

Search & Rescue Survival

Clark County Sheriff's Office Training Rev. # 2018.1 Survival Skills

Core Competency Objectives

- This session will comply and meet Core Comp Criteria for the classroom

Requirement	Classroom - Performance Criteria
Through written evaluation the applicant will demonstrate knowledge of the survival skills required in Search and Rescue in the State of Washington.	<ol style="list-style-type: none"> Clothing worn by SAR volunteers for their assigned SAR operations must be appropriate for conditions encountered on the mission. What actions should be taken when mission personnel become lost or injured? The three elements of fire. Minimum hydration requirements for SAR mission personnel. Methods of water purification and their effectiveness. Fundamentals of survival in a non-urban environment.

Core Competency Objectives

- This session will comply and meet Core Comp Criteria for the field

Requirement	Field - Performance Criteria
Through performance demonstration the applicant will demonstrate survival skills and equipment:	<ol style="list-style-type: none"> Build a fire using materials found in the field and carried in a mission ready pack/kit. The fire must be constructed in a manner that will provide personal warmth; or team warmth; or warmth for a found subject for 8 to 12 hours (fire or stove - local regulations will be the guidance factor). Identify fuel for fire to provide heat and location identification for 12 to 24 hours, fuel sources must be from the field. Heat and provide warm fluids to a team member and/or the found subject (fire or stove - local regulations will be the guidance factor). Use any three (3) emergency signaling methods, plus one (1) emergency aircraft signaling method. Deploy and erect a shelter that is well marked and visible to nearby searchers, durable enough to protect from wind, rain, or snow, using materials carried in a mission ready pack/kit and/or found in the field. Shelter must be sustainable for 12 to 18 hours for the SAR member, members, or subject. Locate or identify alternate shelter (natural or other field sources of shelter). The equipment needed for emergency pack/kit and describe their use (county specific list of equipment), the trainee will be asked to remove certain specified items and describe their use. (Reference county SAR field operations guide or county SAR specific protocol for equipment). Tie three (3) basic knots of the five listed in the training.

(These Field Performance Criteria - Must be performed in a field setting - Proficiency Must Be Demonstrated) One-Kit-Only Use - Standard Equipment Use - Limited Field Requirements

Failing to Prepare is Preparing to Fail

- Pack equipment for the worst conditions you expect could occur during the outing.
- Let a responsible person know your trip plans, and do not change your plans without letting them know.
- Practice and master any necessary skills at home before trying them in a remote location.
- Check and practice with all your equipment before leaving home to be sure it is working properly.
- Acquire any maps, permits, or licenses for the area you will be in before leaving home.
- It is not advisable to go alone.

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Survival Equipment On Your Person

• A High Quality, Knife	• Fire Starting Kit:
• Navigation Kit & Map	• Matches
• First Aid Kit	• Lighter
• Space Blanket	• Fire starting aid
• Appropriate Clothing	• High energy snack food
• Drinking Water & a means to purify more	• Emergency Shelter
• Flashlight & Extra Batteries	• 20' of cord
	• Whistle and/or other signaling devices

(Must carry equipment required by your unit)

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Survival Kit Example

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Before You Go Out

- Learn Wilderness Navigation
- Practice Shelter and Fire Building Skills
- Pull Weather Information
- Pack Appropriate Clothing
 - You need to be able to keep warm and dry
- **ALWAYS Tell Someone Your Trip Plans and Stick To Them**

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Additional Equipment For SAR

- There is no precise list because it depends on what role you play; but consider the following:
 - Enough total equipment to be able to camp out for two days
 - Spare change of clothing (*useful for either you or your subject*)
 - Reliable radio with the proper frequencies
 - Additional first aid equipment that you are trained to use
 - As a responding team, your team should have enough equipment to begin hypothermia treatment
 - Other additional equipment that should be considered:
 - Survey Ribbon, Binoculars, GPS, Leather Gloves, Reflective Clothing, and hardhat/helmet with chin strap
 - A PFD if you will be working within 10 feet of a river

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Environmental Awareness Considerations

- Keep track of where you are going and where you have been.
 - Plot your progress on your map.
 - When walking in the woods, look back down the path you are traveling to learn how the return route should look.
- Be aware of natural hazards around you.
 - This could include steep slopes, avalanche conditions, and weather changes.
 - Avoid hazardous terrain when possible.
 - Do not take unnecessary risks.
- Watch for signs of heat exhaustion, heat stroke, hypothermia, or other outdoor related illness or injuries in yourself and in others in your party.
 - If problems do occur, stop immediately and treat the condition.

