Adventurer's MK

SEARCH AND RESCUE

Introduction
The term SAR indicates two separate functions; first search and second rescue. Rescue utilizes proven procedures along with a high degree of technical skill for victim retrieval. With known victims in known locations, the principle problem involves devising the quickest method of removing that individual from danger to a place of safety and medical aid. On the other hand, search for missing, lost or injured subjects involves a great deal more. Search and search planning encompass a sophisticated science involving a great many techniques that include: statistics, probability, human behaviour, interviewing, and terrain evaluation coupled with track and clue awareness. These represent but a few of the standard tools used in land search strategies.

Weather
Severe weather will have an effect on survivors and rescuers alike and will certainly hamper rescue efforts. Forecasts of severe weather should be considered as a limiting factor on the time period during which search and rescue can occur.

Irrational Behaviour
It is important to realize that missing persons will seldom behave rationally. When a person is lost, some degree of fear will always be present and may override the good judgement of an otherwise sensible person. The resulting panic may result in aimless running or frantic scrambling.

Most lost persons are poorly equipped. The few who are well equipped seldom use the materials they have, often discarding useful items along the way. Clothing frequently suffers this fate. The fact that people will be looking for them is not recognized by many lost persons, and these people make no effort to make their presence known, even going so far as hiding from would-be rescuers.

Effective Searching
During the search you must concentrate totally on what you are doing. Search is no place for small talk or horseplay. Use every sense you have to try to detect clues or the subject. Put yourself in the subject's shoes. Ask, "if I were at this point, where might I have gone or what might I have done? What would I have seen, and how would it affect me? Given the weather at the time, what would I have done? What is the easiest travel path there?" However, also keep an open mind. Remember that lost subjects may act irrationally and go places you would not expect.

- **Sight** is arguably the primary search sense, best used to find clues. There is only one subject, but there are thousands of clues.
- **Hearing** is extremely important, especially early when the subject Is responsive. One can hear much farther than she can see, especially in dense bush. A search subject may reply in a very faint voice, easily

Point Last Seen (PLS)
This is determined by someone who actually saw the person and can pinpoint where they were on a map. This is useful if the point is somewhere along the intended route of travel or at location within the search area. It is useless when the PLS is the subjects home as they were leaving on the trip.

Last Known Point (LKP)
LKP may be more useful in some cases than a PLS. It may be the subjects car parked at the trailhead, the abandoned campsite, the verified piece of equipment found abandoned in the woods, the subjects signature in a summit log book. No one actually saw the subject there but evidence and clues are just as good to place the subject at that location at some point after they left on the trip. All these items narrow the search down and refocus it. There may be only one PLS but there may be several LKP discovered as clues are found and verified.

Likely Spots
A likely spot is any place that may attract a lost person or a geographic feature that could be the cause of the subject being overdue. Examples may include water, mine shafts, caves, shelters, viewpoints. Geographic features that can cause problems include steep terrain, fast rivers, switchbacks, cliffs, drainage's and terrain that tends to direct a person's direction of travel. These are places to search first with hasty teams and things that search teams should be alert for while they search. Trying to determine what happened to the missing subject is a significant part of any successful search.

Tracking
All search teams should have some tracking training. Finding tracks or other signs of a subject passing are excellent tools in reducing the size of a search area. The most significant problem with tracking is making sure the sign or track is in fact made by the subject who is missing and not by some other person or searcher.
What to look for

- Obvious full or partial prints,
- Signs of compression, scuffing, or crushing of plant material,
- Feel for track impressions,
- Look for vegetation damage caused by a person that is not associated with the track (both low in the track and plants disturbed by passage.
- Anything the subject may have dropped (clothing, garbage, equipment, etc)
- If the next track cannot be found check to be sure that the subject did not change or reverse direction.

Clue Aware
Searchers must be made clue aware so they do not overlook the potential clue left by a subject. There are far more clues in a search area than there are subjects. Clues include abandoned camps, equipment and clothing, candy wrappers, footprints and scuff marks, smoke from a fire, emergency signals, and voice response to voice checks.

