TRAINING FOR SCOUTERS TO DEMONSTRATE WINTER CAMPING TECHNIQUES FOR THEIR TROOP

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May 21, 2000

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To the Doctoral Candidate Review Board:

I am submitting herewith a Dissertation written by Earl F. Waters, entitled "Training for Scouters to Demonstrate Winter Camping Techniques for Their Troop". I have examined the final copy of this report for format and content and recommend that it be accepted in partial fulfillment of the requirements for the Degree of Doctor of Commissioner Science.

Jack Devich

We have read this Dissertation
and recommend its acceptance:

Accepted for the Piedmont-Appalachian
College of Commissioner Science:

Chairman,
Doctoral Candidate Review Board

INTRODUCTION

Many years ago, when I first started my career in Scouting as a Scoutmaster, I took a group of boys on a winter camp-out in North Georgia. I made several mistakes while preparing for the camp-out. The one in mind is the pre-camp shakedown that was an oversight on my part. We checked our food, tents, and a few necessities; but personal gear and clothing were overlooked.

I had a new scout with me who had never camped before. He appeared to be ready for the camp-out.

We arrived at Camp Waleska, a primitive camp in north Georgia, on a Saturday morning. We set up camp, cooked, practiced some of our scouting skills, and built a large campfire. We told stories and had a great time around the fire.

As usual, I was the last one to turn in for the night. I slept under a pair of military shelter halves on a foam pad with a good ground cloth under me. I changed into dry sleeping clothes and snuggled down into my GI sleeping bag for the night. The weather was clear,

windy, and cold. The temperature dropped to approximately 8 degrees that night. I slept great and never woke up all night.

The next morning, I discovered my blunder—the new scout brought a summer-weight sleeping bag. He had sat up all night by the fire and kept it going to keep warm. If I had known this, I could have done something to make him more comfortable, but I did not know until the other scouts told me what happened. That scout never went camping again and soon quit the troop. This is something I have continued to think about for over twenty-five years, and I hope this report will prevent another scout from suffering the way this scout under my care did. If the scouts in my troop had not told me, I would have continued to make the same mistake over and over again.

Winter camping is harder because mistakes are not forgiven and can be deadly. After the incident I just discussed, I have always carried extra sleeping gear and blankets. They do not get used very much, but they have proved to be a blessing when needed.

Use the information compiled in this report to make your scouts proficient winter campers who always have fun and learning how to prevent mistakes that can cause an unpleasant experience.

CLOTHING

Frigid winter conditions make the proper choice and use of clothing more vital than at other times of the year. Choose layers of clothing, loose layers, so a steady flow of blood can keep you warm. Wear several loosely fitting layers of clothing and footgear that will allow maximum insulation without impeding your circulation.

Avoid overheating by adjusting your layers of clothing to meet the outside temperature and the exertion of your activities. Excessive perspiration can dampen your clothing and cause chilling later on.

Choose loose-fitting clothing that will meet the most extreme weather you expect to encounter and be sure you can put it on and take it off a layer at a time. On a cool day you might leave home wearing a long sleeve shirt, long pants, a wool shirt, a sweater, mittens, and a stocking hat. As you hike to your destination, exercise will cause your body to generate more heat than it needs. Remove the sweater and put it in your pack. If you are still too warm, remove the wool shirt, mittens, and possibly the stocking hat.

At your campsite, you are no longer exerting yourself, stay warm by reversing the procedure—putting on just enough layers of

clothing to be comfortable. After sundown, you may want to add other clothing such as long underwear, wool trousers, and an insulated parka.

Damp clothing and skin can cause your body to cool quickly, possibly leading to frostbite or hypothermia. Keep dry by avoiding cotton clothing that absorbs moisture. Always brush snow or moisture from your clothing before it can melt or soak in. Body heat can drive perspiration through many layers of breathable clothing and force it out into the air. Don't wear waterproof clothes.

WOOL

Wool is durable and water resistant, even when wet it can keep you warm. Wool is ideal for use in cold weather, wool shirt or sweater will ward off the chill of cool evenings. Wool makes excellent blankets, hiking socks, hats, gloves and mittens. If wool irritates your skin, you may be able to wear wool blends or wear it over clothing made of other fabrics.

COTTON

Cotton is cool, comfortable, and sturdy, but it will not keep you warm when wet. Underwear, liner socks, caps, shirts and bandanas are made of cotton.

SYNTHETICS

Manufactured fabrics such as nylon, orlon, and polypropylene have plenty of outdoor uses. Some are waterproof and some are good insulation.