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If You Become Lost or Injured

- **Stop and stay calm**
 - Establish base and maybe starting a warming fire can have a calming effect
- **Take actions to reduce your immediate risks**
 - If it is getting dark, prepare to spend the night
 - If you are wet, get as dry and warm as possible
 - The actions taken should be directed at meeting your short term survival needs
- **Observe situation and evaluate your options**
 - Look at the risks you face and think about how you got where you are and what your best solution is
 - Decide on the plan of action most likely to succeed
- **Plan and act to ensure survival**

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Shelter (Clothing)

- Go over the types of clothing for the following conditions:
 - Dry, cold weather
 - Cold, wet, and windy weather
 - Arid conditions
 - Cover layering of clothing -vs.- single layer coverage

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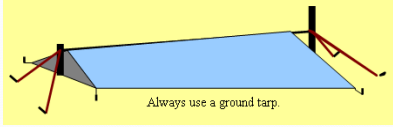
Overnight Shelters From Natural Materials

- Caves and hollow logs
 - Look for naturally dry areas
 - Add insulation and additional coverage for wind break and waterproofing as needed
- Debris Hut
 - Stack, weave together or tie branches together to form a simple frame (roof set at 45 degrees to encourage water runoff)
 - Weave boughs or other vegetative material into frame (8-12 inches thick)
 - Insulate as needed with dry leaves or ferns

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Overnight Shelters Tarp Set-up

- Location, Location, Location!!!
- A-Frame (*open and closed ended*)
- Lean To for quick coverage
- Add waterproof floor and watch drip line



Always use a ground tarp.

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Fire Building





Fire-Starting Diagram

A fire can be started in most weather conditions with some basic knowledge and persistence. There are many things not addressed here which can help the process, but the diagram below shows the general arrangement used in most conditions. Larger fire-batches stand like a rope, debris stack or log cabin style. Small fire-batches are made into fuzz sticks by partly shaving the outer edge of the sticks. Pitch wood can be found in many wooded areas and is pitch-soaked in some larger downed logs. In wet weather, dry wood can also be located on the underside of downed logs. In wet weather, a fire expressed to be started along the spine a while.

Arrangement & Ignition
When the fire is properly arranged, the tinder is ignited and gently fanned to increase flame intensity. Wood containing pitch can accelerate the process. Be sure to collect more than enough so you can add small fuel as needed to get the next larger fuel started.

Use back log to deflect or contain wind.

Bed of Dry Sticks on Wet Ground

<p>Large FUEL</p> 	<p>Fire-batches larger than 3/4 inch in diameter are added last. The size of the fire-batch varies with what is available. The size is increased gradually.</p>
<p>Fuzz Stick</p> 	<p>Small fuel, between 1/4 and 3/4 inch in diameter and/or fuzz sticks should be added next. The smaller sizes first laid out on a 6" sheet that resembles a rope.</p>
<p>Fire Fuel</p> 	<p>A large quantity of fire fuel (the driest available) should be added to the top of the tinder. Get three times as much as you think you will need. The best bet is to collect small dead branches from standing trees.</p>
<p>Tinder</p> 	<p>Tinder is made up of dry-fire fuels like fine moss, shavings, and seed heads along with any commercial aids you may need. (If you do not need to use your commercial aids, save them.)</p>

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Additional Fire Building Notes

- Items to consider for a fire starting kit:
Matches in a waterproof container with a striker, butane lighter, and/or magnesium flint, knife and fire starting aids such as cotton balls, fire paste or fire sticks
- If applicable, check with mission overhead before building a fire.
- Fire-starting aids such as fire sticks, fire paste, pitch, cotton balls soaked in alcohol or petroleum jelly, or even a small segment of a road flare can make fire starting easier in wet weather. Avoid using your stove fuel as a fire starting aid.
- If using a magnesium striker, be sure you have a knife to strike with and cotton balls as tinder for an ignition source.
- If possible, be sure that you build a fire pit and build your fire in a safe location, away from your shelter. Always extinguish your fire before leaving the area.

