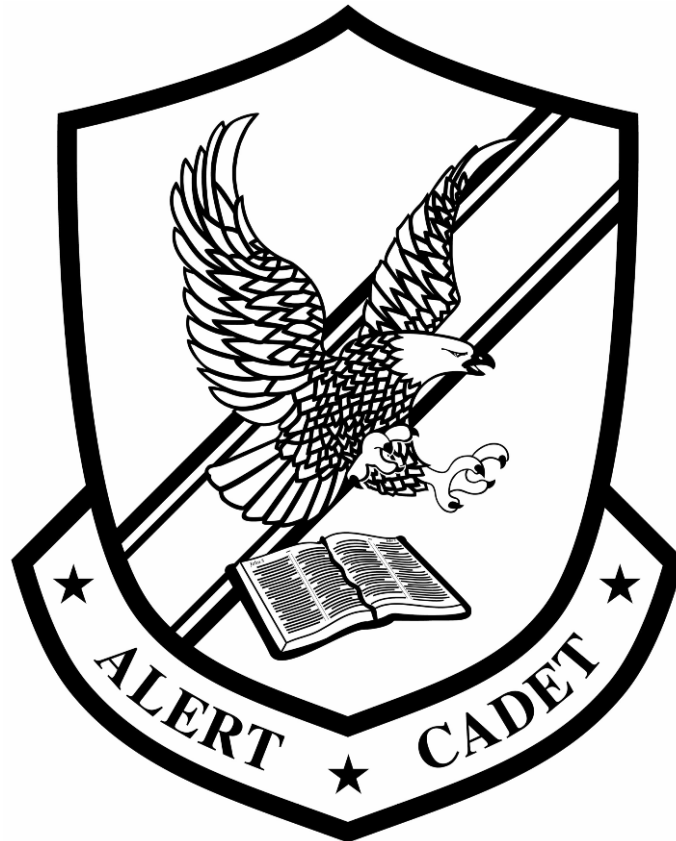


Search And Rescue

For Use in ALERT Cadet Units



**A Specialist Rank Project
Created By
CFC Stephen Winchell
Wisconsin First Bravo
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Introduction

The feeling of being lost is truly terrifying, especially in a wilderness region where there seems little hope of being found. While not as serious, a missing item can still be a big problem. In these types of situations, an organized technique of trying to locate missing objects known as Search and Rescue demonstrates its value. Over the years, Search and Rescue (abbreviated SAR) has been developed to be as efficient as possible. This manual covers land SAR using search teams in a woodland setting. There are a number of other resources used in finding missing people, but this type is the most effective for use by Cadet Squads.

The concepts presented here are fairly simple. The strength of SAR is its ability to accomplish the task of thoroughly searching an area in the most efficient manner. No ground is searched twice and nothing is missed. A group of people may wander all over a small piece of ground for a time and assume that what they are looking for is not there because they did not see it. Yet the chance exists that they all randomly did not look in the one spot where the object is, so they can never be sure. SAR provides reasonable certainty that what was sought is not in the area searched. While the concept is very simple, the execution can be somewhat challenging. However, it is worth learning this skill because of the purposefulness it teaches as well as the other skills it reinforces. For these reasons, SAR training has been included in the requirements for Crisis Response Training. This manual has been designed to equip leaders to be able to teach this skill to their Unit, even if they have had no prior experience in it. Working on SAR has been very beneficial for our unit and hopefully the information in this manual will allow your Cadet unit to profit from the principles of Search and Rescue as well.

I. Organization and Procedure

The basic unit of Search and Rescue is a team of men organized into a search line, sometimes called a "gridline". A gridline is composed of several squads and works together as a team to cover an area in a thorough and efficient manner. The searchers are equally spaced at a distance that allows them to thoroughly scan all the ground traversed. Maneuvers are executed with a specific method in order to eliminate confusion and inefficiency. Usually there is one person in



THIS ORDER CAN BE FLIPPED HORIZONTALLY TO GUIDE LEFT.

