If a fire becomes too large, stop adding fuel and let the fire cool down.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

- Q1. What is the Forest Fire Danger Rating System?
- Q2. What might happen if a fire is placed in an area with strong winds?
- Q3. Why must one maintain a suitable size fire?

ANTICIPATED ANSWERS

- A1. The Forest Fire Danger Rating System uses weather, fuel and topographic data to rate the potential for forest fire ignition and to predict forest fire behaviour.
- A2. It is at risk of spreading.
- A3. Fires that are too large can burn out of control, and cause forest fires or personal injury.

Teaching Point 2

Explain, Demonstrate and Have Cadets Determine the Appropriate Site for a Fire

Time: 15 min

Method: Demonstration and Performance

SITE LOCATION

- Avoid windy areas because the fire can flare up and burn out of control. A reflector or a windbreak can be built out of green wood or rocks. The advantage of a reflector is that it concentrates the heat in the desired direction. Areas near water tend to have higher winds.
- Clear the ground of all inflammable material before starting the fire. The material should be raked towards the centre of the site where the dead leaves, pine needles and other debris can be burned.
- Do not build the fire against an old log or tree trunk. The log may smoulder and catch fire in a breeze.
- Do not build the fire below the boughs of a tree. The boughs will dry from the heat and may catch fire.
- The fire should be a suitable distance from any shelter so the smoke will not get into it when the wind changes direction.

SITE LAYOUT

- Surround the fire with dry rocks. They will help contain the fire so it may be properly maintained. Do not use rocks that have been submerged in water. Water expands as it is heated and may cause the rocks to explode. If rocks are unavailable, dig a pit approximately one half foot deep and four feet wide. This pit will help prevent unwanted spreading of the fire.
- Appropriate firefighting equipment shall be placed in close proximity to the fire.



The instructor should deliver this teaching point around a properly constructed fire site. The constructed fire site should be used as a training aid when each principle is presented.

ACTIVITY

Time: 11 min

OBJECTIVE

To allow the cadet to practically apply the principles learned by constructing an effective fire site.

RESOURCES

- Suitable location for a fire site.
- Rake.
- Shovel.
- Rocks.
- Fire extinguisher.
- Gerry can.
- Water pack.
- Water.
- Bucket of sand.
- Wire broom.
- Axe.
- Fire bell.

ACTIVITY LAYOUT

- This activity will be the first of two activities conducted throughout the lesson that will result in the cadet building, lighting and extinguishing a fire.
- Divide cadets into small groups (size will vary depending on how many cadets are undergoing training: maximum number of cadets in a group should be six).
- Direct cadets to find an appropriate location for a fire by applying the principles they learned in TP2.
- Once an appropriate location has been chosen, provide cadets with a rake and shovel. Direct them to clear the ground and dig a pit that will accommodate their fire.
- Direct cadets to gather dry rocks and surround their fire pit.

SAFETY

Ensure cadets are mindful of the equipment being used.

INSTRUCTOR GUIDELINES

- Supervise groups effectively throughout the activity.
- Ensure each group chooses an appropriate location prior to allowing cadets to proceed with digging the pit.
- Ensure each group effectively rakes the fire site and digs a pit no larger than one half foot deep and four feet wide.
- Ensure rocks are of a suitable size and have not been submerged in water.
- Ensure there is sufficient fire fighting equipment to conduct this activity.



After the cadets have completed the activity they should return to the original fire site for the next portion of the lesson.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

- Q1. Why is it unwise to build a fire near an old log or a tree trunk?
- Q2. Why must the rocks that surround the fire not be submerged in water?
- Q3. What equipment should be in close proximity to the fire site?

ANTICIPATED ANSWER

- A1. It may smoulder and catch fire.
- A2. Water expands when heated and the rock may explode.
- A3. Firefighting equipment.

Teaching Point 3

Identify the Required Elements of a Fire

Time: 5 min

Method: Interactive Lecture

ELEMENTS OF A FIRE

The three required elements for a fire include **oxygen, spark/heat and fuel**.




BT Photo Website, <http://www.btinternet.com>

Figure 15-7-3 Fire Triangle

Oxygen is required for a fire to stay lit. A spark is required to initially start the fire. The heat produced by the embers keeps the fire going. Fuel is anything that burns, such as wood.

If any one of the elements is removed, the fire will extinguish. When lighting a fire, always ensure adequate ventilation, enough fuel and a hot enough source to ignite the fuel.

	<p>The instructor shall provide a demonstration that proves oxygen, heat/spark and fuel are all needed to start a fire and keep it lit.</p>
	<p>The instructor will require a candle, a match and a large water glass. Explain that without the match (spark) and the candle (fuel), the fire cannot be lit. The instructor shall light the candle and place the empty water glass over the candle to prevent air (oxygen) from reaching it. The flame will extinguish.</p>

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

- Q1. What are the three required elements of a fire?
- Q2. If one element is removed, what happens to the fire?

ANTICIPATED ANSWERS

- A1. Oxygen, spark/heat and fuel.
- A2. The fire will go out.

Teaching Point 4

Describe Types of Fires

Time: 15 min

Method: Interactive Lecture

WARMTH AND COMFORT FIRES


Warmth and comfort fires can help to conserve body heat and save needed calories. These fires can be helpful in keeping away wild animals and insects. Warmth and comfort fires are the most economical. They consume little fuel and burn slowly.

SIGNAL FIRES

Signal fires should produce heavy black smoke to attract potential rescuers. This black smoke can be generated by the addition of green branches, rubber, plastic or heavy oil to an already well-established fire.

COOKING FIRES

Cooking fires can be set flat on the ground. They can also be constructed in a pit if there is heavy wind or the surrounding ground contains a fire hazard. Cooking fires shall be a moderate size or the food will burn. The hot coals can be used to start a warmth and comfort fire to heat the camping area when cooking is finished.

	<p>Examples of these fires may be built to use as training aids.</p>
---	--

CONFIRMATION OF TEACHING POINT 4

QUESTIONS

- Q1. What are two advantages of a warmth and comfort fire?
- Q2. What are some items that can be added to a fire to produce thick black smoke?
- Q3. Which fire is the most economical?

ANTICIPATED ANSWERS

- A1. They can help conserve body heat, help save needed calories, keep wild animals and insects away, and they are the most economical.
- A2. Green branches, rubber, plastic or heavy oil.
- A3. Warmth and comfort fire.

Teaching Point 5

Explain, Demonstrate and Have Cadets Practice Lighting, Maintaining and Extinguishing Fires.

Time: 45 min

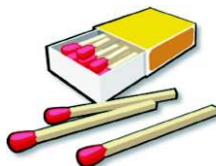
Method: Demonstration and Performance

LIGHTING A FIRE

Tinder. Tinder is any kind of material that a minimum amount of heat will ignite. Good tinder needs only a spark to set it ablaze. Birch bark, dry grass, fine wood shavings, bird down, waxed paper and cotton fluff from clothing all make good tinder. Tinder must be dry. It is a good idea to carry tinder in a waterproof container.

METHODS FOR OBTAINING A SPARK

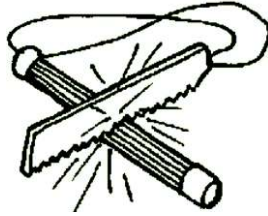
Matches. Matches are the easiest way to start a fire. They produce a flame instantly when struck against a striking pad. The biggest problem with matches is that in wind or wet conditions they may not be useful. They will not ignite if the striking pad becomes worn or wet. The matches should be packed in waterproof containers so that they cannot rub or rattle together and accidentally ignite. Non-safety, strike anywhere matches are the most effective in a survival situation.



Clipart Website, <http://www.hasslefreeclipart.com>

Figure 15-7-4 Matches

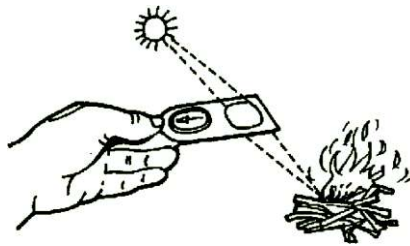
Flint and Steel. Flint and steel is the best method of lighting a fire if matches are unavailable. If the flint is struck vigorously with a piece of steel, it will produce hot sparks that will ignite the fire. The flint should be struck downward so the sparks will hit the centre of the tinder. Even if the flint is wet, it will still produce a spark.



Clipart Website, <http://www.hasslefreeclipart.com>

Figure 15-7-5 Flint and Steel

Magnifying Glass. Magnifying glasses focus strong direct sunlight to produce enough heat to ignite a fire. The light from the sun should be directed onto the tinder. The obvious disadvantage to the magnifying glass is that if the sun is not out, it will not produce a spark.



Clipart Website, <http://www.hasslefreeclipart.com>

Figure 15-7-6 Magnifying Glass

Battery and Steel Wool. Strands of steel wool can be attached to the terminals of a car battery to produce enough spark to start a fire. When the two strands of steel wool are brought close together, a spark will jump between them.



The SAS Survival Handbook, John Wiseman, 1986

Figure 15-7-7 Battery and Steel Wool



The instructor can use a nine-volt battery to demonstrate this method for obtaining a spark.

KINDLING

Kindling is the wood used to raise flames from the tinder so larger less combustible materials can be burned. The best kindling consists of small, dry twigs and small pieces of soft woods. Do not collect kindling straight from the earth because it is usually damp. It should be gathered from standing deadwood.

FUEL

Fuel is anything that will burn in the fire. Dry wood from standing trees should be used to get the fire going. Once the fire is established, greener and damp wood can be used. Hard woods include hickory, beech and oak. These hard woods burn well, give off heat, and last a long time as hot coals. The fire can be maintained for a long period of time using hard woods. Soft woods burn very quickly and give off sparks. They can be used when lighting the fire. These soft woods include cedar, alder, hemlock, spruce, pine, chestnut and willow. After the fire is steadily burning, add fuel that is three to four times the size of the kindling.

VENTILATION

Ventilation allows the needed oxygen to be supplied to the fire. The more oxygen introduced, the brighter the fire. The ideal amount of ventilation will result in a steady burn while only using a moderate amount of fuel. The fire will suffocate if there is too much fuel.

MAINTAINING A FIRE

A fire should never be left unattended. It takes only seconds for a fire to begin burning out of control. Immediately after a fire has been started, it requires a modest amount of wood to build up heat. The fire requires very little wood to keep it burning once a good amount of heat is built-up.

EXTINGUISHING A FIRE

Water is the easiest way to put out a fire. Water should be dumped on the fire until it results in no heat emanating from the centre. Ensure that all of the sparks are out prior to decamping by smothering it completely with wet earth or sand.

ACTIVITY

Time: 30 min

OBJECTIVE

To allow the cadet to practically apply the principles learned in TP5 by constructing, lighting, maintaining and extinguishing a fire.

RESOURCES

- Matches.
- Flint and steel.
- Battery and steel wool.
- Magnifying glass.
- Tinder.
- Kindling.
- Fuel.
- Fire site.
- Rake.
- Shovel.

- Firefighting equipment.
- Water.

ACTIVITY LAYOUT

- This activity will be the last of two activities that will result in the cadet building, lighting and extinguishing a fire.
- Divide cadets into the same groups that were used for building the fire site.
- Direct cadets to build a warmth and comfort style fire in their fire site.
- Once the fire has been built, cadets shall light the fires and effectively extinguish them.

SAFETY

Ensure firefighting equipment is nearby each fire site.

INSTRUCTOR GUIDELINES

- Ensure cadets construct the fire using all of the elements identified during the lesson (tinder, kindling and appropriate fuel).
- Ensure the fire is started with one of the methods explained in the lesson. Start with matches and use other methods if time permits.
- Ensure close supervision during the lighting and extinguishing phases.
- Ensure that all of the fires are properly extinguished prior to the end of the activity.
- Ensure the Forest Fire Danger Rating System is at an appropriate level for starting fires.

CONFIRMATION OF TEACHING POINT 5

QUESTIONS

- Q1. What is fuel?
- Q2. What does kindling do?
- Q3. Name two of the four methods of obtaining a spark mentioned in this lesson.

ANTICIPATED ANSWERS

- A1. Fuel is anything that burns (wood, gasoline, etc.).
- A2. Kindling is the wood used to raise the flames from the tinder so that larger less combustible materials can be burned.
- A3. Matches, flint and steel, magnifying glass, battery and steel wool.

END OF LESSON CONFIRMATION

Each cadet shall demonstrate that they are capable of lighting a fire using one of the methods discussed in the lesson, maintaining the fire and effectively extinguishing the fire. The principles of fire safety shall be noticeably practiced while lighting, maintaining and extinguishing the fire.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

There is no formal assessment of this lesson.

CLOSING STATEMENT

Safety is a key concern when dealing with fire. Cadets must understand and apply principles of fire safety before they begin the steps in lighting. Fire is also the second step in the survival pattern and may be the difference between living and dying while in a survival situation.

INSTRUCTOR NOTES/REMARKS

N/A.

REFERENCES

- C3-002 (ISBN 0-00-653140-7) Wiseman, J. (1986). *The SAS Survival Handbook*. London: Harper Collins Publishers.
- C3-003 (ISBN 1-896713-00-9) Tawell, P. (1996). *Camping and Wilderness Survival: The Ultimate Outdoors Book*. Green Valley, ON: Fifteenth Printing.

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ROYAL CANADIAN AIR CADETS

LEVEL ONE

INSTRUCTIONAL GUIDE



SECTION 8

EO C190.02 – IDENTIFY ENVIRONMENTAL INJURIES

Total Time:

30 min

INTRODUCTION

PRE-LESSON INSTRUCTIONS

A complete list of resources needed for the instruction of this EO is located at Chapter 2 of the QSP. Specific uses for said stored are identified throughout the Instructional Guide, within the teaching point for which they are required.

Prior to instructing this lesson the instructor shall:

- review the lesson content, and become familiar with the material; and
- prepare slips of paper for the end of lesson confirmation.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

The interactive lecture method was chosen as it allows the instructor to make a semi-formal presentation of the material where the cadets can participate by asking or responding to questions and commenting on the material. For this lesson, this method is most effective as it matches well the taxonomic level of the material and is age-appropriate by virtue of its participatory nature.

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be able to identify environmental injuries.

IMPORTANCE

Being able to recognize environmental injuries will give cadets' the confidence to help in an emergency situation that could occur anytime while in a survival situation. Knowing the symptoms and basic treatments for environmental injuries will aid cadets in possibly preventing and detecting an injury earlier.