Some Basic Search Skills and Clue Awareness

- Always need to be clue aware.
- Mark all clues found.
- Call clues in and give a good location.
- Try to preserve tracks.
- Do not destroy evidence.

How to acquire the “Supplementary Skill”
To stay alive in rescue work you must understand the dangers you may meet and the precautions you must take. This is the “supplementary skill.” In any neighbourhood, new buildings are constantly going up and old ones are
being torn down. Study them. Learn how houses are made.

Rescue parties must often use whatever comes to hand. Learn to improvise. But remember Safety must be foremost in your mind.

Knot Tying

Although there are other knots and hitches that can be used in rescue work, the ones mentioned here are the most common and should be learned if you are to be a good rescue worker. Lives may depend on your being able to tie the right knot securely at the moment it's needed in light or dark, rain or shine. The use of natural fibre rope must be discouraged for the rescue of human life. For most other operations, natural fibre rope will suffice. Beware of ropes or straps that have been in the sun for some time, this may have weakened them.

- **Simple Figure Eight Knot**
  This knot, from the figure eight family, is used mainly as a stop knot to prevent a free end of rope from running through a pulley or a block.
- **Reef-Knot**
  A useful knot for general purposes. Used mainly for tying bandages.
- **Clove Hitch**
  A quickly tied hitch which forms the basis of many securing knots. Useful for anchoring a rope to an object.
- **Figure Eight-on-a-Bight**
  This is a widely used knot for tying/ attaching safety lines, persons on the rope, anchor lines, rescue devices and other equipment.
- **Sheet Bend**
  A sheet bend is used for joining two ropes of different sizes. The double sheet bend is more secure than the single sheet bend and is used when there is a great difference in the size of the rope. In rescue work, a double sheet bend is used for tying all ropes together, and can be used for joining ropes with chains. Both knots have the advantage that they do not slip when the rope is wet.
- **Bowline**
  The bowline makes a loop that won't tighten. Useful as a general purpose knot.
- **Round Turn and Two Half Hitches**
  This knot is used for securing a rope to a spar, picket or anchorage. It is particularly useful where guy lines are secured to pickets and an adjusting knot is required.
- **Timber Hitch**
  This is a quickly made temporary knot used to secure a rope to a spar, plank or pole. When lifting spars, planks or poles this knot should be used in conjunction with a half hitch placed at the upper end of the object being raised.

Wilderness Search Methods

- Utilizes 3 to 6-person teams.
- Usually is more efficient when teams work independent of each other.
- Teams can guide off compass, natural or manmade features.
- Teams should be assigned specific, well-defined areas.

Voice Checks

Name calls are important when conducting a search for subjects that are likely to respond. To be effective they should be given at reasonable intervals during the search of high probability areas. Name calls can be given by single teams or in unison by teams working in close proximity to each other. An effective name call works as follows:

- Name calls should be given about every 2/10th of a mile for mobile searchers in areas where there are travel routes such as trails near roads (more frequently if there is background noise that could interfere with the subject's ability to hear you or vice versa.
- Utilize good projection points such as ridge tops or confined basins when they are present.
- Navigator lets team know that it is time to conduct a name call.
- Team leader coordinates team to give one long blast with a whistle or some other loud noise making device. (Whistle on three [1]–[2]–[3] and all would blow their whistle while covering their ears.)
- The subject name is called in the same fashion. For example if the subjects name was Ralph, the TL would say (Ralph on three [1]–[2]–[3] and all would yell RALPH while covering their ears.)
    - Multiple searchers should face different directions while giving a name call. A single searcher should face different directions while giving multiple name calls at a stop.
    - Be sure to listen for a response carefully for 10 seconds after giving a name call.
    - Repeat the name call at least twice at each stop. Different names can be called if there is more than one subject.
- Team leader can utilize a radio to coordinate multiple teams in close proximity to conduct group name calls.

When a subject is found

- Look for safety issues around subject find area.
- Assess subject and provide first aid.
- Report find and location.
- Report subject condition once determined.
- While first aid is in process develop an evacuation strategy.
- Order additional assistance needed ASAP including aid unit or helicopter.
- In the case of a crime against the subject, preserve evidence and record any statements made by the subject.