BLENDS

Blended fabrics combine the advantage of several materials in a single piece of cloth. A mixture of synthetics and wool goes into longwearing socks, shirts and warm jackets.[1]

[1] Clyde S. "Sandy" Bridges, *Fieldbook, BSA*, Third Edition, p. 42

FOOTWEAR

SELECTING FOOTWEAR

When trying on new boots, wear the socks in which you plan to hike or use with the new boots. Unlace the boot, slip in your foot, and kick your toes forward. If the boot is the right length, you should be able to slide two fingers between your heel and the back of the boot.

Next slide your heel back into the back of the boot and with the boot snugly laced, walk around, go up and down stairs and do a few deep knee bends. You want to be sure your heel isn't sliding up and down inside the boot and that the widest part of your foot isn't swimming around or being squeezed. Try on several different types of boots to get a feel for the fit. Take your time to get the right fit. Inspect the workmanship for quality and ask the opinion of experienced hikers.

New boots are stiff and must be broken in before you wear them on an extended trek.

Treat your boots with the dressing recommended by the manufacturer.

Wear the boots around the house and on short hikes until they have loosened. Extend the length of your walks or short hikes, and soon they will feel like a natural part of your feet.

What you wear on your feet must match the climate and terrain of your treks, and it must keep your feet warm. As with your other clothing, the layer system is the answer. Start with a pair of silk, nylon or thin wool socks next to your skin, covered by several pairs of heavier wool socks. Next add an insulated bootie or wool felt liner. You should be able to wiggle your toes but not be loose enough to cause blisters.

Leather hiking boots will not keep your feet warm. The snug fit of most hiking boots can limit the circulation of blood in the feet, especially if you are wearing extra layers of socks. Mukluk booties and overboots cut generously to hold your foot and plenty of insulation will allow moisture to escape and are much more effective.[2]

[2] Clyde S. "Sandy" Bridges, *Fieldbook, BSA*, Third Edition, p. 45-47

GLOVES, HATS, ETC.

Mittens are warmer than gloves. They allow your fingers to be in direct contact with each other, which will keep your hands warmer. Insulated mittens are best, wool mittens or wool gloves with waterproofing over mitts are good.

Stocking hats are great outdoor wear and are also good for sleeping. I prefer a hooded sweatshirt with a drawstring around the face for sleeping in cold weather.

Another trick I learned years ago is to change all of your clothing at bedtime, use a towel or your discarded long underwear to dry your feet and between your toes before putting on fresh dry ones. Dry sweatpants, a dry sweatshirt and dry socks always keep you warmer than damp ones.

Trying to explain to they boys why you dry yourself and put on dry clothes for sleeping is a task, most kids do not understand why until they get cold a few times.

Next to your footwear, your parka will be your most important piece of cold weather clothing. It should be large enough to cover

extra layers of clothing and to allow circulation of air to help move moisture away from your body. A large attached hood can prevent heat loss at the head and neck.

In an emergency, your spare blanket can be used to cover your head and shoulders. Wrap it around you like a mummy.

FOOD AND WATER FOR WINTER CAMPING

When considering food for your winter campout, keep these fundamentals in mind.

1. Simplicity of food preparation is the key to success. Cooking in subfreezing temperatures is difficult. Select foods that require little or no cooking, items that can be cooked by simply adding to boiling water are recommended. Many of these items are available in local stores at a lower cost than the fancy freeze-dried foods sold in sporting goods or outdoor specialty stores. Also, consider foods that can be eaten cold if necessary.

   Meals packaged in boiling pouches are great if you can afford them. To prepare them, simply drop the pouch into boiling water for a specified time. When removed from the water, simply tear off the end of the pouch and spoon out the hot food.

   Stick to single-pot menus if you must cook a meal. Consider precooking as many items as possible before your outing.

   Refrain from attempting to cook raw vegetables. Canned, precooked vegetables are a quick alternative if the urge persists.

2. Food for winter camping needs to be high in calories to produce sufficient energy to keep you warm. Carbohydrates and fatty foods are best for long lasting energy. Sugar produces quick energy and is hard on your teeth.
3. Refrain from foods that will freeze into solid rock, becoming impossible to eat. Avoid liquids that will freeze and split or break their container.
4. Use foods that are tasty, ones that most of your group will like. Eating is essential to staying warm, make eating as much fun as possible.
5. Lunch should be an all-day meal. Include items such as granola, raisins, nuts, chocolate, wheat germ, etc.
6. Be sure to include plenty of hot drink mix. Instant soups, hot chocolate, hot Tang and hot Jello are great during the day and at night.
7. Develop a written menu for each meal. Using your menu, develop a grocery list of food and supplies. Buy plenty of food and don't be miserly. Check the menu and food list with the other adults to be sure nothing has been overlooked. Suggest any changes that could be valuable in the cold weather.