Teaching Point 1**Explain How to Recognize Hiking Injuries**

Time: 5 min

Method: Interactive Lecture

BLISTERS

Blisters are a sign that boots do not fit properly or are not broken in. Blisters are also a sign that the feet are too tender for the distance being covered in the hike. The first sign of a blister is hot spots. Upon noticing a blister, relieve the pressure on the area by loosening the boots, removing a pair of socks, or even cutting a hole in the socks around the offending area.

SHIN SPLINTS

Shin splints are characterized as pain in the front of the lower leg. Shin splints primarily come from excess toe flexion (bending). Shin splints are usually caused by walking without extending the ankle on each step and not using the toes to press down on the ground. Do not wear clogs of any kind because the ankle needs to stay flexed to keep the clog on the foot.

MUSCLE CRAMPS

Muscle cramps are often associated with dehydration. Muscle cramps commonly occur in people who overwork their muscles to the point of exhaustion. Some possible causes of muscle cramps include:

- lack of water;
- lack of calcium;
- lack of potassium; and
- lack of sodium.

SPRAINS

A sprain occurs when the ligaments of a joint are torn by a sudden twist or wrench. Symptoms of a sprain can include the joint being very painful when moved, and considerable swelling. First aid for a sprain includes wrapping the joint in a heavy bandage and resting the limb in a comfortable elevated position.



Inform the cadets that if they experience any of the above mentioned symptoms they should tell someone immediately and go to the nearest first aid station.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

- Q1. What are blisters a sign of?
- Q2. What is the primary cause of shin splints?
- Q3. What are the common causes of muscle cramps?
- Q4. What first aid should be administered for a sprain?

ANTICIPATED ANSWERS

- Q1. Blisters are a way of telling the body that one's boots do not fit, they are not broken in or one's feet are too tender for the miles they are covering in their hike.
- Q2. Shin splints primarily come from excess toe flexion.
- Q3. Lack of water, lack of calcium, lack of potassium, and lack of sodium.
- Q4. First aid for a sprain includes wrapping the joint in a heavy bandage and resting the limb in a comfortable elevated position.

Teaching Point 2

Explain How to Recognize Frostbite Injuries

Time: 5 min

Method: Interactive Lecture

FROSTBITE

There are several types of frostbite. Each of the types is increasingly worse than the previous. The types of frostbite include:

- **Incipient Frostbite or Frostnip.** This type of frostbite is the initial pain from the cold. It is followed by numbness and after rewarming, a tingling feeling. No permanent damage occurs with this type of frostbite.
- **Superficial Frostbite.** This type of frostbite affects only the skin and tissue that is near the surface. The affected area will be white and frozen to the touch, but the tissue beneath it will be soft and resilient. In worse cases, blisters will form after 24 to 36 hours and the pain of the injury may last several weeks.
- **Deep Frostbite.** This frostbite is more serious and involves deeper tissue, possibly as deep as the bone. Before rewarming, the injured area will be hard. Blisters usually form in three to seven days and will be larger than in superficial frostbite. There will be a significant amount of swelling, which can last several weeks.

CONFIRMATION OF TEACHING POINT 2

QUESTION

Q1. What are the three types of frostbite?

ANTICIPATED ANSWER

A1. Incipient frostbite or frostnip, superficial frostbite and deep frostbite.

Teaching Point 3

Explain How to Recognize the Signs and Symptoms of Hypothermia

Time: 5 min

Method: Interactive Lecture

HYPOTHERMIA

Hypothermia means too little heat. In medical terms, it means a lowering of the body's core temperature, resulting in the breakdown of bodily functions.

Some factors that contribute to hypothermia:

- lack of proper nutrition or hydration;

- inadequate clothing;
- getting wet; and
- exhaustion.

Some hints to prevent hypothermia:

- wearing a sufficient thickness of insulation;
- having protection from the wind;
- keeping dry (inside and out);
- maintaining proper nutrition and hydration; and
- pacing oneself to prevent fatigue.

Signs to watch for in others:

- complaints of feeling cold;
- stumbling;
- falling;
- slurred speech;
- violent shivering;
- poor judgement;
- irrational behaviour; and
- in extreme cases loss of urinary control and fruity acetone breath.

Signs for individuals to watch for in themselves:

- feeling of deep cold;
- shivering;
- stumbling;
- falling; and
- poor coordination.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

- Q1. What are some factors that contribute to hypothermia?
- Q2. What are the signs of hypothermia to watch for in others?
- Q3. What are the signs of hypothermia to watch for in yourself?

ANTICIPATED ANSWERS

- A1. Lack of proper nutrition or hydration, inadequate clothing, getting wet and exhaustion.

A2. Complaints of feeling cold, stumbling, falling, slurred speech, violent shivering, bad judgement, irrational behaviour. People with profound hypothermia may lose urinary control and have fruity acetone breath.

A3. Feeling of deep cold, shivering, stumbling, falling and poor coordination.

Teaching Point 4

Explain How to Recognize Heat Related Injuries

Time: 5 min

Method: Interactive Lecture

HEAT CRAMPS

Heat cramps are usually the first warning of heat exhaustion. They occur in the muscles that are doing the most work such as the arms, legs and abdomen. Heat cramps are usually due to a lack of body salt.

Symptoms of heat cramps include:

- shallow breathing;
- vomiting; and
- dizziness.

Treatment for heat cramps includes:

- moving to shade;
- resting; and
- drinking water with a small amount of salt dissolved in it.

HEAT EXHAUSTION

Heat exhaustion is produced by exposure to high temperature and humidity. It is also produced through the loss of body fluids through excessive sweating. It can occur without direct exposure to the sun.

Symptoms of heat exhaustion include:

- pale face;
- cold and sweating skin;
- weak pulse accompanied by dizziness;
- weakness;
- cramps; and
- deliriousness or unconsciousness.

Treatment for heat exhaustion includes:

- moving to shade;
- resting; and
- drinking water with a small amount of salt dissolved in it.

HEATSTROKE

Heatstroke is the most serious result of overexertion or overexposure to the sun.

Symptoms of heatstroke include:

- hot dry skin;
- flushed face and feverish;
- sweating stops;
- rising temperature;
- fast, strong pulse;
- severe headache;
- vomiting; and
- unconsciousness.

Treatments for heatstroke include:

- laying in the shade with head and shoulders slightly raised;
- removing layers of outer clothing;
- cooling body by wetting clothing with tepid (warm) water and fanning; and
- sprinkling water over the individual (do not fully immerse the individual in water).

SUNBURN

A sunburn with blistering is dangerous, especially with pale and sensitive skins.

Treatment for sunburn includes:

- avoiding further exposure to the sun by keeping in the shade or covering skin with clothes;
- taking painkillers if available; and
- covering all blisters with dressings (do not burst the blisters).

SORE EYES

Sore eyes may occur due to glare or excessive exposure to the sun or dust particles.

Treatment for sore eyes includes:

- resting in the shade;
- covering eyes after washing out the foreign debris;
- bathing eyes in warm water;
- using a mask to cover the eyes; and
- darkening below eyes with charcoal to avoid recurrence.

DEHYDRATION

Dehydration becomes more noticeable as more body fluid is lost. Water makes up 75 percent of the body's weight. Survival is unlikely if more than one fifth of the body's water is lost.

For fluid loss between 1 to 5 percent of body weight, symptoms include:

- thirst;
- vague discomfort;
- lack of appetite;
- flushed skin;
- impatience;
- sleepiness; and
- nausea.

For fluid loss between 6 to 10 percent of body weight, symptoms include:

- dizziness;
- headache;
- laboured breathing;
- no salivation;
- indistinct speech; and
- unable to walk.

For fluid loss between 11 to 20 percent of body weight, symptoms include:

- delirium;
- swollen tongue;
- inability to swallow;
- dim vision;
- numb; and
- shrivelled skin.

In the latter stages of dehydration, there is significant muscular weakness and impaired mental capacity.



Inform the cadets that if they experience any of the symptoms listed in this class to tell someone immediately and go to the nearest first aid station.

CONFIRMATION OF TEACHING POINT 4

QUESTIONS

- Q1. What are the symptoms of heatstroke?
- Q2. Survival is unlikely if how much of the body's water is lost?
- Q3. What is the treatment for heat exhaustion?

ANTICIPATED ANSWERS

- A1. Hot dry skin, flushed face and feverish. Sweating stops, temperature rises, pulse becomes fast and strong, severe headache, often vomiting and unconsciousness may follow.
- A2. One fifth.
- A3. Moving to shade, resting and drinking water with a little salt dissolved in it.

END OF LESSON CONFIRMATION

ACTIVITY

Time: 7 min

OBJECTIVE

The objective of this activity is for the cadets to recognize environmental injuries as they pick slips of paper out of a container.

RESOURCES

- Cut out the slips of paper found in Annex D. Answer key is provided in Annex E.
- Container (e.g. a bag or hat) for cadets to pick slips from.

ACTIVITY LAYOUT

- Place the cut up slips of paper in the container.
- Divide the class into three groups.
- Have group one pick a slip and read out what is on the slip. The group will then briefly discuss the answer.
- After the discussion, the group will present the answer.
- Continue until all the slips of paper have been picked and discussed.

SAFETY

N/A.

INSTRUCTOR GUIDELINES

- During the activity, monitor the cadets' progress and ensure all members of the class are participating.
- Answer any questions the cadets may have and correct any errors.
- Ensure discussion time is kept short.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

There is no formal assessment of the EO.

CLOSING STATEMENT

Environmental injuries can be very serious and life threatening. Understanding the symptoms and basic treatments for these injuries will provide individuals with the knowledge to possibly prevent and detect an injury earlier.

INSTRUCTOR NOTES/REMARKS

N/A.

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ROYAL CANADIAN AIR CADETS

LEVEL ONE

INSTRUCTIONAL GUIDE



SECTION 9

EO C190.03 – TIE KNOTS AND LASHINGS

Total Time:

60 min

INTRODUCTION

PRE-LESSON INSTRUCTIONS

A complete list of resources needed for the instruction of this EO is located at Chapter 2 of the QSP. Specific uses for said stores are identified throughout the Instructional Guide, within the teaching point for which they are required.

Prior to instructing this lesson the instructor is required to:

- review the lesson content and become familiar with the material;
- prepare a suitable instructional area; and
- prepare lengths of cord or rope for each cadet.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

The interactive lecture method was chosen as it allows the instructor to make a semi-formal presentation of the material where the cadets can participate by asking or responding to questions and commenting on the material. For this lesson, this method is most effective as it matches well the taxonomic level of the material and is age-appropriate by virtue of its participatory nature.

The demonstration and performance method was chosen due to the practical nature of the subject matter. These methods provide the instructor the opportunity to introduce the subject matter, demonstrate procedures and observe the cadets practicing and performing the skill. The demonstration and performance methods must always be used when the taxonomic level of the material requires a performance of a skill. These methods are highly developmentally appropriate for young cadets.

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to tie knots and lashings.

IMPORTANCE

Without the skill of tying knots and lashings, cadets may be unable to construct sturdy shelters, snares and camp craft. Selecting the appropriate knot for the appropriate situation will provide strength to a structure.

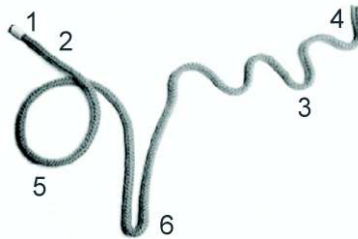
Teaching Point 1**Explain the Parts of a Rope**

Time: 5 min

Method: Interactive Lecture

PARTS OF A ROPE

The following definitions will assist cadets when tying each knot or lashing. Use the following diagram to make an OHP as a reference for the cadets.



Pocket Guide to Knots and Splices, Des Pawson, 1991

Figure 15-9-1 Parts of a Rope

1. **Working End (Running End).** The very end of the rope that is used during the tying of the knot.
2. **Working Part (Running Part).** The short length of rope that is manipulated to make the knot.
3. **Standing Part.** Part of the rope that usually “stands still” during the knot tying process. Often it is the longer end that leads away from the loop, bight or knot.
4. **Standing End.** The end of the rope not immediately being used in the tying of a knot.
5. **Loop.** (crossing turn).
6. **Bight.** Middle part of a length of rope. This term also refers to a loop of rope that does not cross over itself.

Teaching Point 2**Explain, Demonstrate and Have Cadets Tie Knots**

Time: 25 min

Method: Demonstration and Performance



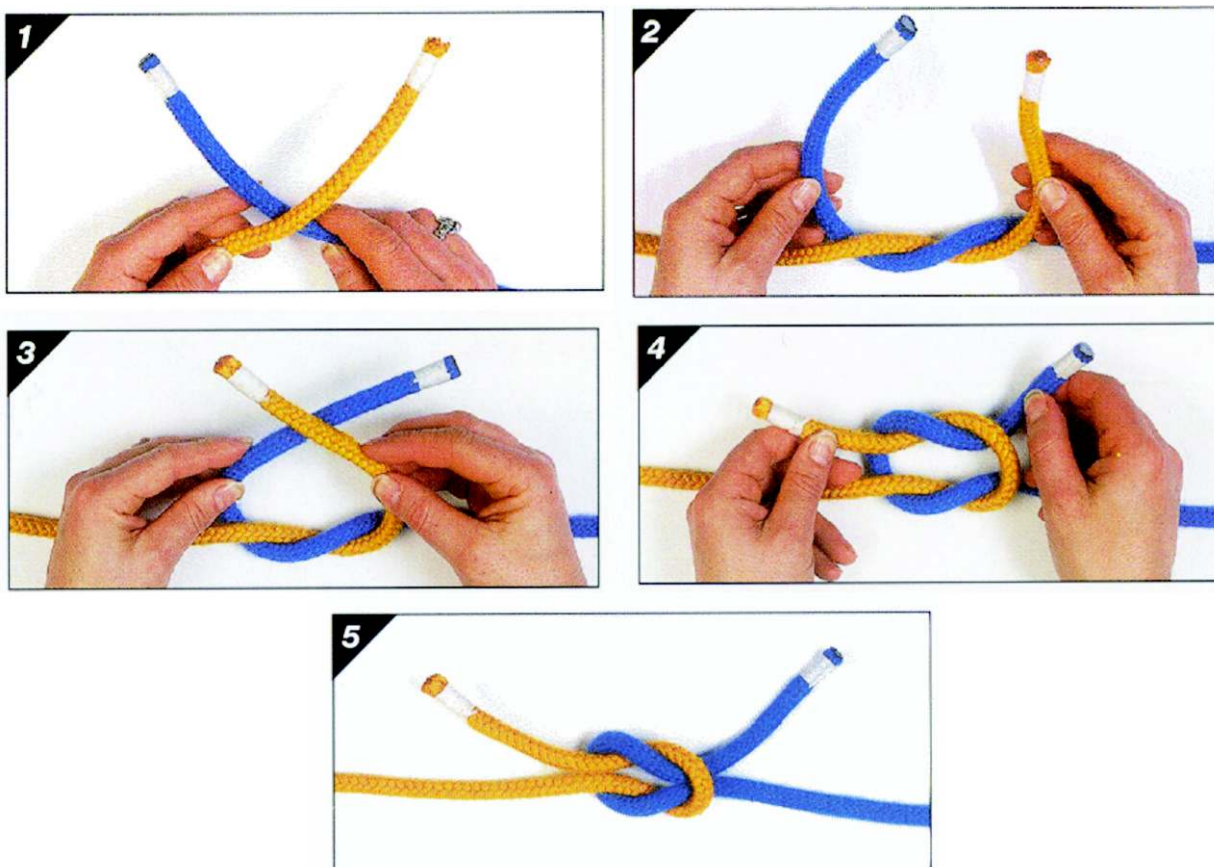
The instructor shall give several lengths of rope/cord to each cadet. After each of the following knots and lashings are demonstrated, the instructor should allow time for cadets to practice tying the knot with the rope they have been given. If available, other qualified instructors can assist during performance and help maintain class control.