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Back Road Driving Tips

- Be sure you have tires and a spare adequate for the task.
- Carry safety equipment such as a tow cable, tools, chains for winter, shovel, hand or electric winch, axe or saw, flares.
- Use safe driving techniques:
 - Drive defensively and keep your headlights on
 - Keep speeds down and scan ahead for obstacles or oncoming traffic
 - Do not take unnecessary risks where road conditions are hazardous
 - Keep extra gear (blankets, clothing, hat) and water in your vehicle

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Water Purification

- Best to carry what you will need (with *extra in your vehicle*)
- Boiling (*filter with cloth, boil for 5 minutes*)
- Iodine Tablets (*follow instructions on container*)
- Commercial water filter (*maintain filter and replace element as necessary*)

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Hypothermia

(Killer of the unprepared)

- Hypothermia is a lowering of the body's core temperature to a point where normal brain and/or muscle function is impaired.
- Stages of hypothermia:
 - **Mild** - Symptoms include shivering, difficulty performing complex tasks (*fumbles*), confusion, apathy, sluggish thinking (*grumbles*), sluggish speech (*mumbles*), and altered gait (*stumbles*).
 - **Moderate** - Worsening of the mumbles along with uncontrollable shivering.
 - **Severe** - Shivering stops; patient displays increasing muscular rigidity, stupor progressing to a coma, decreasing pulse and respiration to a point where they're undetectable.

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Hypothermia Prevention

- Wear clothing that retains body heat when wet.
- Stay dry by managing clothing layers, removing layers as you warm up and adding layers back as you cool down.
- Drink plenty of water.
- Eat lots, especially carbohydrates.
- Maintain a pace that prevents overexertion.
- In a group, watch for signs of hypothermia in others.
- Treatment of hypothermia and hyperthermia will be covered in the Subject and Searcher First Aid section.

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Heat Exhaustion

(In hot weather ration sweat not water)

- This condition occurs when a person has been sweating heavily while working in warm conditions. Symptoms generally include tiredness, flushed skin, and heavy sweating. Thirst is usual and subject may feel dizzy upon standing.
- Treatment consists of rest in a cool location and drinking of cool water. Subject can be further cooled by wetting down and/or fanning.

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Heat Stroke

- Heat stroke occurs when heat is being produced faster than it can be shed. The core temperature can rise above 105° F. Disorientation and bizarre personality changes may be a common sign. Skin turns hot and red and sometimes (but not always) dry.
- To treat, subject must be cooled rapidly. Remove heat retaining clothing and cool with water & fanning. Concentrate cooling effort on head and neck. Cold packs may be used on head, neck, groin, hands, and feet. Allow subject to drink cool water when they are able to accept it.
- **Subject must see a doctor ASAP**

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Walking in the Woods

- **Maintaining Traction**
 - Use proper footwear for conditions
 - Slow down on mud and snow
 - Avoid use of logs as travel aids
- **Walking Through Brush**
 - Don't follow too close
 - Use eye protection where brush is thick

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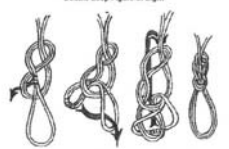
Crossing Water

- If possible find a dry crossing (preferably a bridge)
 - *If using logs, do not cross over water you couldn't wade*
 - *Do not use a log that is more than chest high*
 - *Do not use a log with loose bark, unstable, or slippery*
- Where crossing is absolutely necessary, select tail-out area where water is shallow (*streams may not be crossable where fast flowing water is more than knee deep*)
- When crossing use a walking stick or link arms with other party members to help stabilize yourself (*keep two point contact at all times*)
- Dry out wet clothing after crossing
- On SAR Missions - Use a floatation device when working around rivers which include any crossings other than bridges
- Zip lock or other water proof bag for protecting electronics while crossing water.

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SAR Knots

Double Loop Figure of Eight



The double loop figure 8 is used in equalizing the load between multiple anchor points. It can be tied either on a bight of rope or as a follow thru knot used with the in-line figure of eight.

Figure-of-Eight loop on a bight





Figure-of-Eight Follow Thru




The above re-threaded method is usually used to tie into a harness, and is just a case of making a figure-of-eight on the single rope, looping through the harness, and following the knot back through itself.