8. Greater quantities of food and beverages are required for winter camping than for summertime. Your troop may require as much as 50 percent more food to keep warm in winter and perhaps even more for severe weather conditions. A generous supply of emergency food should be included in your provisions. Food produces the energy to keep you warm.

You need water in winter to avoid dehydration. Your body requires water in winter just as it does in summer. Under normal winter conditions, the average adult looses two to three quarts of water per day through sweating, breathing and elimination. Cold, dry winter air can cause you to dehydrate quickly, especially with windy sunny conditions. Dehydration upsets your body's metabolism making you susceptible to hypothermia. Cold temperatures also tend to suppress thirst. You can become dehydrated without being thirsty which is not usually true in summer. To get adequate quantities of water in winter, you may need to force yourself to drink liquids.

The need to remove clothing to eliminate body waste and the lack of readily available water, as well as suppressed thirst, are factors that tend to inhibit your intake of water. Many people have a

tendency to put off consuming water unless they are thirsty. In normal living situations, we depend on our thirst system to maintain an adequate intake of water, but this cannot be relied upon in cold weather.

Finding water in winter does not have to be a difficult task. Look for open water. Streams may continue to flow without ice at temperatures below freezing. An open stream can be the easiest way to get water.

Be sure to use a prescribed method of purification. Use iodine tablets or two drops of bleach per quart, shake and let stand for 30 minutes or maintain a rolling boil for 10 minutes. Do not take any chances.

Food can be kept from freezing by placing it into a cooler with a rock wrapped in a towel. Heat the rock in the fire before placing it in the cooler. You can also dig a pit. The pit can be lined with leaves or straw and then placing a couple of hot rocks in the pit with the food to prevent it from freezing. Cover the pit with canvas or leaves.

Frozen water containers should not be placed too close to the fire. The fire will melt the plastic and you will never get any water from them.

Water in containers can also be put into a pit for storage the same way food is stored. Warm some water and pour it into the storage container before putting it into the pit and then cover the pit with leaves or straw.[3]

[3] Handouts, Woodbadge, SR031, 1994

HYPOTHERMIA

What is hypothermia? Low body temperatures below 96 degrees Fahrenheit (35.5 degrees Celsius), well below the body's normal temperature of 98.6 degrees Fahrenheit (37 degrees Celsius), mark hypothermia. Just a couple of degrees can have a devastating effect on the human body. Severe hypothermia can cause an irregular heartbeat leading to heart failure or death. Body temperature is a balance between how much heat your body produces and how much is lost. The brain acts as a thermostat, sending and receiving signals to and from parts of the body that affect temperature: the spinal cord, muscles, blood vessels, endocrine system and skin. The body has many different reactions to cold. Shivering by the muscles is one way the body produces heat. Muscles shiver in response to messages sent by the nerves, shivering increases muscle cell activity, which, in turn, produces heat.

How can you tell if someone has hypothermia? If a person says they are unusually cold, check their temperature with a thermometer. Older people may be reluctant to complain or are

unsure of how serious the cold can be. Look for these signs of hypothermia:

- Confusion or sleepiness
- Slowed, slurred speech or shallow breathing
- Weak pulse, low blood pressure
- A change in behavior during cold weather or a change in the way a person looks
- Excess shivering or no shivering, stiffness in the arms or legs
- A person's surroundings – Has the person been in a cold place?
- Poor control over body movement or slow reactions.

The most important step in treating hypothermia is to make a person warm and dry. The body should be warmed from the inside out by giving warm fluids. Consult a doctor.

If you suspect that a person has hypothermia and emergency help is not available right away, move the person to a warmer location and wrap them in a warm blanket to stop further heat loss. You can also use your body heat to keep the person warm. Rubbing the person's arms and legs can make the problem worse.

Increased awareness is the most effective way to treat and prevent accidental hypothermia.[4]

PRECAUTIONS

- Wear a warm hat. Most body heat is lost through the head.
- Wear layered clothing. Proper layers will allow warm air to stay trapped but do not trap perspiration next to the skin.
- Protect your feet and hands. Wear loose, waterproof boots. Mittens warm the hands more effectively than gloves.
- Prevent dehydration and exhaustion. Drink plenty of fluids (no alcohol). Pace yourself when doing vigorous activity.
- People who are physically fit are less susceptible to hypothermia.
- Seek heat where available.
- Eat high-energy food such as nuts and raisins. Eat warm meals.
- Avoid coffee, tea, tobacco and alcohol.
- Try to plan ahead and be prepared for the worst conditions.
- Use the buddy system.[5]

[4] "Accidental Hypothermia", http://www.agenet.com, National Institute on Aging, 1993
[5] "Cold Facts", http://www.safety-council.org, Canada Safety Council, 1998

During your troop shakedown, while preparing for your campout, look for items that can help prevent or treat hypothermia.