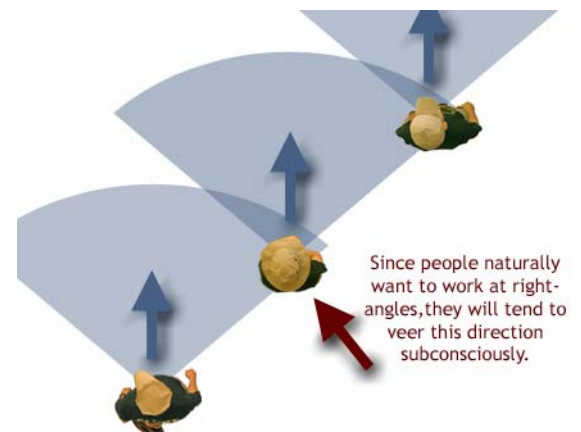
charge of the search line to give commands and keep it organized, but the search line's success depends on the faithfulness of each individual search member.

Squad structure, Squad leaders, and keeping a good line

A search line is generally divided up into several "squads", each placed under the jurisdiction of an appointed squad leader. The squad leader assists his men (usually four to five) by helping them to stay in their proper position in line, communicating with the search commander, assisting in areas that require extra searching, and other tasks. The squad leader is able to see and do things that a normal searcher is unable to do, because they cannot leave their positions. One of the hardest aspects of actual searching is keeping proper alignment and spacing in the search line. Rough terrain or a large search line only intensifies this problem, and the role of the squad leader as the one who keeps his squad in formation becomes especially important.

Guiding directions

Each member of the search line is assigned to a specific place in line and is responsible for a designated section. In order to maintain a constant distance, each searcher "guides" or gauges his distance from the searcher next to him. An entire search line either guides left or right, each looking to the man next to him in the specific direction to maintain the same spacing at all times. Each searcher should stay a little behind the man beside him that he is guiding off of. This way, the team stays in a line and the searcher can easily keep his partner in view. If a line is guiding right, the man on the extreme right is called the "point man". He sets the direction and pace for the entire line. When the search line changes directions, the line will guide the opposite direction, but have the same point man. To some extent, the entire line relies on the point man, so this should be a knowledgeable LTC or father. He will usually have a compass and use it to keep the line running in the right direction. If it is necessary to keep track of distance, the man next to him should count the paces. A specific depth will be necessary to make certain that the intended search area is covered.



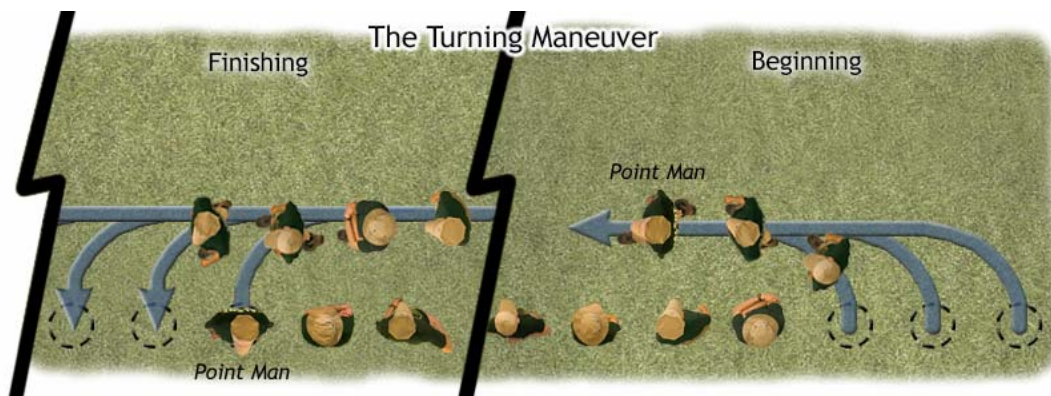
THE LINE IS STAGGERED SO A SEARCHER CAN KEEP THE NEXT MAN IN HIS PERIPHERAL VISION.

Whistle commands & Movement

The spacing between searchers may be up to a hundred feet so communication to the whole line may be difficult. For this reason, whistles are often used to relay commands, and every squad leader should be equipped with one. One whistle blast generally means "ready", and two blasts is the signal to "execute" a command. The search line will fall into line beginning with the point man, and space out from there. Once the last squad is in position, the squad leader in charge of that squad will give one whistle meaning that everyone is ready. Upon two whistles from the commander, the point man (only) moves out, causing a delayed chain reaction down the line as each man moves out to stay just a little behind the man he guides off of. Every searcher must stay alert so as not to get ahead or fall behind his place in the line.