REEF KNOT

The reef knot is used for joining two sections of rope that have the same diameter. This knot can hold a moderate amount of weight and is ideal for first aid use. It may be used when tying slings because the knot lies flat against the body. It is usually made with small to medium diameter rope and is easy to remember because of its simplicity.

Procedure:

1. Place the left hand working end on top of the right hand working end (see Figure 15-9-2, Step 1).
2. Bring the left hand working end under the right hand working end (see Figure 15-9-2, Step 2).
3. Put the working end that is now on the right on top of the working end that is now on the left (see Figure 15-9-2, Step 3).
4. Bring the working end that is on top over then under the other working end so that the working end that is moving comes out of the same place it entered the knot. Pull tight (see Figure 15-9-2, Step 4).
5. The completed knot (see Figure 15-9-2, Step 5).



Pocket Guide to Knots and Splices, Des Pawson, 1991

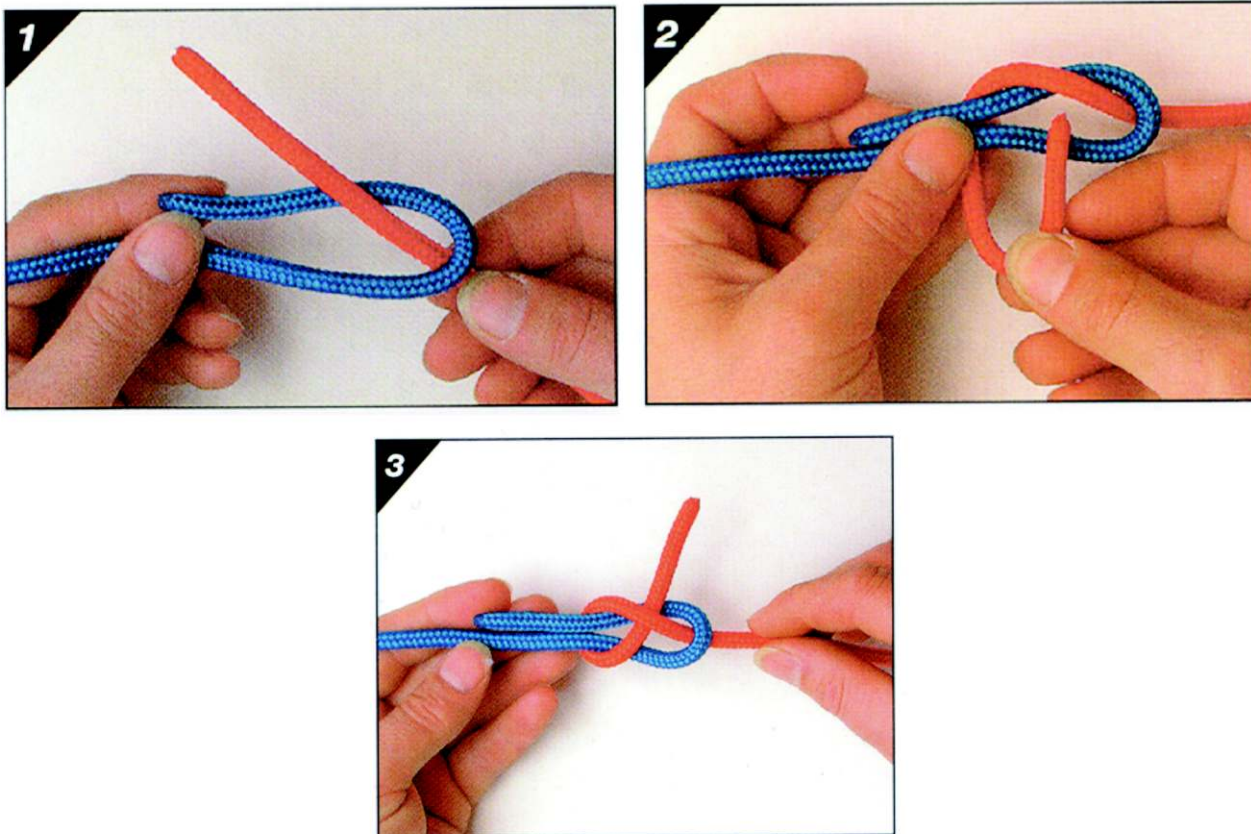
Figure 15-9-2 Reef Knot

SHEET BEND

The sheet bend is one of the simplest and best ways to join two pieces of rope together. It is ideal for ropes that are close in size. This knot was found in a fragment of fishing net that is dated to be 9000 years old. It is the oldest knot ever found. The greater the strain put on this knot, the better the performance of the knot.

Procedure:

1. Fold the end piece of a rope back on itself to form a bight. If the ropes to be joined are varying sizes then the larger of the two should form the bight. Bring the working end of the second piece of rope up through the bight (see Figure 15-9-3, Step 1).
2. Take the working end of the rope around the shorter end of the first rope and on round behind the standing part (see Figure 15-9-3, Step 2).
3. The working end of the second piece of rope is tucked under itself. Pull tight (see Figure 15-9-3, Step 3).



Pocket Guide to Knots and Splices, Des Pawson, 1991

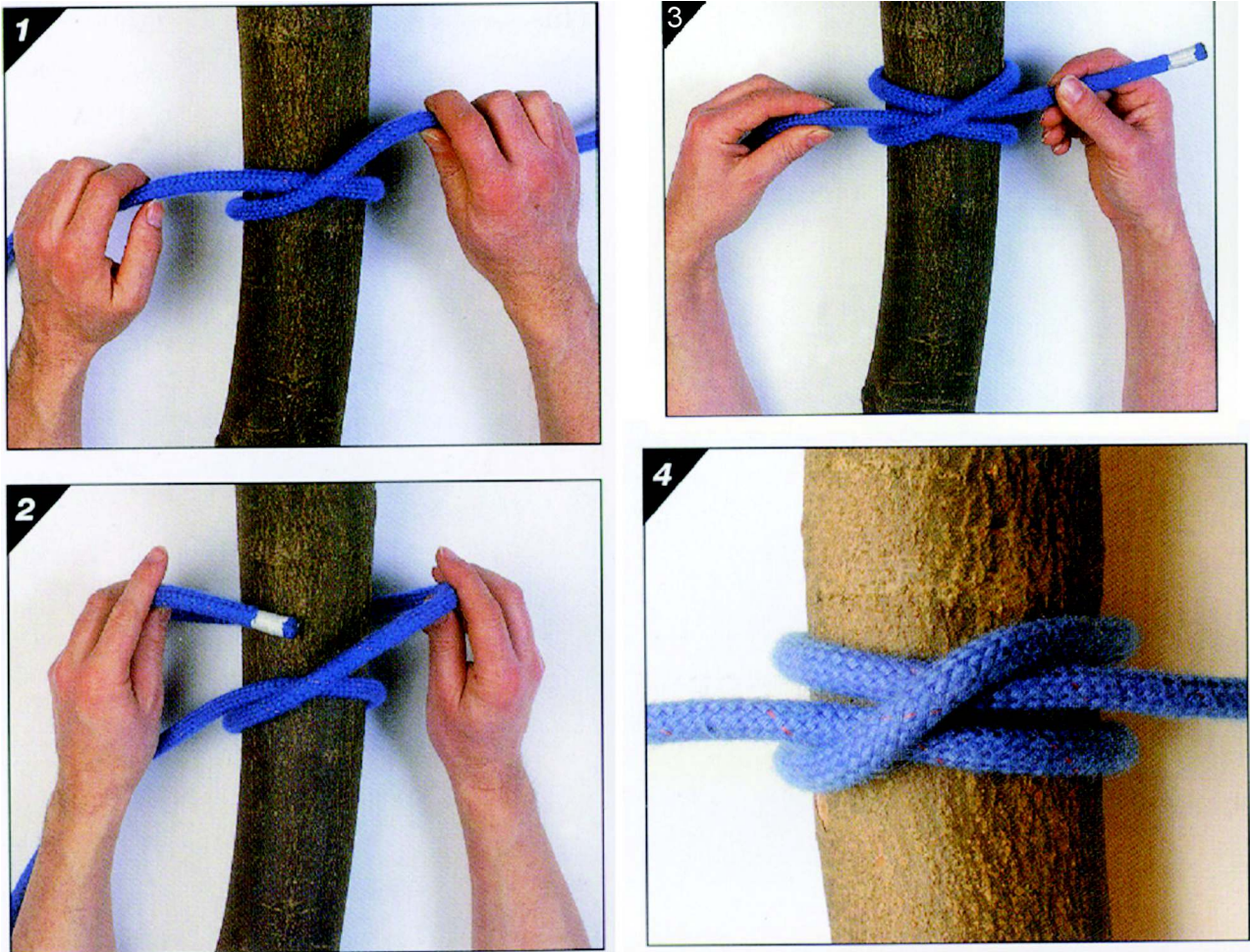
Figure 15-9-3 Sheet Bend

CLOVE HITCH

The clove hitch consists of two half hitches or crossing turns each made in the same direction. It is used to secure a rope to a tree or to start and finish lashings. Under heavy tension the knot may jam and become difficult to untie.

Procedure:

1. Make a turn around the post or tree bringing the working end of the rope over and trapping the standing part of the rope – this makes the first half hitch (see Figure 15-9-4, Step 1).
2. Bring the working end round behind the post/tree, above the first half hitch (see Figure 15-9-4, Step 2).
3. Put the working end under the turn just made. This gives the second half hitch and forms the clove hitch (see Figure 15-9-4, Step 3).
4. The completed knot (see Figure 15-9-4, Step 4).



Pocket Guide to Knots and Splices, Des Pawson, 1991

Figure 15-9-4 Clove Hitch

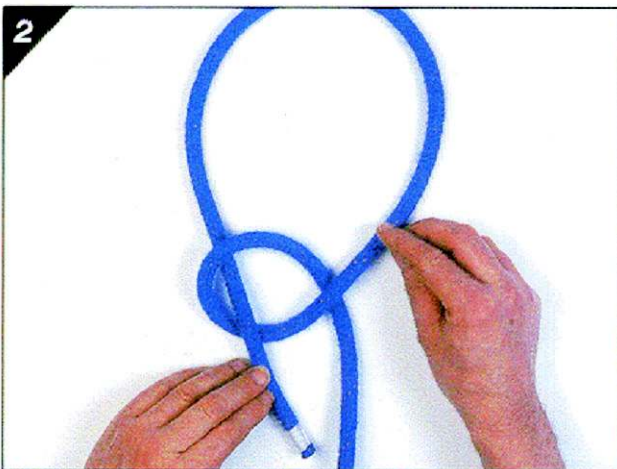
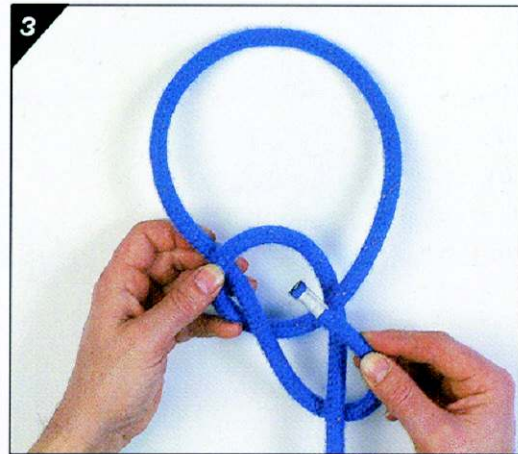
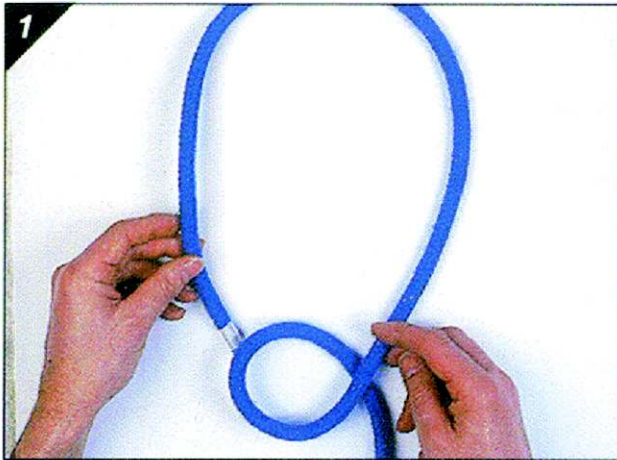
BOWLINE

The bowline is a very secure knot that will not slip, regardless of the load applied. It is commonly used by mountain climbers to tie climbing ropes around their waists. Use this knot whenever a non-slip loop is required at the end of a line.

Procedure:

1. A short distance back from the working end, make a crossing turn with the working part on top. Go on to form the size of loop you require (see Figure 15-9-5, Step 1).

2. Bring the working end up through the crossing turn – it will go under first, then lie on top of the other part of the turn (see Figure 15-9-5, Step 2).
3. Bring the working end around behind the standing part and down through the crossing. A good way to remember this is: “the rabbit comes out of the hole, around the tree and back down the hole again” (see Figure 15-9-5, Step 3).
4. Completed bowline (see Figure 15-9-5, Step 4).



Pocket Guide to Knots and Splices, Des Pawson, 1991

Figure 15-9-5 Bowline

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

- Q1. What is the reef knot used for?
- Q2. What is a clove hitch used for?
- Q3. Which knot creates a non-slip loop at the end of the line?

ANTICIPATED ANSWERS

- A1. Tying two lengths of rope together that are the same diameter.
 A2. Securing a rope to a tree or a pole and finishing lashings.
 A3. Bowline.