Taking Charge of the Scene

- Approach Safely:
- Look for potential safety hazards posing a risk to subject or rescuer.
- Mitigate any potential safety problems.
- When possible radio communication with base should be conducted out of hearing range of the subject.
- Team members should not group up around subject but should rather be put to work preparing evacuation route, assisting information gathering for resource orders, or assisting as needed for treatment of hypothermia and subject stabilization.
- All team members touching subject need to apply BBP (**B**lood **B**orne **P**athogens) barriers before assisting with subject.
- Report location and subject condition to supervisor and up through chain of command.
- If stretcher will likely be required, make request for equipment and manpower needed as soon as possible.
- If injuries appear to be serious, consider requesting EMS Personnel to site to assist with rescue.
- Team Leader should begin evacuation planning process, first aid person should prepare to assess subject, and other team members assist as needed.
- SOMEONE NEEDS TO TAKE NOTES.

Initial Assessment

- Apply BBP protection before approaching subject.

- First Aid Person approaches subject feet to head (if possible) and kneels beside subject.
- Introduces him/her self and asks subjects permission to assist.
- Conduct Initial assessment:
- Place hand on patients head asking them not to move until assessment is complete
- Establish level of consciousness.
- Take care of any existing ABC issues:
    - **Airway** (Is subject breathing if yes, get rate/minute. Normal = 12 – 20/min.)
    - **Bleeding** (If there is bleeding control with direct pressure).
    - **Circulation** (check for radial pulse on wrist or carotid pulse on side of neck, and count for 15 seconds and multiply by 4 for rate/minute. Normal = 60-100 / min. If no pulse, begin chest compressions unless subject is obviously deceased).

Illness Assessment

- If subject is conscious, ask him/her to describe how he/she feels.
- If there is a problem ask if this has happened before
- Ask for any known injuries.
- If yes, see if they know how it happened.
- Check and note site and do not re-check during secondary assessment.
- Check for Medic Alert Tags.
- Ask subject if he/she is taking medication.
- If yes, try to get information on type and if they are current.
- Check the skin temperature. Normal at rest would be neutral and dry.
- Check the tissue inside the lower lip. Normal would be pink, pale, or ruddy.

Second Injury Assessment

Once initial assessment issues are cared for, proceed with Injury Assessment.

- Ask for any known injuries or sites with pain. - If yes, see if they know how it happened.

Place hand of subject's forehead and ask subject not to move. Ask them to respond verbally if he/she feels any pain.

- Check the head for pain, deformities in the skull or jaw, signs of injury, and bleeding.
- Check the eyes for blurred vision, can the eyes track a moving object, and check pupils relative size and dilation response with a light source.
- Is there a bloody or clear fluid discharge coming from the nose, ears, or mouth.
- Check the neck for pain or discomfort. If pain is present, stop assessment and immobilize the neck.
- Check the shoulder, shoulder blades, and collarbones for pain or deformities.
- Check the arms one at a time for pain and deformity.
- If there is no indication of injury, ask the subject to grip your finger with each hand.
- Check the ribs for pain and deformity by pressing lightly on each of side over the length of the rib-cage.
- Without moving the subject, check accessible areas along the spine for alignment, sensation, and pain.
- Check the abdominal area for pain and tenderness by pressing lightly in each of the four quadrants.
- Check the pelvis area by lightly pressing down on the pelvis and then in on the hips.
- Check legs, one at a time, for pain, deformity, and sensation.
- If there is no indication of injury, bend the knee slightly, and rotate each leg gently.
- Then have the subject apply pressure against your hand with his/her foot.

If there is pain on any extremity, no further motion of that extremity should be attempted.

- After head to toe check, roll the subject to assess rest of spine if it appears safe for the subject to do so.