Changing directions

When the assigned distance has been traveled, the line must turn around and return in a parallel direction alongside the area which has already been searched. There is a specific procedure for turning the search line around so that everyone stays in their position in line and as much confusion as possible is eliminated. The search line should be set up so that the point man is on the outside of the area being covered on the first pass. When the last searcher comes to a halt at the end of the area, his squad leader will give a blast on his whistle signaling that the entire line has come to a halt. Upon the commander's double whistle, the point man turns and walks down in front of the search line. As he passes each man, they fall in close behind him at the tail end of



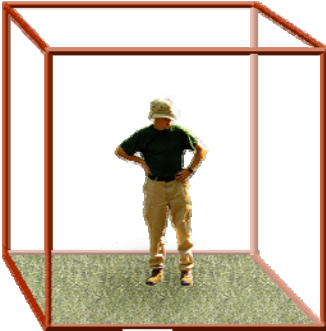
a growing line. Once the point man passes the last man in line, he turns to the inside (facing the direction of the next pass) and spaces himself about half the normal interval away from the last searcher. This is so there is an overlap to ensure no region is missed in between the two passes. The point man should then quickly check his azimuth (an orienteering term referring to a compass heading, see *Navigation*) and point his arm perpendicularly to it to help the others to know where to line up. As each man comes to his place in line, he turns in and stands in that position. This entire maneuver should be executed as quickly as possible so as to avoid spending excess time not searching. At this point the entire line should be facing opposite its original direction and now be guiding left [or right] instead of right [or left]. The last squad leader again gives a whistle blast to signal that his squad (and therefore the entire line) is ready. The commander now gives two whistles, and the search team moves out.

Halts

A halt may be needed for various reasons including an especially difficult section of terrain that requires extra searching, the location of a possible clue or the object of the search, or a line that is becoming miss-formed and needs to be straightened. Any searcher can call for a halt if necessary. This call should be passed down the line or could be signaled by a squad leader's whistle. Everyone stops where they are until the need has been attended to, and then the leader whose squad called the halt gives another whistle to signal that the line is ready to move. According to pattern, the commander gives two whistle blasts to signal the line to move out.

2. Actual Searching

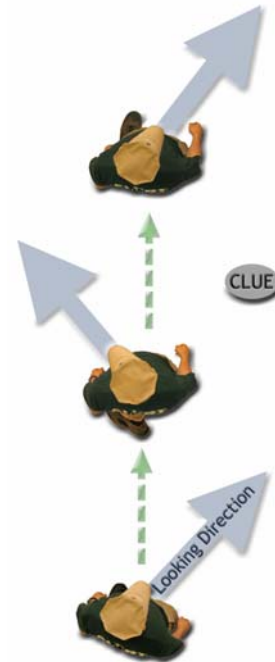
The Searcher's Cube



THE SEARCHER'S CUBE

Having a deliberate method of movement is important, but the success of the search actually depends on visually searching the ground you are covering. The "Searcher's Cube" is a picture of the area around a member of a search line. Each person is responsible for this specific area and needs to be continually checking every part of it. This cube extends up, side to side, and back as well as forwards. Some objects will be covered and only are visible once you have passed them. In one case, a lost hunter

was found hanging unresponsive from a tree stand. He would not have been found had the searchers only been looking at the ground. The Searcher's Cube illustrates the importance of searching in all directions.



AT TOO FAST OF A PACE, THIS KIND OF MISTAKE HAPPENS

Searching speed

When one is concentrating on staying in line and looking all over the Searcher's Cube, there is some danger that he may be looking in the wrong direction for a moment and walk right past the object without seeing it. This risk is minimized when a slow pace is maintained to allow for thorough searching. The correct speed for each search will vary based on the spacing of the men, the difficulty of terrain, and the size of the item that is being sought. The point man is the one who sets the pace, so he must understand what the proper speed is. A good pace is usually a slow walk.



CLUES GREATLY REDUCE THE AMOUNT OF AREA TO BE COVERED

Alertness & Finding clues

Any searcher will need a healthy amount of the character quality of Alertness. A search may go on for a long period and is often rather tedious. It is vital to be attentive to even small things. In any search, one of the most valuable aids is the location of clues. Clues narrow down the area of the search dramatically and give additional information. This evidence can include clothing, backpacks, water bottles, a temporary shelter, and especially footprints. Lost people discard equipment and excess clothing, often irrationally. Finding these objects pinpoints the direction and vicinity of the victim. Whenever a

possible clue is found, immediately stop the search line and **do not touch** the object until the proper authorities arrive. First-aid may be necessary if a victim is found, so searchers should be knowledgeable in this area.