Teaching Point 3

Explain, Demonstrate and Have Cadets Tie Lashings

Time: 25 min

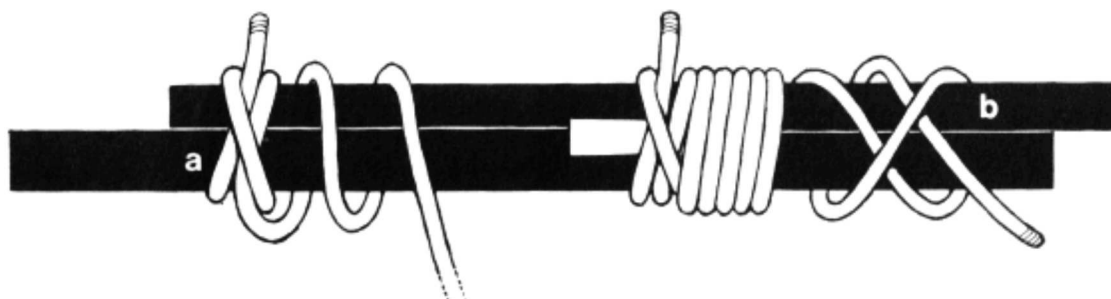
Method: Demonstration and Performance

ROUND LASHING

This lashing is used to attach or extend the length of spars or logs. This lashing can be used when building a shelter or other camp craft.

Procedure:

1. Begin with a clove hitch around both spars, and then bind the rope around them tightly (see Figure 15-9-6, a).
2. Ensure that the rope stays very close together. Finish with another clove hitch when finished wrapping. A wedge can be forced under the lashings to make them extremely tight. Stand the spars up vertically and bang the wedge into the lashing (see Figure 15-9-6, b).



The SAS Survival Handbook, John Wiseman, 1986

Figure 15-9-6 Round Lashing

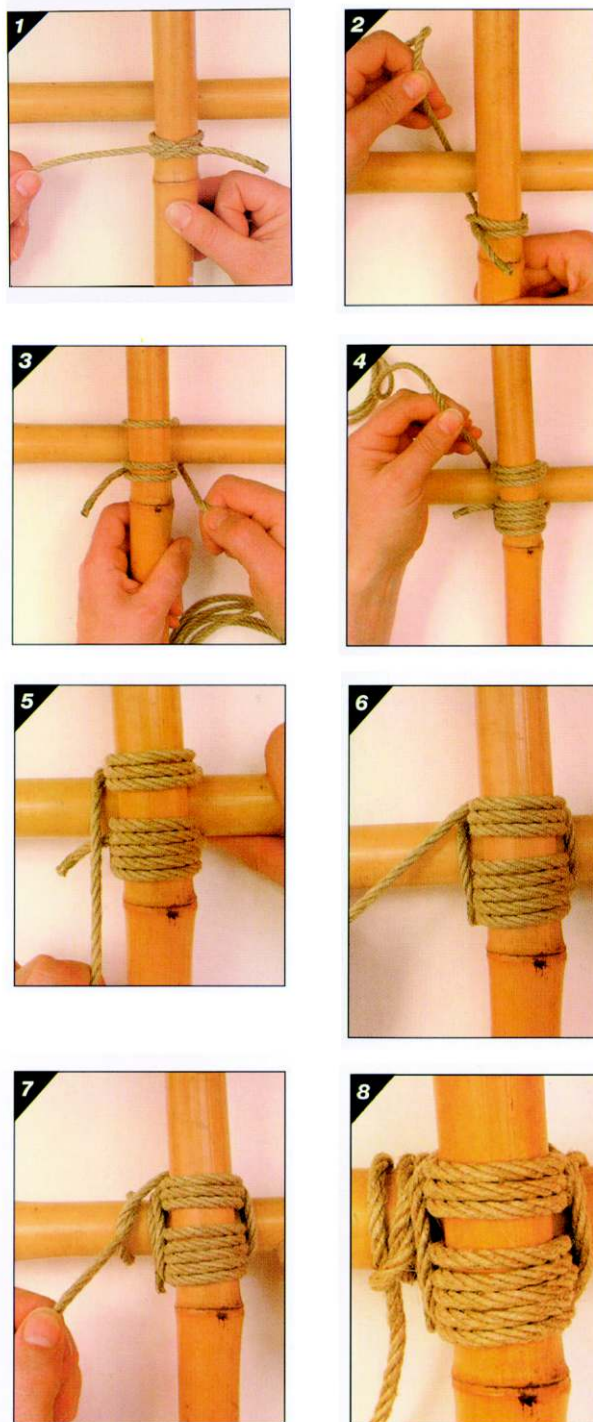
SQUARE LASHING

A square lashing ties two poles or spars together at 90 degrees. The rope used to make the lashing should be considerably smaller than the size of the poles. For the lashing to be effective, each turn must be pulled as tight as possible as it is made.

Procedure:

1. With the vertical pole on top of the horizontal pole, make a clove hitch on the vertical pole just below the horizontal pole (see Figure 15-9-7, Step 1).
2. Bring all the rope around behind the horizontal pole (see Figure 15-9-7, Step 2).
3. Bring the rope over the vertical pole and back behind the horizontal pole back to the clove hitch (see Figure 15-9-7, Step 3).

4. Carry on making two or three more complete turns right round the two poles, pulling tight after each turn (see Figure 15-9-7, Step 4).
5. After passing the clove hitch, bring the rope around the horizontal pole from behind and start to wrap round the junction between the two poles. These are frapping turns – pull them as tight as possible (see Figure 15-9-7, Step 5).
6. Make two complete sets of frapping turns (see Figure 15-9-7, Step 6).
7. Finish off with a clove hitch around the horizontal pole (see Figure 15-9-7, Step 7).
8. Finished lashing (see Figure 15-9-7, Step 8).



Pocket Guide to Knots and Splices, Des Pawson, 1991

Figure 15-9-7 Square Lashing

SHEER LASHING

The sheer lashing has two distinctive uses. It can create an A-frame or a set of sheer legs using a single sheer. A number of sheer lashings can be used to extend the length of a spar. To make the A-frame, two poles are put side-by-side with the lashing made at one end. When tying the initial turns of the rope, do not pull them

very tight. The loose lashing will allow the A-frame legs to come apart with ease when the lashing is complete. Pull tight when extending the length of a spar.

Procedure:

1. Start by making a clove hitch around both poles (see Figure 15-9-8, Step 1).
2. Wrap round both poles, trapping the end of the clove hitch (see Figure 15-9-8, Step 2).
3. Carry on making eight or ten more turns around the two poles. The lashing could be finished by tying a clove hitch (see Figure 15-9-8, Step 3).
4. Add a couple of frapping turns by brining the end of the rope between the two poles (see Figure 15-9-8, Step 4).
5. Finish off with a clove hitch around one of the poles (see Figure 15-9-8, Step 5).
6. The finished sheer lashing with the poles parallel (see Figure 15-9-8, Step 6).
7. The finished lashing with the poles opened to create an A-frame (see Figure 15-9-8, Step 7).

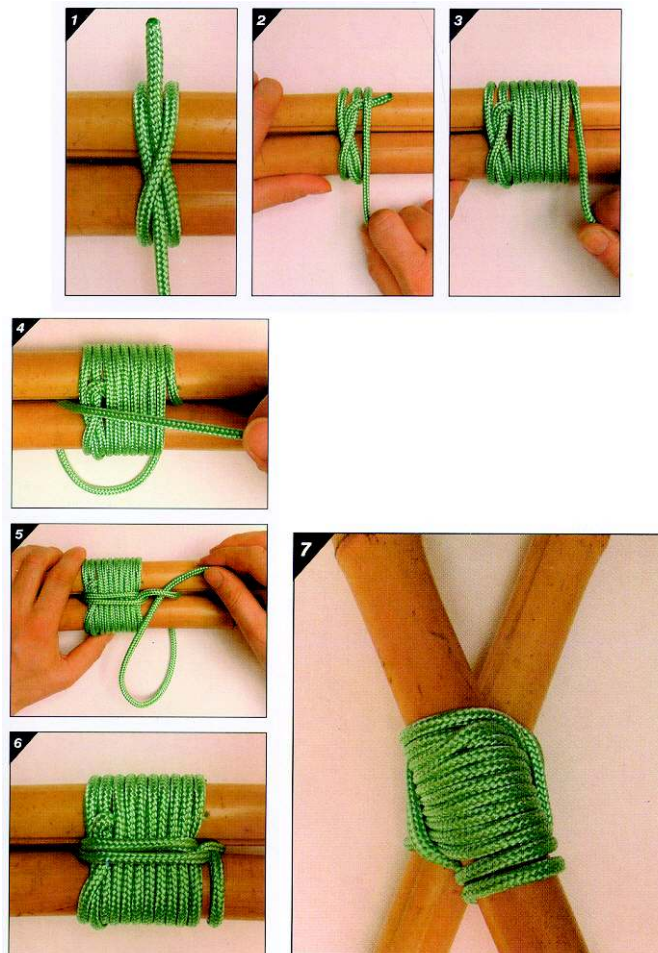


Figure 15-9-8 Sheer Lashing

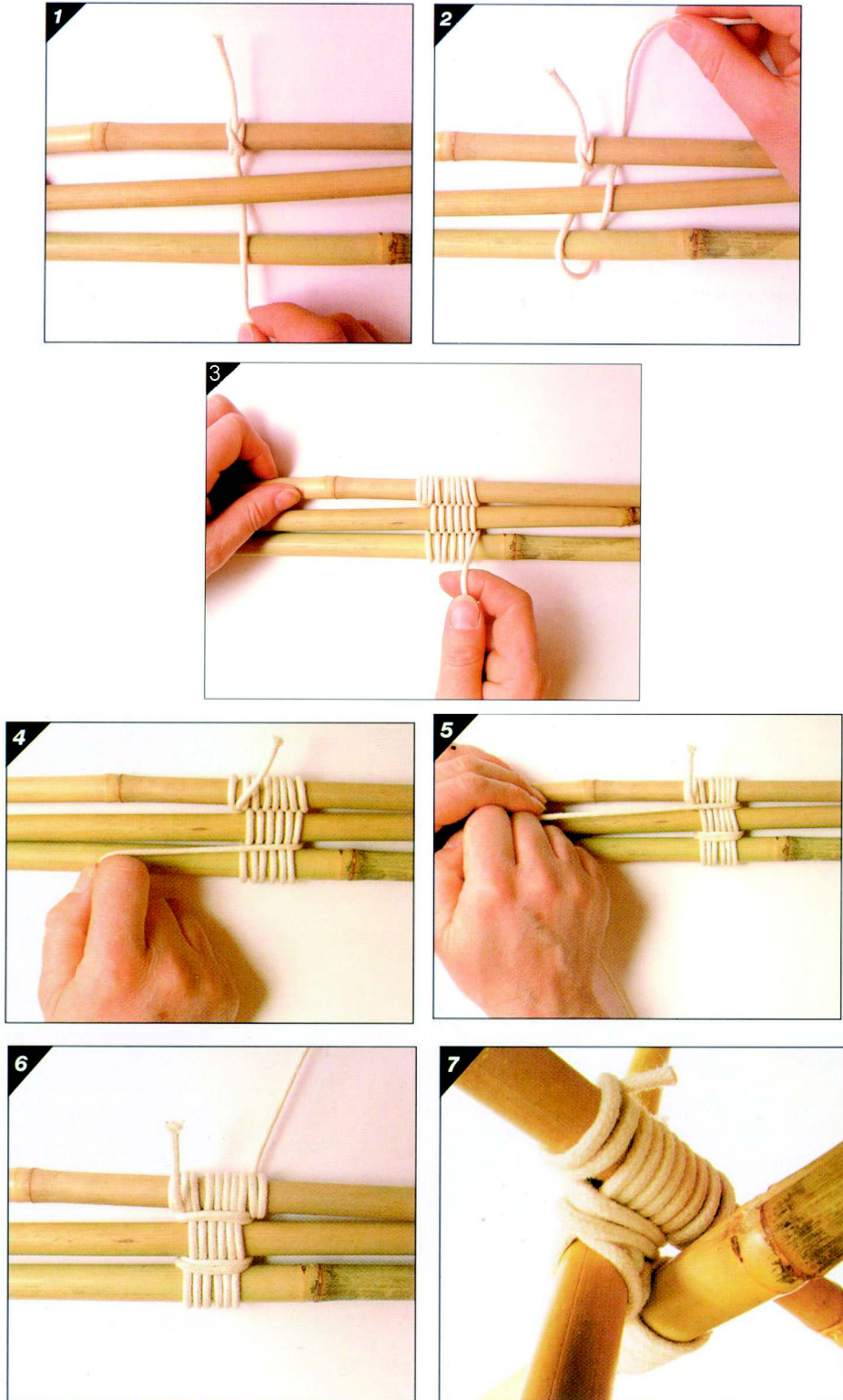
TRIPOD LASHING

This lashing is used to join three poles together to create a tripod. Three poles are laid side-by-side and a clove hitch is made around one of the outside poles a short distance from the end. The lashing line is then woven in

and out of the three poles, frapping turns are put in and another clove hitch is put around one of the outside poles to finish the lashing.

Procedure:

1. Start with a clove hitch around one of the outside poles. Lead the rope under and over the other two poles (see Figure 15-9-9, Step 1).
2. Go around the pole furthest away from the start and weave the rope back over and under (see Figure 15-9-9, Step 2).
3. Continue to weave the rope in this manner for seven to eight full passes before bringing the rope up between two of the poles (see Figure 15-9-9, Step 3).
4. Pull the rope parallel to the poles and start to put in some frapping turns (see Figure 15-9-9, Step 4).
5. After making frapping turns between the first two poles move on to make frapping turns around the other two poles (see Figure 15-9-9, Step 5).
6. Finish off with a clove hitch around the pole that was first started with (see Figure 15-9-9, Step 6).
7. The tripod can now be opened (see Figure 15-9-9, Step 7).



Pocket Guide to Knots and Splices, Des Pawson, 1991

Figure 15-9-9 Tripod Lashing

ACTIVITY

Time: 10 min

OBJECTIVE

The objective of this activity is to confirm that each cadet has grasped the skills required to tie knots and lashings.

RESOURCES

- Four to five desks.
- Two lengths of rope per group.
- Two poles per group.