- Head gear, a stocking hat or hooded sweatshirt, and a neck scarf
- Gloves or mittens
- Long underwear or sweat clothes to sleep in
- Coats, sweater and vests
- Footgear, extra wool socks - *Change socks a couple of times during the day if the weather is extremely cold or damp. You need one or two good pairs of boots with rubber boots for damp weather.
- A good sleeping bag rated for the season, an extra wool blanket to fold under your bag on top of your sleeping pad
- A tent that is small enough for two but not excessively large
- Food that contains high protein and requires liquids to prepare
- Supplies to help treat mild hypothermia and a game plan in case of an emergency.

SYMPTOMS OF HYPOTHERMIA[6]

98 - 95°F	Mild	Feeling chilly—shivering begins. Skin numbness, minor impairment in muscular performance, poor coordination.
95 - 93°F	Mild	Violent shivering, more obvious lack of coordination, slow, stumbling pace, difficulty speaking, mild confusion and apathy, pale skin that's cold to the touch.
93 - 90°F	Mild	Gross lack of muscular coordination with frequent stumbling and falling, inability to use hands, mental sluggishness with slow thought and speech, amnesia.
90 - 86°F	Moderate	Shivering stops, severe lack of coordination with stiffness and inability to walk or stand, incoherent speech, mental confusion, irrationality.
86 - 82°F	Severe	Severe muscular rigidity, extreme lethargy and a desire for sleep, dilation of pupils, slow respiration and heartbeat, skin ice cold to the touch.
82 - 78°F	Severe	Unconsciousness, followed by potential heart and respiratory failure.

[6] "Family Health", *First for Women*, p. 90, 2/28/00

SHELTER

Some type of shelter is necessary to protect you from the wind, rain or cold. The type of shelter used by scouts is a small, two-man tent. Early tents were made of cotton duck and did not use a fly with them. We used sheets of heavy plastic to make a fly and the same type of plastic was used as a ground sheet. The plastic sheet covered the tent and leaves or straw were mounded around the bottom of the tent for insulation. The plastic fly provided a space over the tent for still air. Leaves were also piled under the ground sheet for insulation (ground bed).[7]

The smaller two-man tents are best for winter because your body heat is not overwhelmed by the void space of larger tents.

Nylon tents usually come with a fly and provide the same type of protection from the elements.

Evergreen branches can be used to cover the sides of the tent instead of leaves; they serve as excellent insulation when available.

In an emergency situation, there are many ways to make or find shelter. Rocks, overhangs or cover may offer some protection from

[7] Bill Riviere with the Staff of L. L. Bean, *The L. L. Bean Guide to theOutdoors*, Random House, Inc., New York, 1981, p. 101-103

the elements. A large log may screen you from winds and be high enough so you can snuggle under branches laid over it. Branches laid over broken treès or a lean-to can help a lot and offer some protection from the rain. This type of shelter comes easy if you are up on your pioneering skills.[8]

A weekend campout to practice building and possibly using these shelters can prove valuable at a later date. Make a game out of building emergency shelters. Camp in milder weather and let they boys use the shelters to sleep in.

Snow structures or snow caves are the best shelters. In this part of the south it would be a rare occasion to get enough snow to build such structures. The Scout Fieldbook is an excellent resource to learn more about snow structures.

Any type of cover to keep out rain, wind or cold is better than no shelter at all. Lying in a pile of leaves is better than sitting in the open and letting the elements take control.

"One has to lie deep in the snow to learn how warm and protective it is. A den in the snow confines the body heat like a blanket or overcoat. It is a snug place, no matter how the wind may

[8] *Fieldbook for Boys and Men, BSA*, 1972 Printing, p. 309, Tom Johnston, James Gilbert Phillips, "Winter Camping", *Fieldbook, BSA*, Third Edition, p. 347-349

howl. One who holes up in the snow understands better the mysteries of the wood in the winter. He knows why the severe weather grouse squirm their way under soft snow and be quiet. He understands why deer bury themselves in drifts, lying a half-day or more with just their heads sticking out. He learns something of the comfort of the bear hibernation."