3. Search Planning and Management

There is a large amount of skill and expertise required to successfully organize and operate a large-scale Search and Rescue assignment. This manual will not attempt to cover that area, but will cover the basic information needed to direct a small team. If a family member, younger Cadet, or neighbor is missing, this knowledge would be useful in thinking through where to direct the search.

Types of searches

There are four basic types of searches. These are different ways to go about searching for a missing object or person, depending on what the resources and the situation dictate.

Hasty Search: Lost people are often still on a road or path and are just confused in where they are. Even if they weren't originally on a trail, they will often come across or follow them. The hasty search makes use of this fact, and confines itself to following all the trails and roads around the area where the person was lost. The hope is that the person will be found on or crossing these travel aids. The use of bikes or four-wheelers makes the hasty search more effective. This type of search requires much less manpower than other types of searches and is often successful. This type of search is mostly self-explanatory and is not covered in this manual.

Efficiency Search: This is the use of a search line to systematically search the vicinity where the lost person is likely to be found. The spacing between searchers is usually between sixty to one hundred feet.

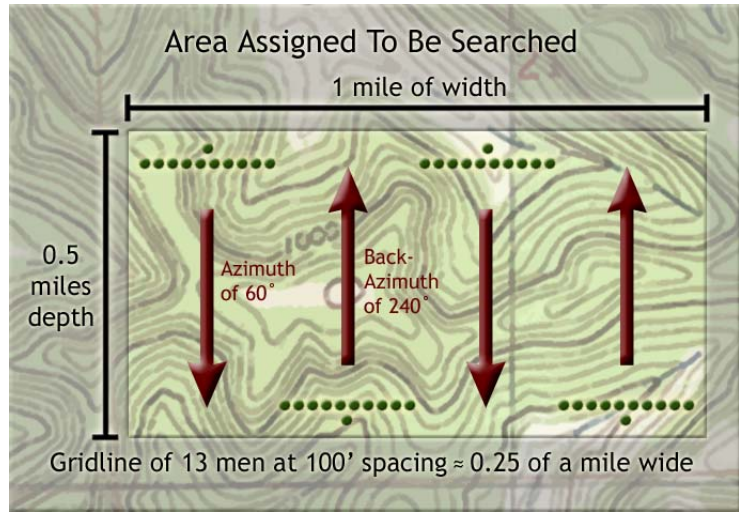
Thorough Search: Similar to the efficiency search, the thorough search uses twenty foot spacing between searchers. This is usually used when the victim is thought to be unresponsive and concealed, or where a smaller object is being sought. As a result of its thoroughness, this search can be very time consuming and is not good for covering large amounts of territory.

Evidence Search: When a small object such as a discarded weapon or even ejected cartridges is needed for proof in a crime investigation, this type of search is used to cover likely places. It can also be used to look for missing keys, wallets, contacts, etc. Spacing can be very close varying on the ground cover and visibility of the object. Searchers may even be on their hands and knees.

Navigation

Search and Rescue often relies heavily on map compass and skills. The point man should be equipped with a compass to use in establishing the direction to be followed by the search line. The compass heading or azimuth is designated by a number of degrees that can be entered into a compass and gives a specific direction. This ensures that the point man is traveling in a straight line and that the swaths of territory covered will be parallel and only slightly overlapping. Unless one has already been assigned, an azimuth should be determined based on the general direction that is desired. If the place where the search path will end is visible, it is often sufficient to take a reading and find a recognizable object to head towards. If the vegetation is dense, multiple

readings will be needed to stay on course. Once the turning maneuver has been executed, it is only necessary to shoot a “back-azimuth” (or 180 degrees off of the first reading; you can just box needle the opposite way) to follow an exactly parallel course. The distance to travel before turning should be measured by pace counting in the absence of an established ending point, such as a road. If a team is working under other authorities in a large SAR operation, they will often be assigned an azimuth as well as a distance to cover. This allows a large search area to be divided up into searchable sections. Compass navigation is also important to enable you to notify others of your location. There is a wealth of information to be found on map and compass skills in other books and websites. (See *Resources*)



AN EXAMPLE ASSIGNMENT

Determining spacing

It can be difficult to know what interval to use between searchers if this is not assigned by the authority in charge the search. In the case of a missing object, the size and visibility of the object as well as the terrain may dictate the spacing. With a missing person, the time elapsed since disappearance, the weather, and the type of person must be taken into account. A small child lost for several days and possibly unresponsive will necessitate a closer spacing than a hunter dressed in blaze orange. Bad weather will often cause people to take shelter, reducing their detectability. (See *Resources*)