ACTIVITY LAYOUT

- Divide cadets into groups of four.
- At the front of the instructional area set-up one desk per group.
- Direct each group to line-up in a single file line approximately five metres behind a desk.
- Place two lengths of rope and two poles on each desk.
- On the command to commence, one group member will approach the desk and tie a knot or a lashing. Once the cadet is finished and the instructor has ensured that the knot or lashing is correct, he or she will return to the line. The second cadet will then approach the desk and complete a different knot or lashing.
- Cadets will take turns tying the knots and lashings until all eight are complete.
- The first group to complete all four knots and all four lashings is the winner of the relay.

SAFETY

N/A.

INSTRUCTOR GUIDELINES

- Ensure that each knot or lashing is correctly tied before allowing the next cadet to carry on.
- It is best to have cadets in groups of four so each cadet must do two knots or lashings.
- If available, use other instructors to assist in ensuring each lashing is correct.
- If the group is too large to complete this activity in the allotted time, use the time for cadets to practice each knot and lashing while providing assistance and feedback.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

- Q1. What knot is used to start and finish most lashings?
- Q2. What is the square lashing used for?
- Q3. What are the two most common uses for the sheer lashing?

ANTICIPATED ANSWERS

- A1. Clove hitch.
- A2. Connect to poles/spars at a 90 degree angle.
- A3. Create an A-frame or extend a pole/spar.

END OF LESSON CONFIRMATION

Confirmation will be completed during the activity following TP3. Verbal questioning may be used in addition to this activity.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

There is no formal assessment of this EO.

CLOSING STATEMENT

Cadets have learned the skills required to create four knots and four lashings. Without these skills, cadets may be unable to construct sturdy shelters, snares and camp craft. Selecting the appropriate knot for the situation will provide strength to a structure.

INSTRUCTOR NOTES/REMARKS

N/A.

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ROYAL CANADIAN AIR CADETS

LEVEL ONE

INSTRUCTIONAL GUIDE



SECTION 10

EO C190.04 – RESPECT THE ENVIRONMENT IN THE FIELD

Total Time:

30 min

INTRODUCTION

PRE-LESSON INSTRUCTIONS

A complete list of resources needed for the instruction of this EO is located at Chapter 2 of the QSP. Specific uses for said stores are identified throughout the Instructional Guide, within the teaching point for which they are required.

Prior to instructing the lesson the instructor is required to:

- review the lesson content and become familiar with the material;
- select an appropriate site for instructing the class; and
- ensure the following materials are ready prior to the class:
 - an example of biodegradable soap or shampoo; and
 - a stove fuel cartridge.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

The interactive lecture method was chosen as it allows the instructor to make a semi-formal presentation of the material where the cadets can participate by asking or responding to questions and commenting on the material. For this lesson, this method is most effective as it matches well the taxonomic level of the material and is age-appropriate by virtue of its participatory nature.

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to:

- describe the importance of low impact camping; and
- identify factors important to respecting the environment while cooking, washing, and disposing of waste.

IMPORTANCE

Cadet squadrons are at survival training sites only a few days out of a year. However, these areas are home to a variety of wildlife and vegetation. By following proper protocol, the wilderness can be preserved, securing a home for wildlife as well as future field exercises for groups such as The Canadian Cadet Organization.

Teaching Point 1

Discuss the Importance of Low Impact Camping

Time: 10 min

Method: Interactive Lecture



During this teaching point, the instructor should try to select a location where both good and poor examples of low impact camping are present.

LOW IMPACT CAMPING CONCERNS

The goal of low impact camping is to leave the training area in the condition it was before being used. There should be little indication that the area had been used at all.

The wilderness is sourced for wood; burned, paved, and otherwise destroyed. However, action has been taken to preserve the environment. Recycling is one example of actions that have been taken.

POSSIBLE OUTCOMES OF ENVIRONMENTAL OVERUSE

With camping and hiking becoming increasingly popular, it is important to treat the environment with respect. The overuse of environmental resources could cause:

- an excess build-up of garbage;
- barren, stripped land;
- exposed tree roots;
- destroyed plants, or absence of vegetation; and
- scarred trees where branches have been torn away.

These outcomes affect the environment negatively. For example, the amount of garbage in a wilderness area can pollute the ground, the water, and the wildlife that live there.

ENVIRONMENTAL PRECAUTIONS

Through people taking responsible actions and following proper precautions, a site can be left in its natural condition for continuous use. This environmental consciousness will help wildlife and plants to recover from the impact of field training. A number of precautions can be taken to include:

- packing out all garbage, including used stove cartridges and other non-burnable trash;
- staying on trails whenever possible; do not create new paths by cutting down vegetation;
- avoiding crushing plants underfoot by walking on rocks and compacted earth;
- no harassing or feeding animals;
- where campfires are allowed, gathering fallen branches instead of cutting down trees for firewood; and

- using designated fire pits for campfires.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

- Q1. When creating a fire, what should one keep in mind when collecting firewood?
- Q2. Why should you stay on trails whenever possible?
- Q3. If you come across various forms of wildlife, what precautions should one keep in mind?

ANTICIPATED ANSWERS

- A1. Gather branches instead of cutting down trees for firewood.
- A2. So vegetation is left alone and not trampled.
- A3. Do not harass the animals or feed them.

Teaching Point 2

Identify Important Environmental Factors When Cooking

Time: 4 min

Method: Interactive Lecture

IMPORTANT FACTORS WHILE COOKING IN THE FIELD

There are a number of factors that should be considered while cooking in the field. They include:

- avoid dropping or draining food on the ground in your cooking area;
- waste water from cooking, when cooled, should be evenly distributed across the ground away from the cooking area and bivouac site;
- do not dump waste water into ground water;
- after meals, garbage should be packed-up immediately; and
- pack wet waste in a sealed container or a plastic bag, separate from dry garbage.

RECYCLING IN THE FIELD

It is very important to divide up garbage for recycling. There are different recycling groups for cardboard, paper, metal, glass, plastic and rigid foam.

CONFIRMATION OF TEACHING POINT 2

QUESTIONS

- Q1. What factors should be taken into account when disposing of waste water from cooking?
- Q2. What is important to keep in mind when disposing of wet waste?
- Q3. What are the different types of recyclable materials?

ANTICIPATED ANSWERS

- A1. It should be cooled and evenly distributed across the ground, away from the cooking area and bivouac site.

A2. Wet waste should be sealed in a container or plastic bag.

A3. Cardboard, paper, metal, plastic and rigid foam, glass.

Teaching Point 3**Identify Important Environmental Factors When Washing**

Time: 4 min

Method: Interactive Lecture

IMPORTANT ENVIRONMENTAL FACTORS WHILE WASHING

It is important to maintain proper hygiene while in the field. If soap is going to be used while bathing in the field, certain precautions should be kept in mind:

- select a site on high and dry ground that is at least 100 metres away from a ground water source;
- sponge bathe from a basin of water, using as little soap as possible; and
- once bathing is finished, ensure that the grey water is disposed of properly into a grey water container;
- biodegradable soaps and shampoos should be used.

Also, before swimming in a large body of water, ensure that any oils (e.g. sunscreen, grease, fuel residue, bug repellent, body oils, etc.) are removed in order to ensure there is no water contamination from the presence of these items.



The instructor should show an example of biodegradable soaps and shampoos to the cadets at the end of this teaching point.

CONFIRMATION OF TEACHING POINT 3

QUESTIONS

- Q1. What should be washed off before going swimming?
- Q2. If using soap, where should one bathe?
- Q3. If using soap to bathe, what form of soap should be used?

ANTICIPATED ANSWERS

- A1. Different types of oils (e.g. sunscreen, grease, fuel residue and body oils).
- A2. Ensure the site is on high and dry ground and at least 100 metres away from a ground water source.
- A3. Biodegradable soap.

Teaching Point 4**Discuss Proper Disposal of Human Waste in the Field**

Time: 6 min

Method: Interactive Lecture

PROPER DISPOSAL OF HUMAN WASTE

There are a number of factors that should be considered with respect to waste disposal in the field. Wherever possible, use an established toilet, outhouse or portable toilet. If toilets, outhouses, or portable toilets cannot be used, then a latrine should be dug for communal use. A hole about 60 centimetres x 60 centimetres, 30 to 60 centimetres deep will work for about 20 people for up to two days. When the hole is full to about 15 centimetres from the top, cover it with the remaining dirt and natural cover.



Ensure to check local regulations concerning latrine construction prior to demonstrating this to the class. Some areas do not allow latrine construction.

CONFIRMATION OF TEACHING POINT 4

QUESTIONS

- Q1. Name three types of facilities that should be used for proper waste disposal as a first resort.
- Q2. If a latrine is constructed (regular measurements), how long will it be suitable?

ANTICIPATED ANSWERS

- A1. An established toilet, outhouse or portable toilet.
- A2. Up to two days.

CONCLUSION

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

There is no formal assessment of this EO. Instructors will confirm cadets' comprehension during the end of lesson confirmation.

CLOSING STATEMENT

There are a number of things to keep in mind in order to properly respect the environment. Following proper methods of cooking, washing, and waste disposal are important in preserving the environment. If such practices are followed during survival, the training area can be maintained and used for many years.

INSTRUCTOR NOTES/REMARKS

N/A.

REFERENCES

- C3-005 (ISBN 0-89886-814-9) Sierra Club, San Diego Chapter. (1999). *Wilderness Basics: The Complete Handbook for Hikers & Backpackers*. Portland, Oregon: The Mountaineers Books.
- C3-008 (ISBN 0-02861-100-4) Moulant, M. (1999). *Complete Idiot Guide to Camping and Hiking*. Toronto, Canada: Alpha Books.



ROYAL CANADIAN AIR CADETS

LEVEL ONE

INSTRUCTIONAL GUIDE



SECTION 11

EO C190.05 – IDENTIFY REGIONAL WILDLIFE

Total Time:

30 min

INTRODUCTION

PRE-LESSON INSTRUCTIONS

A complete list of resources needed for the instruction of this EO is located at Chapter 2 of the QSP. Specific uses for said stored are identified throughout the Instructional Guide, within the teaching point for which they are required.

Prior to instructing this lesson the instructor shall:

- review the lesson content, and become familiar with the material;
- research approximately four to six different types of wildlife that are common to the region. The information that should be included at each learning station is included in the background information. A reference for finding the required information is *Hinterland Who's Who* found at www.hww.ca/index_e.asp; and
- Set up learning stations in the training area/classroom with a photo of the animal and the bristol board display (see Activity Section).

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

The small group activity was selected to allow for maximum participation in the learning process. It is an interactive way to illustrate and substantiate the lesson material in a concrete manner.

The group discussion method was chosen to allow the cadets to share their knowledge, opinions, and feelings about the subject matter while still allowing the instructor to control the direction of the discussion. The instructor must ensure that points not brought forth by the class are presented. If the instructor follows the Instructional Guide, including the questions posed, this will allow the cadets to express, in their own words, what they learned from this lesson and how they may apply the information.

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to identify regional wildlife.

IMPORTANCE

The wilderness is home to many types of wildlife. Having background information about the different types of animals in the area will allow the cadet to identify the animal and recognize some of the habits it may have.

BACKGROUND KNOWLEDGE

GENERAL DESCRIPTION

Wildlife includes all non-domesticated organisms. It includes all animals, insects and plants. (<http://www.hww.ca/glossary.asp>).

A general description of the animal should include:

- the physical description of the animal;
- the colour of the animal; and
- any special characteristics/features of the animal.

HABITAT

A habitat is a space that is uniquely suited to an animal's needs through the arrangement of food, water, shelter and cover. A description of the habitat should include:

- the characteristics of the habitat;
- the weather conditions in the area; and
- any other pertinent habitat information the instructor wishes to include.

DIET/FEEDING HABITS

A diet is the sum of the food that an organism consumes. A description of the diet/feeding habits should include:

- different types of food consumed;
- seasonal effects on food; and
- any other pertinent diet/feeding information the instructor wishes to include.

BREEDING CHARACTERISTICS

Reproducing is the act of breeding or producing young. Gestation refers to the actual pregnancy stage. A description of the breeding characteristics should include:

- breeding season;
- gestation period;
- number of young born; and
- any other pertinent breeding characteristics the instructor wishes to include.

UNIQUE CHARACTERISTICS

Many animals possess characteristics that make them unique. For example, a moose's eyesight is extremely poor, but its sense of smell and sense of hearing compensate for it.

ACTIVITY

Time: 15 min

OBJECTIVE

The objective of this activity is to familiarize the cadets with the wildlife common to their region.

RESOURCES

- Bristol board.
- Photo of each animal.
- Index cards.

ACTIVITY LAYOUT

- This activity will be conducted using learning stations. Each animal will be presented to the cadets at the stations.
- Each station will have a picture of the animal, a description of the animal on the bristol board and five index cards.
- Prior to the activity, prepare the bristol board, including all the information outlined in the background information. The information should be written in paragraph form because the cadets will need to pull information from the bristol board as part of the activity. Headings as found in the background information should not be used on the board.
- Prepare five index cards for each station with one heading on each card. The headings include: general description of the animal, habitat, diet, breeding characteristics and unique characteristics.
- Divide the class into groups. The number of groups will match the number of learning stations.
- Place each group at a different station.
- Each group will take three minutes (time may vary depending on the number of stations) to read the information at the station, choose an index card, and then fill in the information on the index card.
- Indicate when it is time to move to the next learning station.
- The groups will take their index card from the stations with them.
- The group should pick a different index card topic at each station if possible.

SAFETY

N/A.

INSTRUCTOR GUIDELINES



At this point the instructor shall brief the cadets on any safety rules or any other guidelines pertaining the activity.

During the activity, supervise the groups at the learning stations, ensure each cadet is participating and answer any questions.

REFLECTION

Time: 10 min

Method: Group Discussion

GROUP DISCUSSION

- Once all the groups have been to each station, the cadets will present their information.
- The presentations should be completed by animal and in the order of headings found in the background information.
- The presentations should be no more than two minutes.



The instructor shall ensure that all lesson objectives are drawn out towards the end of the reflection stage.

DISCUSSION QUESTIONS



TIPS FOR ANSWERING/FACILITATING DISCUSSION

- Ask questions that help facilitate discussion; in other words, avoid questions with yes or no answers.
- Prepare questions ahead of time.
- Be flexible (you are not bound to only the prepared questions).
- Encourage cadets to participate by using praise such as “great idea” or “excellent response, can anyone add to that?”.
- Try to involve everyone by directing questions to non-participants.

SUGGESTED QUESTIONS

- Q1. What resources do the wildlife in this region depend on?
- Q2. How does an animal's survival in this region compare to our survival while in the field?
- Q3. How does the climate affect the different wildlife in this region?



Other questions and answers will develop throughout the reflection stage. The discussion should not be limited to only those suggested.

CONCLUSION

REVIEW

Upon completion of the group discussion conclude by summarizing the discussion to ensure that all teaching points have been covered. Also take the opportunity to explain how the cadet will apply this knowledge in the future.