William O. Douglas, 1950

BEDDING

When Scouting started, sleeping gear by today's standards was primitive. Two or more wool blankets were often folded to form an envelope held together with horse blanket pins, sometimes encased in a canvas tarp or rubber poncho, the total weighing 12 to 20 pounds. Then came sleeping bags, insulated with wool bats—warm but heavy and bulky—or filled with cotton quilting—equally bulky, and inclined to become soggy. Later, bags were filled with kapok, a silk-like natural fiber. These were inexpensive, costing as little as $6.00 during the 1930's. However, under the stress of the sleeper's weight, the kapok soon broke down into powder and became useless as insulation. Down-filled "sleeping robes" were also available; while they would be considered bargains now, their cost was beyond the reach of the average outdoorsman forty years ago.

SLEEPING BAGS

Modern technology now provides materials and designs that are thermally efficient, durable and moisture resistant at about one-third to one-fourth the weight of previous bedding. Some of the

materials now in use as insulation in sleeping bags are down, polyester and polyester blends.

In theory at least, all insulations of equal thickness provide equal warmth, whether it is two inches of down, polyester or even sawdust. However, since you may have to tote your sleeping bag some distance, you want the lightest possible two inches. This ratio of warmth-to-weight is known as "thermal efficiency".

Of the two major sleeping bag insulations—down and polyester—down is more thermally efficient. Polyester, including Polarguard and Hollofil II, is somewhat less so. Although the percentages may be subject to challenge, it is safe to say that a quality down bag provides the warmth of a polyester bag that is 25 to 30 percent heavier.

When wet, down mats severely, losing more than 80 percent of its insulating value. What's more, drying may take several days. Even when down is merely damp, it's efficiency rating drops 20 percent. On the other hand, polyester-filled bags lose only about 5 percent of their loft when saturated and maintain close to 75 percent of their insulating value.

The price of a down bag is roughly double that of a polyester model of comparable loft and quality, the difference lying in the cost of the fills.

Initial cost is only part of the story. Evidence suggests that polyester's insulation value deteriorates with time. The loss can be accelerated by exposure to heat—a laundry dryer, for instance, or being left in a car trunk under a hot sun. This results in a flattening of the batts and a loss of loft. For a polyester bag, a reasonable life expectancy is only about three years at 100 percent efficiency, even with the best of care. After that, look for a gradual decrease in loft. A down bag, properly cared for, will maintain its loft indefinitely.

PADS AND MATTRESSES

The purpose of a pad and a mattress is to insulate your body from the cold ground and give some comfort. The most popular pad is made of foam, and closed-cell foam is ideal because it will not soak up moisture. Closed-cell foam pads are also lightweight and easy to carry.

Air mattresses are comfortable. They roll or fold into a much more compact bundle than is possible for foam; however, the free

flowing air within provides little, if any, insulation. They are not recommended for winter camping.

Always use a ground sheet under the pad to prevent moisture from the ground penetrating through the pad and into the sleeping bag.[9]

[9] Bill Riviere with the Staff of L. L. Bean, *The L. L. Bean Guide to the Outdoors*, Random House, Inc., New York, 1981, p. 84-100

ACTIVITIES

Even in the winter, sharing fun activities with your scouts is one of the most important parts of camping. During colder months, the activities should be kept less stressful than in more temperate months because your body is working hard just attempting to keep warm. Conserving energy conserves body heat. Winter camping is an excellent time to practice scouting skills such as stargazing, orienteering, pioneering, nature study and campfire fun, just to mention a few.

The cold weather gives us a clearer atmosphere, which makes for a perfect opportunity for stargazing. Make a game of identifying constellations and planets. A telescope is not necessary but, if one is available, it certainly can add to the fun.

Patrols can challenge each other with their orienteering skills. Games are listed in the Scout Fieldbook. Patrols can also challenge each other in building pioneering projects.

Learning to identify trees and plants during the winter is not as easy as it is during the spring and summer when there are leaves on

the trees. Scouts have to do some research to be able to name trees and plants in their area.

Planning a successful campfire program is one of the most rewarding experiences a boy can do. Skits, games, stories and singing around the campfire are always fun, but are certainly more appealing when the temperature drops; the campfire always feels the best in the winter.

SUMMARY

The rewards of a winter camp are much greater than most scouts have ever dreamed about. It is a challenge that most only think about when the temperature soars to 90 plus degrees during the summer.

A little planning and practice can open up a new world of the outdoors, new adventures to explore, and a new you to learn about.

Most scout troops hang it up when the temperature drops anywhere close to freezing. The leaders are lost as to what to do next, where to turn for help and are too embarrassed to let anyone know they do not know how to camp in the winter.

This report can be the start for you and your troop to become proficient winter campers.

TRAINING FOR SCOUTERS TO DEMONSTRATE WINTER CAMPING TECHNIQUES FOR THEIR TROOP

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