- If any injury indicators were found, subject complains of back pain, or subject suffered a fall which could have resulted in a back injury, rescuers should use the proper log role with neck stabilization techniques when conducting this step.
- This is a good time to start treatment for shock and hypothermia by placing pad and sleeping bag or other insulation on ground.
- If additional EMS assistance is needed prior to evacuation of subject add the request to personnel order.
- Periodically monitor vitals and level of consciousness until subject is passed off to EMS.
- It is important to record Base Assessment Information as soon as assessment is done. If possible have someone record Information As Assessment is completed by First Aid person.

Subject Stabilisation Evacuation

- Make determination based on assessment as to what immediate treatment is needed.
- Treat for hypothermia, hyperthermia, or shock if needed.
- Subjects with suspected spinal injuries should be stabilized in place and packaged for transport under the direction of EMS personnel.
- Fractures should be splinted in place if possible for evacuation. When straightening is necessary, stabilize subject in place until EMS can be brought to site to assist.
- Strains and sprains can be treated and evacuated. Evacuation technique is dependent on whether subject is able walk after injured area is wrapped. If uncertainty exists about severity of injury, treat injury for the worst of the possibilities.

Evacuation Process

- This process is usually handled by team members not assisting with first aid:
- Determine location of subject and best route to subject location.
- Notify supervisor of find, location, confirm subject identity, and preliminary subject condition report.
- Work with first aid person to determine evacuation needs:
- Can subject walk out or is a Stretcher needed.
- Order equipment and personnel needed to carry out the evacuation.
- Prepare route out while waiting for first aid to be completed.
- If subject can walk out assist them as needed.
- When Stretcher is needed assist medical person in loading subject as needed.

Loading subject into Stretcher:

- Subject's injuries should be stabilized prior to loading.
- Place sleeping pad on ground.
- Get a tarp and sleeping bag under subject (use log role if needed).
- In cold weather, cover subject with top sleeping bag to maintain warmth and/or to help treat hypothermia and shock.
- Wrap tarp around subject if needed to protect from weather.
- If subject's injuries allows for self loading, get them to do so. Stretcher can be placed in a scoop position to make it easier for subject to slide into it.
- If subject needs to be lifted into Stretcher, the tarp can be utilized for the lift.
- Subject should be covered as needed to address stability needs.
- Once subject is secured in Stretcher begin evacuation
- Avoid placing straps directly over injury.
- Package in a way that allows periodic monitoring of vitals and circulation below splinting or wrapping during evacuation.
- Check to see subject is comfortable yet stable once tied into Stretcher.
- The subject should wear safety glasses during evacuation.

- Only one person should check to be sure strapping is equally tight and subject adequately secure prior to evacuation.

Stretcher Carry

- Continuous switch off while walking method:
- First aid person usually remains at the head of the Stretcher to both monitor subject and direct evacuation.
- Team members can be switched out two at a time when medical person uses the (switch on three) command.
- Subject should be carried feet first when possible so medical person can walk facing forward.
- Subject's head should be slightly higher than feet during carry. Reverse to a head first carry while climbing a hill to make it easier for evacuation team to keep head properly elevated.
- Entire team can be switched off or rested as needed if there are not enough people for the continuous switch off method.
- Use personal load bearing straps when needed to better manage subject position and extend carrying length of Stretcher team.
- First aid person should maintain level of conscious evaluations and check other vitals including circulation past wrapped injury sites periodically during evacuation process.
- Remember to record and treat any changes in subject conditions that display during evacuation.

Record Keeping

- It is important to keep records of any treatment given during a rescue process. There are some simple forms available for this (see example at end of document).
- If there are enough people at the subject site assign a record keeper.
- Continue to monitor and talk with subject to monitor level of consciousness.
- Periodically take and record pulse and respirations.
- Monitor circulation below any injury site to ensure circulation is being maintained.

Hand off to Emergency Medical Response Unit

- Once subject find is made, the IC should initiate EMS response either to base, evacuation walk out point, or to subject find site depending on seriousness of injuries.
- All subjects should be checked by EMS before being released.
- Any notes taken to record subject care should be given to EMS Responders.
- Time of handoff and names of EMS Personnel receiving subject should be recorded.
- If SAR equipment is being transported with subject to advanced care facility, get the location of the unit where care will be given.