MAIN TEACHING POINTS

- TP1. Descriptions of the animals.
- TP2. The animals' habitat.
- TP3. The animals' diet.
- TP4. The animals' breeding characteristics.
- TP5. Unique characteristics of the animals.



The instructor shall reinforce those answers and comments discussed during reflection, but must ensure that the main teaching points have been covered. Any main teaching point not brought out during the group discussion shall be inserted during review.

HOMEWORK/READING/PRACTICE

N/A.

METHOD OF EVALUATION

There is no formal assessment of this EO.

CLOSING STATEMENT

During a survival exercise, wildlife may be encountered. By having some information about the wildlife common to their region, the cadets will be able to identify the animal and have a general understanding of the characteristics of it.

INSTRUCTOR NOTES/REMARKS

N/A.

REFERENCES

- C3-018 *Wikipedia, the Free Encyclopedia.* (2006). Retrieved 24 April 2006, from [http://en.wikipedia.org/wiki/Habitat_\(ecology\)](http://en.wikipedia.org/wiki/Habitat_(ecology)).
- C3-019 *Wikipedia, the Free Encyclopedia.* (2006). Retrieved 24 April 2006, from [http://en.wikipedia.org/wiki/Diet_\(nutrition\)](http://en.wikipedia.org/wiki/Diet_(nutrition)).
- C3-020 *Hinterland Who's Who.* (2006). Retrieved 24 April 2006, from http://www.hww.ca/index_e.asp.

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ROYAL CANADIAN AIR CADETS

LEVEL ONE

INSTRUCTIONAL GUIDE



SECTION 12

EO C190.06 – COLLECT DRINKING WATER IN THE FIELD

Total Time:	60 min
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INTRODUCTION

PRE-LESSON INSTRUCTIONS

A complete list of resources needed for the instruction of this EO is located at Chapter 2 of the QSP. Specific uses for said stores are identified throughout the Instructional Guide, within the teaching point for which they are required.

Prior to instructing this lesson the instructor is required to:

- review the lesson content, and become familiar with the material;
- prepare a suitable instructional area; and
- prepare examples of water collection devices.

PRE-LESSON ASSIGNMENT

N/A.

APPROACH

The interactive lecture method was chosen as it allows the instructor to make a semi-formal presentation of the material where the cadets can participate by asking or responding to questions and commenting on the material. For this lesson, this method is most effective as it matches well the taxonomic level of the material and is age-appropriate by virtue of its participatory nature.

REVIEW

N/A.

OBJECTIVES

By the end of this lesson the cadet shall be expected to conserve and collect water for drinking.

IMPORTANCE

Cadets will obtain the skills to collect water in a survival situation. Water is vital to human survival. Without sufficient drinking water, the body will shut down and eventually die. Having sufficient drinking water combats thirst, which is an enemy of survival.

Teaching Point 1**Describe Steps to Conserve Water**

Time: 15 min

Method: Interactive Lecture

OVERVIEW

Water is essential to life. All living things contain water and depend on it. The average person can survive for approximately three weeks without food but only three days without water. Do not wait until water supplies have completely diminished to find a water source. When faced with a survival situation, conserve water and find a source as soon as possible. The source should be fresh, running water. However, boiling or the use of chemical purifiers can sterilize water. The human body consists of 75 percent water. It is required to keep kidneys functioning so they may eliminate wastes, control body temperature, and regulate the nervous system.

When water is lost from the body, it must be replaced in order to maintain health and efficiency. The human body loses 2 to 3 litres of water per day, which must be replaced to maintain the water balance. This water replacement occurs by consuming actual water or water that is contained in food.

DEHYDRATION

The human body has no means of storing water like it can with food fats. When the body is deprived of water it becomes dehydrated, which can affect it in very negative ways.

Effects of Water Loss

Loss of 1 to 5% Body Water	Loss of 6 to 10% Body Water	Loss of 11 to 12% Body Water
Thirst	Headache	Delirium
Discomfort	Dizziness	Swollen tongue
Lethargy	Dry mouth	Twitching
Impatience	Tingling in limbs	Deafness
Lack of appetite	Blue shade to skin	Darkening vision
Flushed skin	Slurred speech	Lack of feeling in the skin
Increased pulse	Difficulty breathing	Skin starts to shrivel
Nausea	Inability to walk	Inability to swallow
Weakness	Blurred vision	Death

RETAINING FLUIDS

The following precautions can be taken to keep fluid loss to a minimum:

- Avoid exertion.
- Do not smoke.
- Keep cool, stay in the shade.
- Do not lay on hot ground or heated surfaces.
- Eat as little as possible – If you have little fluid in your body, water will be taken from the vital organs to digest the food.
- Avoid alcohol – it takes fluid from the vital organs to break it down.

- Avoid speech.
- Breathe through the nose, not the mouth.

CONFIRMATION OF TEACHING POINT 1

QUESTIONS

- Q1. What percentage of the human body is water?
- Q2. How much water does the human body lose each day?
- Q3. What are three ways to prevent water loss?

ANTICIPATED ANSWERS

- A1. 75 percent.
- A2. 2 to 3 litres.
- A3. Avoid exertion, do not smoke, keep cool, stay in the shade, do not lay on hot ground or heated surfaces, eat as little as possible, avoid alcohol, avoid speech, and breathe through the nose, not the mouth.

Teaching Point 2

Collect Drinking Water

Time: 40 min

Method: Demonstration and Performance

FINDING WATER

Surface characteristics:

- Follow dry riverbeds. The structure and composition of the rocks in the riverbed may result in an emerging stream. The riverbed may also be followed to its source. There may be a trickle of water that remains or humid soil may be present where a pit can be dug to the water table.
- Watch for damp spots on the ground. A high water table can cause this.
- Old human habitations can be a good place to find water. Old mines and dumps are good examples.
- Water may be collected from dew accumulation.

Plants and trees:

- Look for areas with green leaf and tree growth. This vegetation requires a significant amount of water. Plants include: cattails, bulrush, elderberries, and reeds. Trees include: cottonwood, poplar, greasewood, and willow. The green leaves indicate a high water table. Dig a pit approximately 1 to 2 feet deep to find the water.
- Water can be found at the base of cliffs where vegetation is present.
- The pulp from some cacti can be crushed to produce a watery mash.

Animal indicators:

- Animals are the best indicators of desert water.
- Insects live within flying distance of water. Their flight path may be followed to a water source.

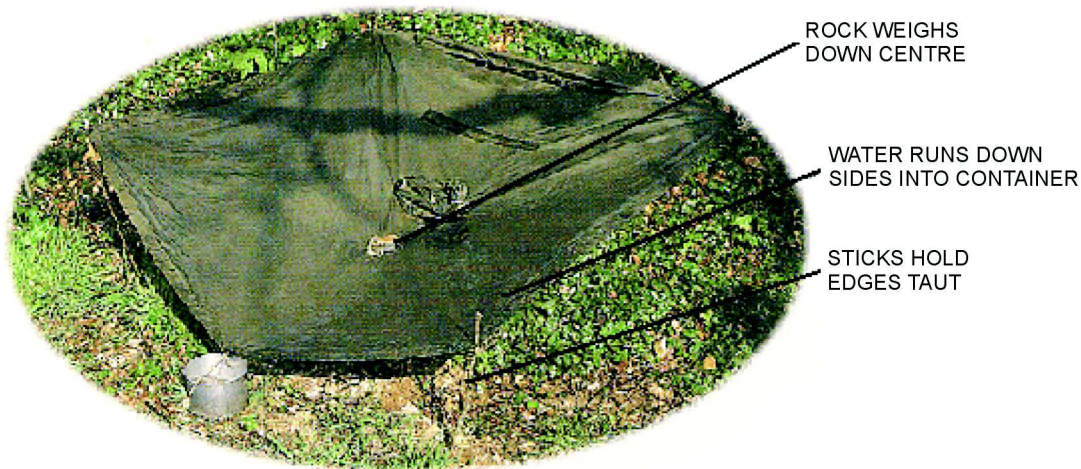
- Grazing animals travel to and from a water source every morning and evening. Animals' trails can be followed to a water source.
- Birds may circle a water source or congregate in large flocks. Birds of prey use their victims as a source of fluid and do not travel to water frequently.

COLLECTING WATER

Rainwater

Set out a container to collect any rain that may fall. The flow from the roof of a shelter can be collected using improvised guttering to channel the rain into containers. Rainwater requires less purification than that a standing body of water. Collecting rainwater is also easier than other collection methods.

Stretch a waterproof sheet tightly over a wide area, preferably on a slope. Peg down its corners with sticks and collect the rain in a container. A rock may be used to weigh down the centre and better direct the water into the container. When waterproof sheets are unavailable, use a birch bark sheet and shape it to channel the water into a container.



The Complete Wilderness Survival Manual, Hugh McManners, 1994

Figure 15-12-1 Rain Collector

Collecting Dew

As the air cools down at night, the water vapour in the air condenses as dew on low-lying ground, and vegetation. This water evaporates rapidly as the sun rises. Many plants, insects and animals depend upon dew to survive. Humans can also make use of this natural water supply. Dew can be collected by soaking a cloth in long wet grass. The best time for collection is at dawn. When the cloth is soaked, wring the water out into a container. If a cloth is unavailable, a spare T-shirt or other piece of clothing may be used.

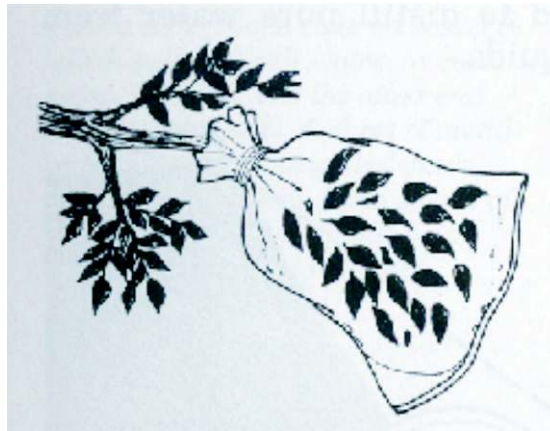


The Complete Wilderness Survival Manual, Hugh McManners, 1994

Figure 15-12-2 Dew Collection

Collecting Water From Vegetation

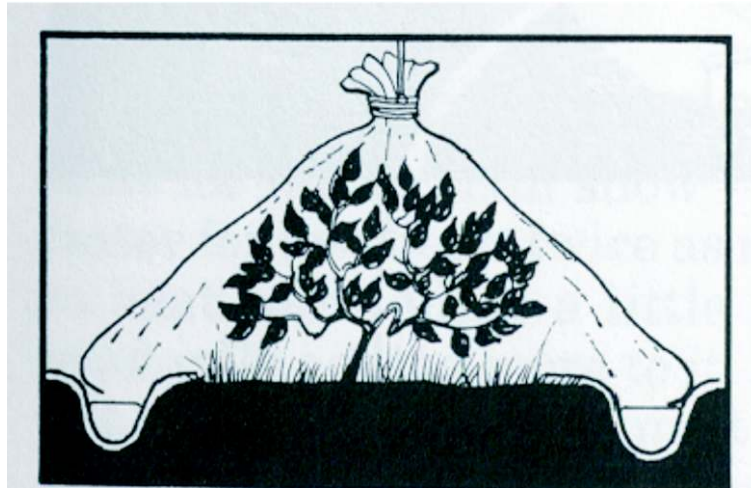
Tie a plastic bag over a healthy, bushy green branch. The water vapour given off by the foliage will heat-up inside the plastic and condense to form water inside of the bag. On trees, keep the mouth of the bag at the top with a corner hanging low to collect condensed evaporation.



The SAS Survival Handbook, John Wiseman, 1986

Figure 15-12-3 Collecting Condensation

An entire plant can also be used as a water source. Placing a plastic bag over any vegetation will collect moisture by evaporation. The moisture will condense on the plastic as it cools. Suspend the bag to an overhead tree branch, or place a wide stick on the inside to prop up the plastic bag. Arrange points for the water to collect.



The SAS Survival Handbook, John Wiseman, 1986

Figure 15-12-4 Collecting Condensation From Plants

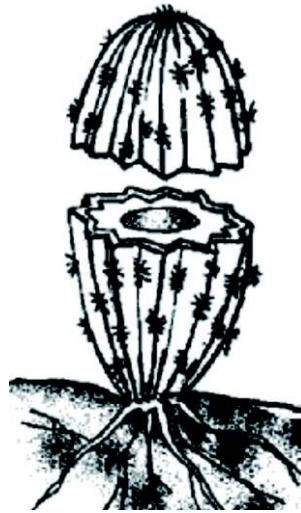
There are many different types of vegetation that store water in either their leaves or roots. Some types of vegetation capture rainwater in order to trap insects for food. Others secrete special fluids that can be tapped and drunk by humans in emergencies. Some examples include: pitcher plants, cacti, tree roots and vines.

Pitcher Plant. (*Nepenthes spp.*) This plant catches insects in a watery fluid in its "pitcher." You can extract the water, but it must then be strained to remove any insects (which you can eat).



The Complete Wilderness Survival Manual, Hugh McManners, 1994

Figure 15-12-5 Pitcher Plant



Camping and Wilderness Survival, Paul Taurell, 1996

Figure 15-12-6 Cactus

Solar Still

Water can be extracted from soil using a solar still. As long as there is a difference in temperature in between two surfaces, air between those surfaces will heat-up and become saturated and the air will condense as droplets on the cooler surface.

To construct a solar still, dig a hole about three feet wide and two feet deep. Place a collecting can at the bottom of the hole. Spread a plastic sheet across the hole and hold it in place with rocks. Weigh down the centre of the sheet over the container with a fist-sized rock. As the temperature of the air and soil rise, water vapour will condense on the underside of the cooler sheet and run into the container. Dig another hole when the moisture in the hole/still has been used up.