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SAR Knots

Bowline




The bowline is easy to adjust and untie. Beware, though, that if tied incorrectly it can be unsafe. You should really tie a stopper knot in the loop with the loose end to prevent it from pulling through.

Lark's Foot or Girth Hitch



Quick knot, but weak. When tied around an object it is referred to as a girth hitch. Usually used with webbing loops as quick anchor points.

Clive Hitch

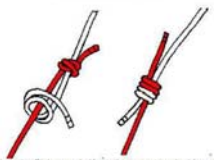


The Clive hitch is easily adjusted when placed, but is not a particularly strong knot. If one side of the knot is to be loaded, place the diagonal underneath. If both sides are to be loaded, place the diagonal at the top. Tighten before loading, as it may run if loaded when loose.

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SAR Knots

Double Fisherman's Knot



Better than the Fisherman's Knot, this uses two double overhand knots. Good knot, as it can be difficult to untie. Check regularly for the loose ends getting shorter, and if so, re-tie. Tighten with body weight.

Sheet Bend

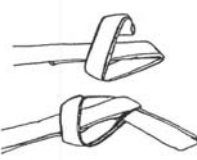


Occasionally used to join the ends of ropes, may be adjusted easily, but can also come undone easily.

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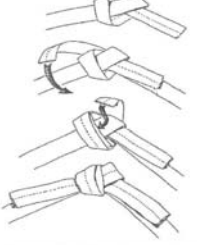
SAR Knots

Overhand Loop



This knot can be used with slings and ropes, for shorting slings to creating loops in the end of webbing. Once loaded it is difficult to untie.

Tape Knot or Water Knot

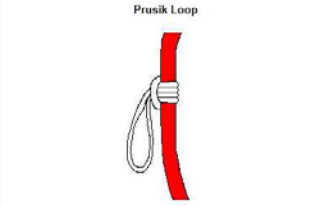


Usually used for joining the ends of ropes or slings. Can work better immediately, as both rope ends, and one end of the ropes are getting shorter. Tighten with body weight before use. Tails should be at least 2 inches long.

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SAR Knots

Prusik Loop



Two wrap prusik loop is mainly used for personal use, where a three wrap prusik is used for heavier loads and system rigging.

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Dealing With Wild Critters

- Insects
 - Bees, Hornets, and Wasps
 - Blood Sucking Insects (mosquitoes and ticks)
 - Poisonous Insects (spiders)
- Small Mammal Issues (rodents, skunks, squirrels, chipmunks, and raccoons)
- Large Mammal Issues (coyotes, bears, and cougars)

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SAR Equipment Requirements



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What You Need To Learn

- Why having the right equipment is important
- Equipment carried by resource type:
 - Command and Support
 - Dog Handlers
 - Ground Searchers
 - Mobile Resources
 - Mounted Units
- Learn to use and care for the equipment you have

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Purpose of SAR Equipment

- The primary purpose of equipment is to support the SAR personnel while they are on a mission.
- It is also necessary that this same equipment carried by volunteers can support the needs of any subjects they find during a search.
- To provide shelter from the elements.
- To aid in keeping you safe.
- The lists in this program do not meet all SAR volunteer and/or subject needs all the time but should allow a basic gear list as a starting point.

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What Needs Must Be Met

- Shelter from the elements:
 - Layered clothing & hat for insulation (not cotton)
 - Proper boots that are correctly maintained
 - Protection from rain (good quality rain gear)
 - Good sleeping gear (sleeping bag, ground pad, and tent or other shelter)
- Search equipment:
 - Navigation, lighting, basic survival, signaling, first aid, safety equipment, work gloves, and communication equipment
 - Safety Equipment: Safety vests, hardhat, and other activity specific gear

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More Equipment

- Energy and Hydration:
 - High energy snack food for urban and 24 hour packs
 - Meal packets that need to be heated for extended stay (48 hours)
 - Water, plus means to acquire more (1.5 to 2 quarts in pack plus water purification tablets or an extra gallon in vehicle)
- Kitchen Gear:
 - Stove (3-hours fuel), mess kit, eating utensils, and cleaning supplies
- Personal Hygiene – soap, toilet paper, tooth brush & paste, and hand sanitizer

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Do You Have Questions???

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