Basic info on lost person behavior

One factor that is fairly consistent, though not universal, is that lost people tend to use “travel aids.” In other words, they will often follow game trails, small paths, old roads, intermittent waterways, gullies, or anything that will make their way easier and might lead to civilization. While this is not always a good choice, it is very common and happens more than half of the time. There are statistics available on the likelihood of a specific type of person using travel aids. (See *Resources*) For instance, hikers are much more likely to be found on paths than hunters because of the nature of their activity. The area should be checked for travel aids of any type, and these should be covered in a Hasty Search. (See *Types of Searches*) Bear in mind that people often respond quite irrationally once they realize they are lost. They often do things that make no sense such as discarding equipment, failing to take shelter or build a fire, and frantically running in random directions. A lost person that walks eight miles trying to “get out” will probably be only a little over a mile from where they started.

Summary of probability

In theory, a lost person can travel in any direction from the PLS (Point Last Seen: a SAR term referring to the point that a victim approximately was lost from. It is interchangeable with LKP: Last Known Point). This creates a large problem, as only searching in a three mile radius around this point (a distance easily covered by a lost person), there is already over twenty-eight square miles to be covered. A section of this size would require an enormous amount of resources and time to encompass. However, the victim's direction can often be narrowed down to several plausible general directions. They will often be influenced by topography, usually traveling down hills or on travel aids. Sizeable roads or houses will often eliminate that direction, because if the person had traveled in that direction they would have been found. Rivers and lakes also restrict the avenues of travel. Good search planners place themselves in the lost person's place and try to guess what might have caused them to become lost or why they might have chosen a certain direction. Once several probable directions have been selected, these should be given highest priority on the search to increase the likelihood of discovery.

A successful search

What defines success for a search team is not necessarily the locating of the victim or item. While the ultimate goal in SAR is to find the object of the search, success for a team consists of accomplishing their assignment in a thorough manner. If the victim or item is not found, it is not the fault of the searchers. True accomplishment is the ability to report back to the authority over the operation, "we searched the area assigned to us and the victim is not there." A faithful team can always be successful by serving their authorities and giving them one more place the object is not to be found.

4. Teaching and Using SAR in Your Cadet Unit

Value and uses

Depending on what area of the country one is located in, there may not be many cases of missing persons that would require a SAR operation. However, it is still a valuable skill to be trained in. Missing object or evidence searches are necessary in almost all localities, and may be more practical applications of this skill. A cell phone or wallet can be easily lost on a hiking trip, and the use of SAR techniques would be beneficial. A child may wander off at a campground and a small scale operation becomes a valuable tool to minister to others. The basic skill of being able to analyze a problem or go about a task in a thorough and deliberate manner is also extremely valuable. In this way, the lessons and character qualities learned in SAR can be practical in almost all aspects of life.

Age limitations

"A chain is only as strong as its weakest link."

This saying is very true in the case of SAR. The search line is basically as effective as the "weakest" member. One distracted person very well may have the path that should have found the object of the search. Since a successful search is one that confidently allows it to be said that

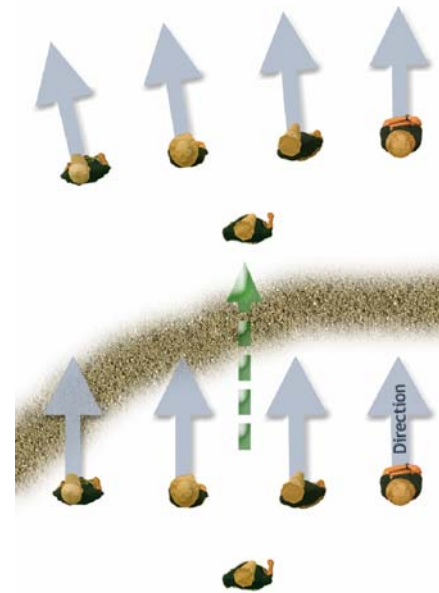
the object of the search is not in the area that has been covered, an inattentive searcher will cause the whole search to be basically unsuccessful. For this reason, it may not be prudent to bring younger Cadets in searches that are highly important. A full-scale search can be very arduous and long. In actual field uses of SAR, the searchers should probably be limited to LTC's and fathers. However, a well-trained young man can be just as effective as a father. This decision will need to be made on a case by case basis, and depends on what your authorities are open to if they are involved. At the same time, training exercises are often good places for Cadets to learn responsibility and self-discipline. Fathers may need to work alongside their younger boys, but if possible, include all members of your unit.