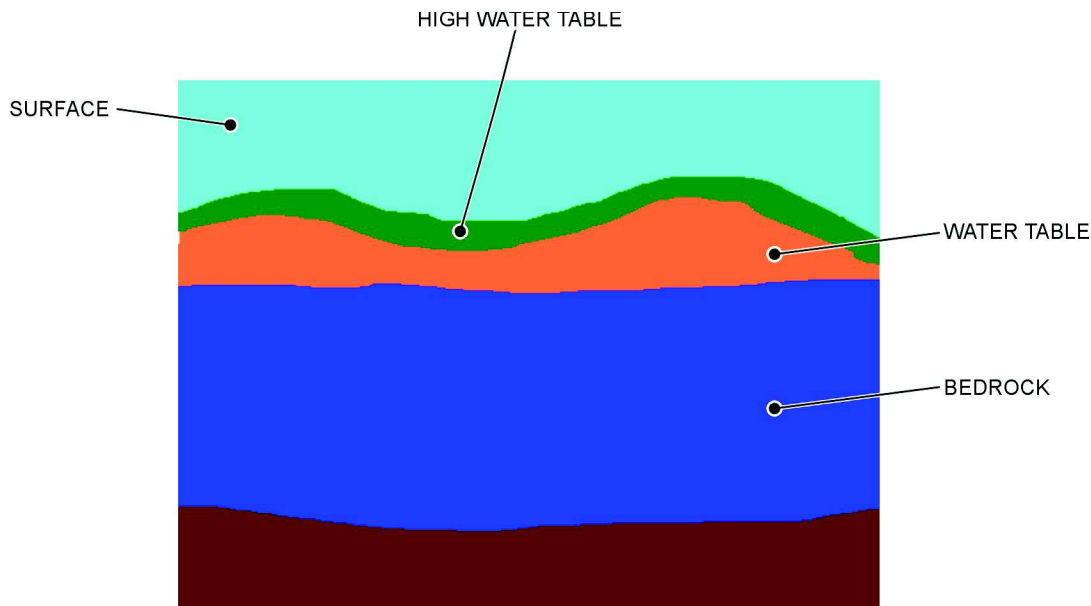


The Complete Wilderness Survival Manual, Hugh McManners, 1994

Figure 15-12-7 Solar Still

Digging for Water

Water will often seep into a hole dug in a location where the water table is high. Dig a hole about one foot deep. Water will seep from the ground into the hole. The water will be dirty the first few times the hole fills, but clear water will eventually rise and can be purified and drunk. Keep scooping away the muddy water until clear water rises. Note the surroundings before a water hole is dug. Never dig where the mud has a potent smell or a green slime on the surface. This water is probably contaminated. Do not collect water where there are dead animals and always purify the water before drinking.



Microsoft Paint, 2006

Figure 15-12-8 Water Table

ACTIVITY

Time: 20 min

OBJECTIVE

Allow cadets to practice making a water collection devise.

RESOURCES

- Plastic bags/sheets of plastic (one per group).
- Shovels (one per group).
- Pegs.
- Cup or bowl.

ACTIVITY LAYOUT

- Instruct cadets to find an appropriate site and build one of the water collection devises listed above.
- Some or all of the provided resources may be used.
- The collection devises may be left out overnight to see if they produce positive results.

SAFETY

N/A.

INSTRUCTOR GUIDELINES

- Ensure cadets select an appropriate site to build the water collection devise.
- Ensure that the site selected will not adversely effect the environment.
- If holes are dug, ensure they are filled in upon completion of the activity.
- Check each devise to ensure each step has been followed and it has been suitably constructed.

CONFIRMATION OF TEACHING POINT 2**QUESTIONS**

- Q1. What are some surface characteristics to look for when looking for a water source?
- Q2. How can insects help to find a water source?
- Q3. What is a method of collecting water?

ANTICIPATED ANSWERS

- A1. Follow dry riverbeds. The structure and composition of the rocks may result in a stream emerging. The riverbed may be followed to its source. There may be a trickle of water that remains or humid soil is present where a pit can be dug to the water table. Watch for damp spots on the ground. A high water table can cause this. Old human habitations can be a good place to find water. Old mines and dumps are good examples. Water may be collected from dew accumulation.
- A2. Insects live within flying distance of water. Their flight path may be followed to a water source.
- A3. Rain collection, dew collection, water from vegetation, solar still, and water from the ground.

END OF LESSON CONFIRMATION

Each group's water collection devise shall be checked to ensure all of the principles of construction have been applied. Other lesson material can be confirmed by verbal questioning.

CONCLUSION**HOMEWORK/READING/PRACTICE**

N/A.

METHOD OF EVALUATION

There is no formal assessment of this EO.

CLOSING STATEMENT

Cadets have learned the effects of water on the human body, how to find water and how to collect it. Water is vital to human survival; without sufficient drinking water the body will shut down and eventually die. Having sufficient drinking water combats thirst, which can be an enemy of survival.

INSTRUCTOR NOTES/REMARKS

N/A.

REFERENCES

- C3-002 (ISBN 0-00-653140-7) Wiseman, J. (1986). *The SAS Survival Handbook*. London: Harper Collins Publishers.
- C3-003 (ISBN 1-896713-00-9) Tawell, P. (1996). *Camping and Wilderness Survival: The Ultimate Outdoors Book*. Green Valley, ON: Fifteenth Printing.
- C3-021 (ISBN 0-7715-9035-0) McManners, H. (1994). *The Complete Wilderness Survival Manual*. BC: McMillan Canada.

SURVIVAL SCENARIO

You are on a camping trip with your family. It is a pleasant day in mid-October. The campsite is far from town, and your family is the only one there. At 3 p.m., you decide to go on a short hike. You start off along a clearly marked trail. When you see a rabbit, you follow it off into the woods. When the rabbit finally goes down a hole, you realize you are lost. You don't know in which direction the trail or the campsite are. You have been gone from the campsite for about two hours. You are lost in the woods.

In your backpack, you have:

- a one litre bottle of water
- a sandwich bag of trail mix
- a bird identification book

You are wearing jeans, a T-shirt and a light jacket. The wind is picking up, and it looks like rain.

QUESTIONS

1. What is the first thing you should do?
2. Think about the consequences of staying where you are, or wandering through the woods. What are the pros and cons of each?
3. What kind of things would you want to observe about your surroundings?
4. Consider the key elements of the survival pattern – food, water, shelter, fire, and first aid. What is your plan?

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SUGGESTED ANSWERS FOR SURVIVAL SCENARIO – INSTRUCTOR USE ONLY

1. What is the first thing you should do? STOP.
2. Think about the consequences of staying where you are, or wandering through the woods. What are the pros and cons of each?

Staying		Walking	
Pros	Cons	Pros	Cons
<p>Effective use of time to develop and implement effective survival pattern.</p> <p>Staying in one place makes you easier to find.</p> <p>Prevents you from going farther away from potential search parties.</p> <p>Familiar with the nearby surroundings.</p>	<p>There may be hazards with the current location.</p> <p>There may be little or no resources at the current location.</p> <p>There is no chance of finding your way to civilization if you do not leave.</p> <p>Boredom could develop.</p>	<p>Could find your way to civilization – if you know the direction to travel.</p> <p>Could find better site for setting up shelter and signals.</p>	<p>Get more lost.</p> <p>Move away from a location where people can find you.</p> <p>End up unprepared for nightfall.</p> <p>Wasting energy.</p> <p>Increase risk of injury.</p> <p>Inadequate clothing or shoes.</p>

3. What kind of things would you want to observe about your surroundings?
 - Physical dangers.
 - Flooding hazards.
 - Food and water sources.
 - Location for shelter.
 - Signs to help determine location.
 - Evidence of animals.
 - Fire resources.
 - Shelter resources.
4. What is your plan?
 - First aid – there are no injuries, so this is not a concern.
 - Build a fire – this is good for signalling and warmth in the short term.
 - Build a shelter – stay dry in case it rains.
 - Signals – if there is an open area, lay ground-to-air signals. Build additional signal fires.
 - Water – stay hydrated. Find additional water sources before the litre runs out.
 - Food – ration the trail mix. Find additional sources of food.

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SHELTERS SET-UP

ERECT AN A-FRAME SHELTER

1. Select a level area with good drainage.
2. Ensure the area is free of hazards, (i.e., overhanging branches that may fall, too close to roadways etc).
3. Zip two shelter halves together, ensuring flap covers zipper.
4. Attach cord to the grommets at both ends near the joined zipper.
5. Suspend both ends from trees or other objects so that the centre is approximately waist high.
6. Stretch out the sides and secure them using sticks.
7. Attach cord to the middle grommets on each side and tie the cord to pull the side out and give more room to the inside.
8. When possible, dig a drainage trench on both sides.

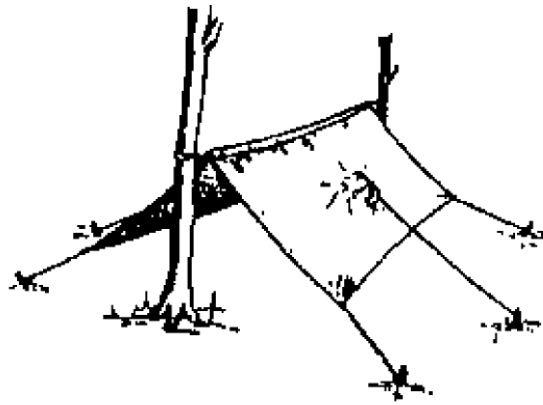


Figure 15C-1 A-frame Shelter

LEAN-TO SHELTER

1. To build a lean-to, two trees must be found with fairly firm, level ground between them. These trees are called the uprights. The distance between these two trees will be the opening of the lean-to.
2. Next, a ridgepole must be found. This must be a fairly thick pole, around fist size in thickness, and should be long enough to reach from one upright to the next.
3. The ridgepole should be placed behind the uprights from the viewpoint of the person facing the uprights. Natural notches in the uprights may be perfect to hold the ridgepole. If these are not available, the ridgepole will be laced onto the uprights using the square lashing. (It may be a good idea to lash the ridgepole on even when using natural notches to ensure the pole is secure). After the square lashing is completed, the ridgepole should be very secure. In fact, the people who will be using the shelter should be able to sit on it and it should not move.
4. The height of the ridgepole should be the height of the waist of the tallest person if a group will be staying in the shelter. This will make the shelter opening fairly low, which will help conserve heat inside the shelter. For a one-person lean-to, the ridgepole should be placed lower, at mid-thigh height.

5. Find approximately 8 poles about 5 to 7 cm in diameter. These will serve as the pole framework for the lean-to and will be known as the spars. They will be tied onto the ridgepole using the square lashing, and will run from the ridgepole to the ground. Spread these evenly, going from just inside one upright to the other.
6. The number and the height of the people living in the lean-to will determine the length of the spars. For a group, the spars should be slightly longer than the height of the tallest person. If the shelter will sleep one person, the spars should be about the same height as the chest of that person.
7. Find approximately 8 small flexible poles that will run horizontally across the spars. These will be known as the ribs. The length of these should be the distance between the two spars closest to the uprights. These ribs should be woven horizontally through the spars. If long enough ribs cannot be found, shorter ones can be used. Weave the shorter ribs as far as possible and then start at the point ended with a new piece.
8. A pole around the same thickness as the ridgepole should be found and laid on top of the bottom of the spars. This is known as the foot log.
9. Vertical poles will be placed from the ground to the spars on the furthest sides of the lean-to. These do not need to be laced onto the spars. They should be tall enough to reach from the ground to the spar, and since the spar is on a slope, the vertical poles will need to be of varying heights.
10. Place boughs with the stem toward the ridgepole and the top of the bough upwards (the glossy side).
11. Make a row going right across the bottom with the boughs close together.
12. For the next layer, lay the boughs into the first layer; again with the top of the bough facing up.
13. Repeat Step 12. until the top is reached and the boughs cover the lean-to like shingles cover a roof.
14. Weave the stems of more boughs into the layers that now cover the lean-to. These layers should be thick enough to be waterproof; a suggestion is around 15 cm thick.
15. For the sides of the lean-to, boughs can be placed as in the Steps above until the ground is reached.
16. If a fire has been made, extend boughs about a foot down the front of the lean-to to keep out rain or wind, but allow the heat from the fire to enter.
17. As described above, boughs can also be used to cover a part of the front if there is no fire. Just leave an opening for a door in case a quick exit is required.

COMMERCIAL TENTS

Commercial shelters come in various sizes and forms, and therefore, have different ways to be erected. Users should read the information booklets provided with the tent used in order to know how to erect it.

ARCTIC TENT ASSEMBLY AND PITCHING

1. Lay out the outer tent, flat apex in the centre and panels outwards with the inside facing upwards, and the door zipper fastened.
2. Lay out the inner tent liner on top of the outer tent, with the inside facing upwards.
3. Attach the top and bottom stovepipe toggles. By lining up the stovepipe openings of the outer and inner liner and attaching the top and bottom toggles, the inner and outer portions are then positioned properly.
4. Working either way, attach the remaining toggles. Use the corners of the tent as checkpoints to make sure no toggle was missed. Continue until all toggles are through the seam grommets of the inner liner.
5. Thread the long or the lower drying line through the drying line keepers. To get the drying line keepers through the inner seam splits, feel through the liner at the peak or centre of the doorway, follow-up the

seam on the panel of the outer tent, when you reach the drying line keeper, insert it through the split seam of the liner and thread the drying line on. There is a keeper on every seam. This means there are 10 keepers for the lower drying lines.

6. Thread on the short or upper drying line. Start at the door seam again and carry out the same drill as for the lower drying line. There will be a keeper on each side of this one and then one on every second seam. This means that there will be six drying line keepers on the top.
7. Insert the spike of the tent pole through the apex of the inner and outer tents and lash these three securely.
8. Attach the five bottom tie-down pegs. To do this, run a rope through the bottom wall eyelets of the outer and inner tents, tying the pegs to the outside.
9. Attach the wall guy lines to the guy line loops on the outer tents. To do this, thread the guy lines through one hole of the runner then through the guy line loop of the tent and back through the outer hole of the runner. Tie a figure-of-eight knot on this end of the guy line to prevent it from slipping out of the runner hole. The other end of the guy line is threaded through the eye of the peg of the line and is prevented from being pulled out of the peg by a slipknot. This method of attaching guy lines must be used as the rope will invariably freeze in the peg hole and to reverse the above procedure will prevent tightening of guy lines. In addition, when the ground is too hard, or snow too soft and deep, the pegs can be secured by wrapping several turns of the guy line to the centre of the peg and either freeze the peg in the snow or place a large stone or log on top of the peg.
10. Attach the five top guy lines in the same manner.
11. The tent is now assembled and ready for use; however, when the tent is pitched and the doors are opened, quite often the zippers become disengaged. To prevent this, close the zipper and, sew the track of the zipper together near the top of the door. This will act as a stopper, preventing the zipper from becoming disengaged. Do this to the outer and the inner tent zippers.
12. The fly screen is of no use in cold weather and should be rolled up and secured by the ties running each way from the door to the outside corners. Roll and secure this screen, only after the tent has been pitched. If done when the tent is struck, the tent will be misshapen when pitched.
13. To prevent the guy lines from being left hanging loose and becoming tangled, roll the guy rope around the tent peg and in the guy rope loop. In most cases the guy rope loops are sewn too far down and the loop is not large enough for the peg to fit in. To overcome this, thread short pieces of the rope through the guy line loops and tie with a square knot. Adjust the knot so the peg will fit securely in it.

STRIKING AN ARCTIC TENT

1. Members take positions. One person is inside at the tent pole. Three people are at the guy ropes located above the left side tie-down point, above the right side tie-down point, and above the back tie-down point. One person is supervising the procedure and giving orders.
2. The order "pull pole" is given.
3. The person inside the tent pulls the bottom of the pole towards the door and lowers the tip to the rear of the tent. That person disconnects the lower section or telescopes the pole, depending on which pole is being used.
4. The member at the back guy rope grasps the apex of the tent.
5. The person at the pole backs out of the door, carrying the pole sections and base plate, and zippers the door closed.
6. The two persons at the right and left side guy ropes roll up the guys and secure them to the tent. They pull out the remaining pegs, roll up the guys and secure them to the tent.

7. The members pull the tent to the rear and spread it out on the ground.
8. The order "shake out" is given. Members spread around the tent, shake the snow/ice/sand/etc. out and fold the tent for stowing.

FOLDING AN ARCTIC TENT FOR STORAGE

1. Lay out the tent with the tent door up, in the centre and with zippers closed.
2. Make sure there are no double folds on the underside.
3. Hold the apex securely: the first long fold is made by folding the wings to the centre, with the pegs straight up and down.
4. Straighten and flatten out.
5. Fold-in snow flaps across the base.
6. Make the second long fold, repeating the action as with the first long fold.
7. Straighten and flatten out.
8. Make the third long fold.
9. Straighten and flatten out.
10. Fourth long fold – flip folds one on top of the other.
11. Make the first cross fold: fold in base at the top of wall.
12. Make the second cross fold by folding the apex into the base of the inserted pole section allowing approximately 4 inches of loose fold at the base of the pole section to avoid wear and tear: top of pole should be offset.
13. Third cross fold – place the folds one on top of the other.
14. Insert in the bag (base plate and spare pegs have already been placed in the bag).
15. Place the remaining two pole sections in the bag alongside the tent.
16. Tie-up the top of the tent bag.

PITCHING AND ANCHORING A MODULAR TENT

The key stages for pitching and anchoring a modular tent are as follows:

1. Lay the frame parts on the ground and erect the arch frames (A-frames), leaving the uprights folded and placed at equal distances one from the other.

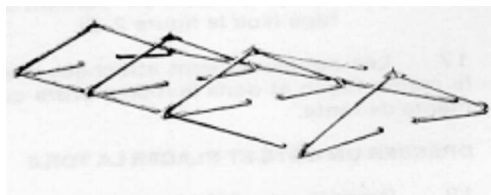


Figure 15C-2 A-frames

2. Join the tie beams (purloins) to each of the arches at the summit and roof edges, locking them into place.

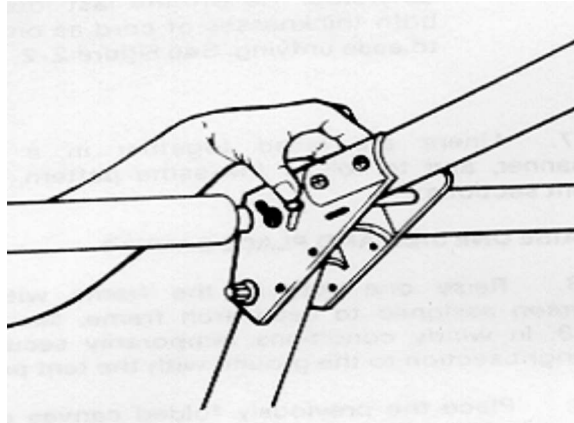


Figure 15C-3 Joining of the Tie Beams

3. Generally using one person per arch, raise one side of the frame.

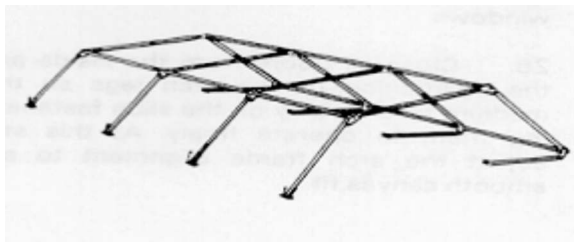


Figure 15C-4 Raising One Side

4. Before lacing the tent canvas together, close all doors. Lace the tent canvas together, placing them on the frame and attaching them at the top of the arches.

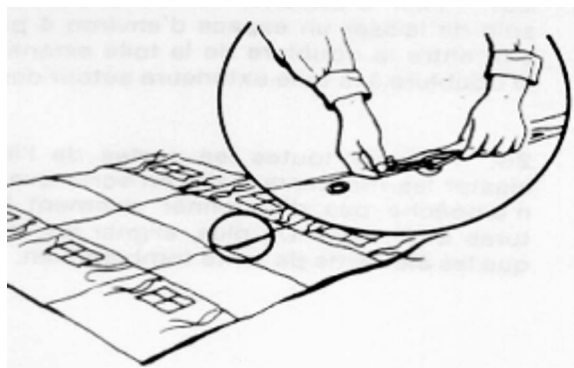


Figure 15C-5 Lacing the Tent Canvas

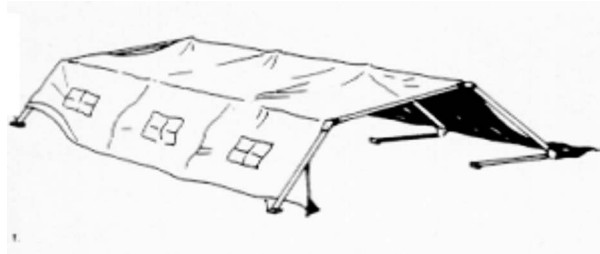


Figure 15C-6 Half of the Tent Is Laced

5. Raise the other side of the frame.
6. Attach the stays without tensioning them and lace the rest of the canvas.
7. Using straps, attach the canvas and lining to the ties on the edges of the roof.
8. Align the arches and adjust the canvas.
9. Raise the tent completely.
10. Drive pickets in each foot from the outside.
11. Tension the stays.
12. Attach the ground canvas using sandbags or earth.
13. Dig drainage trenches as required.

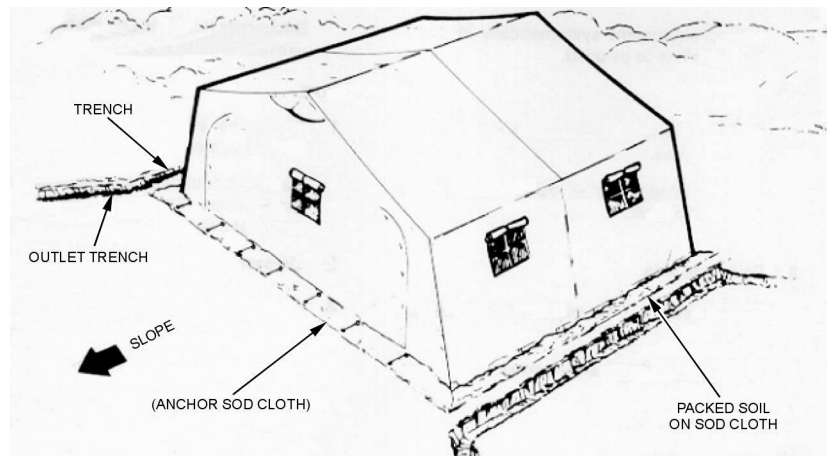


Figure 15C-7 Modular Tent

STRIKING A MODULAR TENT

1. Release cables and anchors and remove them if the wind is not too strong. Otherwise, leave them in place until the tent has been disassembled.
2. Remove earth or sandbags covering the ground sheet.
3. Undo adjusting stays from the edge of the roof.
4. Unlace the sides of the tent and lower one side.
5. Remove the lining strapped to the frame, and fold it.

6. Lower the other side of the tent, unlace tent parts, remove them from the frame and fold them.
7. Disassemble the frame and pack the components.
8. Take necessary steps to clean and dry components as required, with the shortest possible delay.

Folding the Centre Canvas

1. After having removed the canvas from the frame, close the windows and doors.
2. Stretch the canvas inside a building on the floor, on a dry and clean surface.
3. Clean the canvas and ground sheet using a broom.
4. Fold the ground sheet towards the centre.
5. Fold the canvas on its length towards the centre of the sheet, until the canvas is long and narrow.
6. Fold the canvas in the other direction towards the centre.

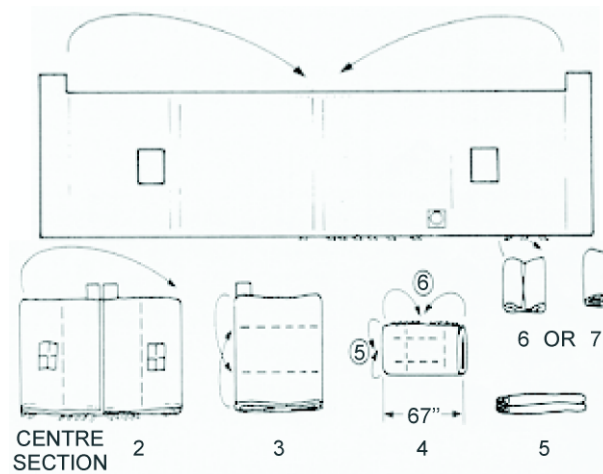


Figure 15C-8 Folding of the Centre Section

Folding the Outside Walls (Doors)

1. As for the central canvas, clean the canvas and fold the ground sheet towards the inside.
2. Fold the point towards the inside part.
3. Fold the canvas towards the centre and secure it.

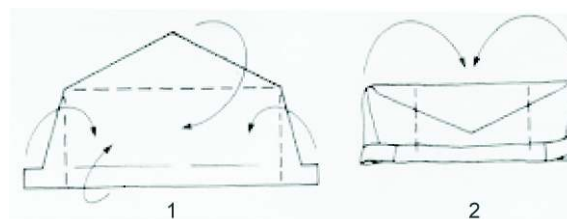


Figure 15C-9 Folding the Outside Walls

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RECOGNIZE ENVIRONMENTAL INJURIES ACTIVITY

<p>I am a sign to the body that one's boots do not fit.</p> <p>What am I?</p>	<p>To make me feel better one should relieve the pressure on the area by loosening the boots.</p> <p>What am I?</p>	<p>One will get me if they walk without extending their ankle on each step.</p> <p>What am I?</p>	<p>Some possible causes of me include lack of water, lack of calcium and lack of sodium.</p> <p>What am I?</p>
<p>When I occur one should wrap a heavy bandage on me and let me rest in an elevated position.</p> <p>What am I?</p>	<p>I am initial pain to the cold.</p> <p>What am I?</p>	<p>My affected area will be white and frozen to the touch.</p> <p>What am I?</p>	<p>Blisters usually form when I occur.</p> <p>What am I?</p>
<p>I mean too little heat.</p> <p>What am I?</p>	<p>To help prevent me one should seek protection from the wind, keep dry and ensure proper nutrition and hydration.</p> <p>What am I?</p>	<p>When I affect others I make them stumble, slur their speech, make bad judgements and complain of coldness.</p> <p>What am I?</p>	<p>My symptoms include shallow breathing, vomiting and dizziness.</p> <p>What am I?</p>

<p>Treatment for me includes moving to the shade, resting and drinking water with a little salt in it.</p> <p>What am I?</p>	<p>My symptoms include a pale face, a weak pulse, cold yet sweating skin and cramps.</p> <p>What am I?</p>	<p>My symptoms include hot dry skin, rising temperature, fast strong pulse and a severe headache.</p> <p>What am I?</p>	<p>Treatment for me includes laying in the shade with ones head and shoulders raised, removing layers of outer clothing and cooling the body with tepid water.</p> <p>What am I?</p>
<p>Treatment for me includes avoiding further exposure to the sun, taking painkillers and covering blisters with dressings.</p> <p>What am I?</p>	<p>Treatment for me includes resting in the shade, covering eyes after washing out debris and bathing eyes in warm water.</p> <p>What am I?</p>	<p>My symptoms include dizziness, headache, laboured breathing, lack of salivation, indistinct speech and the inability to walk.</p> <p>What am I?</p>	

ANSWER KEY – RECOGNIZE ENVIRONMENTAL INJURIES ACTIVITY

<p>I am a sign to the body that one's boots do not fit.</p> <p>Answer: Blister</p>	<p>To make me feel better one should relieve the pressure on the area by loosening the boots.</p> <p>Answer: Blister</p>	<p>One will get me if they walk without extending their ankle on each step.</p> <p>Answer: Shin Splints</p>	<p>Some possible causes of me include lack of water, lack of calcium and lack of sodium.</p> <p>Answer: Muscle Cramps</p>
<p>When I occur one should wrap a heavy bandage on me and let me rest in an elevated position.</p> <p>Answer: Sprain</p>	<p>I am initial pain to the cold.</p> <p>Answer: Frostnip</p>	<p>My affected area will be white and frozen to the touch.</p> <p>Answer: Superficial Frostbite</p>	<p>Blisters usually form when I occur.</p> <p>Answer: Deep Frostbite</p>
<p>I mean too little heat.</p> <p>Answer: Hypothermia</p>	<p>To help prevent me one should seek protection from the wind, keep dry and ensure proper nutrition and hydration.</p> <p>Answer: Hypothermia</p>	<p>When I affect others I make them stumble, slur their speech, make bad judgements and complain of coldness.</p> <p>Answer: Hypothermia</p>	<p>My symptoms include shallow breathing, vomiting and dizziness.</p> <p>Answer: Heat Cramps</p>

<p>Treatment for me includes moving to the shade, resting and drinking water with a little salt in it.</p> <p>Answer: Heat Cramps</p>	<p>My symptoms include a pale face, a weak pulse, cold yet sweating skin and cramps.</p> <p>Answer: Heat Exhaustion</p>	<p>My symptoms include hot dry skin, rising temperature, fast strong pulse and a severe headache.</p> <p>Answer: Heatstroke</p>	<p>Treatment for me includes laying in the shade with ones head and shoulders raised, removing layers of outer clothing and cooling the body with tepid water.</p> <p>Answer: Heatstroke</p>
<p>Treatment for me includes avoiding further exposure to the sun, taking painkillers and covering blisters with dressings.</p> <p>Answer: Sunburn</p>	<p>Treatment for me includes resting in the shade, covering eyes after washing out debris and bathing eyes in warm water.</p> <p>Answer: Sore Eyes</p>	<p>My symptoms include dizziness, headache, laboured breathing, lack of salivation, indistinct speech and the inability to walk.</p> <p>Answer: Dehydration</p>	