Methods of teaching, start simple and easy

A good way to teach SAR is to familiarize your unit with the basics of the process and then directly proceed to try it out. It is hard to assimilate the whole process without actually doing it. Just jumping in and trying the process out can show many of the rough spots and give you an idea of what needs to be practiced. The whole procedure of basic SAR is not a complicated concept and may be learned quite rapidly. It is the actual execution that is often the hardest, so make sure that you start out simply. Our first time attempting the maneuvers was on a football field where it was easy terrain and we were able to use the painted lines and square edges to guide off of. This was a great place to start and allowed us to cement the method before taking on more challenging applications. Even a gym or large indoor area will serve well for basic practice. With a new and somewhat foreign technique like SAR, start simple and progress to higher complexity.

Special Challenges

Once the basic concept has been mastered, there are many elements that must be added. Factors that can greatly increase the difficulty of a search include: rocky terrain, dense undergrowth, thick trees, guiding a search line off a compass azimuth, hilly topography, and bad weather. Even just a level field with thickets and undergrowth can make it much more of a challenge to keep a well-spaced search line. The ideal number of members for a search line is about twelve, and though more can be added, it makes the operation more difficult and time-consuming. Crossing roads can create a special challenge. Subconsciously, people naturally want to work either parallel or perpendicular to a road or other defining landmark. This is often not possible in a practical SAR application (though it is sometimes advantageous to start and end on a road or path). The point man should continue straight, since he is using a compass, but others will tend to veer at least a few degrees to be perpendicular with the road. Searchers must remember to guide off the man to their side, no matter what "feels" right. The squad leaders should also be aware of this to help straighten out any confusion. It is beneficial to practice scenarios like this on tougher terrain in order to become more proficient at SAR.



THE NATURAL TENDENCY WHEN CROSSING A ROAD AT AN ANGLE

Practicals

A helpful training tool is to set up “practicals”, where a scenario is given and searchers must find a “lost” object or person. In our unit, we have done this on camping trips as we try to locate a hidden Cadet in a specific area. It is often beneficial to plant several clues or objects along the way such as a piece of clothing or water bottle. This keeps the search from getting too tedious and tests observance. The search commander or leader of the search line should know where these objects are planted. This is so that they can be relocated if they are missed but also enables the leader to be watching when the line approaches the objects. He can observe to see if it is found or see what goes wrong if it is not. The path of searching should be somewhat planned beforehand so that the person can be hidden at the end of the search pattern. Pay special attention to maintaining correct spacing, which is often very difficult at first, especially on tough ground. While this is not as crucial as good visual observation, spacing is important, and once this concept is learned and practiced, the searcher can give more attention to actual seeking. Much can be learned in practicals before the lessons are put to the test in a true search.



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Conclusion

Even if there does not seem to be many opportunities for your Cadet unit to use SAR in an actual setting, it still has great value. It teaches many character lessons to those involved, provides a practical use of map and compass skills, and reinforces the need for First-Aid training. There is also great value in understanding the main principle of SAR: that any task may be accomplished more completely and quickly if executed in a methodical and organized fashion. More importantly, providing disciplined manpower trained in SAR procedures can be a powerful way to serve your authorities and your community. It is a selfless act of service when young men and their fathers give of their time to try to locate something or someone and help those who are in need. It is also a clear demonstration of how Christ came to earth to “*seek and save that which was lost*”. (Luke 19:10) May God bless your efforts as you serve Him and press on to be “*Strong To Overcome*” in this new area of training.

Recommended Resources

Analysis of Lost Person Behavior: An Aid to Search Planning

By William G. Syrotuck

This is a study of 229 lost person cases that gives a good analysis of how lost people think and act. It also includes extensive statistics on detectability, use of travel aids, average distances of travel, and likelihood of direction for numerous categories of people. This is a very interesting resource of about sixty pages for those who are interested in search planning.

NASAR: the National Association for Search & Rescue.

www.nasar.org

This organization is the leader in the field of training search and rescue personnel. They offer a variety of books and courses.

The Basic Essentials of Map & Compass

By Cliff Jacobson

A great deal of SAR relies on map reading and orienteering skills. Though not specifically for SAR, this short book covers most of the basics as well as more advanced aspects of these skills in a very understandable manner.