

***INTRODUCTION TO LAND
SEARCH AND RESCUE***



A training course for REACT Teams and members

This is a revised edition of *Search Teams*, a 1992 REACT International Course. It has been updated to reflect changes in search and rescue in Canada and the United States in the years since its original publication, while retaining the mission of the original course as an introduction for REACT Teams to the basics of land search and rescue.

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I. INTRODUCTION

This course was first developed in 1992 to meet a need for basic search and rescue training for REACT team members who respond to search events. If you completed the old Search Teams course, you will recognize much of this material. However, in the 25 years since its original publication, search and rescue has evolved in the United States and Canada into a very capable emergency service, and this text has been completely reworked to address the changes,

Normally our role in REACT is communications, but sometimes the need is not so much for radio operators as it is for people who can walk across a field or down a road or around buildings looking for someone who is missing. Because you are a member of an organized team, you know how to work as a team, follow a team leader, and carry out a task. Untrained volunteers who simply show up in response to a public appeal do not have those skills. So, whether the task is searching for a missing person, trying to locate an emergency beacon, or supporting other teams as communications liaisons, you can be a valuable resource.

Before you take this course, there are some things that you must commit to memory. We are going to cover these points in more detail, but they are worth stating at the start because they provide a basic guide as to how to be a good citizen in the search and rescue community.

1. You are not in charge. The responsibility for search and rescue lies with the Air Force, the Coast Guard, elected and senior appointed government officials, emergency management agencies, and law enforcement. You work for (first) the incident commander and (ultimately) the missing or lost person or persons.

2. Know the incident command system. Understand that the way local agencies apply the incident command system is not necessarily by the book. Adapt to the procedures and organizational structure the local authorities use.

3. The way to get used is to talk to the responsible organization for search and rescue in your community before there is a search, establish your credentials, find a need that you are capable of filling, take the standard training other agencies take, and if there is a certification program, become certified – in other words do what all the other organizations have already done. When you are called, respond quickly, play nice, do what you are asked to do, and stay the course.

4. Accurately represent your training, experience, or capabilities. Be humble, but also be able to do what you say you can do very well and to a professional standard.

5. Offer your services before you respond. If you are told “no thank you,” don’t go. No search manager wants to deal with an organization he did not request, whose capabilities are an unknown, and to whom he now must assign someone to keep the unknown team from getting in trouble. Do not self-dispatch.

6. When you respond be in uniform, look good, be calm, and act professionally. People have confidence in uniformed, professional responders. That confidence helps you in dealing with the public.

7. Do not freelance. If you are assigned to do a task, carry out your assignment. Do not wander off and do what you want to do, rather than what you are told to do.

8. REACT members working on a search have no greater powers or authority than any other citizen. You may not enter private property without the owner’s permission, take people’s belongings that might help your efforts, or give orders to the general public, government workers or officials, or emergency responders.

9. Don’t play with stuff, your stuff or other people’s stuff or things you find in the search area. Stayed focused on the task. Don’t pick up and handle evidence – flag it and report it.

10. Maintain accountability. Know where all of your team members are all of the time. No one goes anywhere alone. Make sure the appropriate managers know where your team is, what task it is working on, and what its status is. When you finish report back your results. When released, account for your people, and make sure to check out with the appropriate people.

11. If you think it might be unsafe, believe it – it is unsafe. The doubt in your mind is the signal that you are about to do something stupid that could get you hurt or killed. If you are injured, or worse yet killed, as part of a search, you become part of the problem, not part of the solution.

12. Refer all requests by news media to interview you or your team to the incident public affairs officer. Period.

13. Afterwards, when you speak to others about the incident, do not criticize the agency of the individuals who managed it. The time for questions about why something was done, or suggestions on how to do it better, is the debriefing or the hot wash. There is never time for complaining or ego. If you speak publicly against the incident’s managers you may get a lot of attention, but your team will never be used again.

Remember that this course will not make you an expert in how to do land search and rescue. It is an introduction. Get to know the search and rescue teams in your area and state, ask how you can help, attend their training, work with them in exercises, and be a reliable partner in actual responses. If you do, you will make a real contribution to helping find people who have misplaced themselves in the urban, rural, or wilderness environment.

Training Note: If your team is using this course as a training program in your meetings or a training session, we have included short discussion topics and practical exercises at the end of each section to help focus your learning. Have your members read the material and then discuss or walk through these items together in your training session.

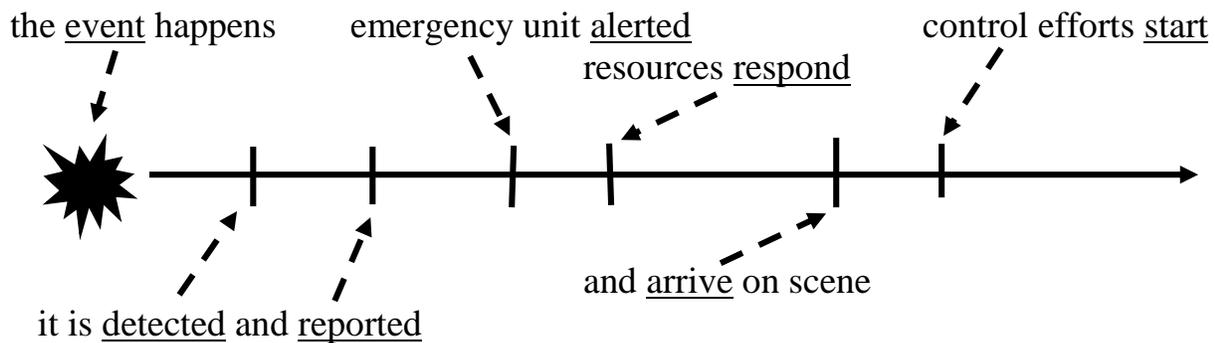
Terms and Abbreviations: One standard abbreviation is used throughout this course – “SAR” is the accepted short version of “Search and Rescue.”

II. SEARCH IS AN EMERGENCY

Any SAR incident is an emergency. This means that any report of an overdue or missing person must be treated with as much seriousness as a report of a school bus accident, multiple vehicle collision, tornado, flash flooding, etc. One or more persons' lives may be in danger – the subjects of searches are often found dead, injured, or ill, and some are never found.

At the same time, it is important to understand that, as a member of a REACT team, that searches can create intense news media and public interest and political pressure for a quick and successful outcome. Bungling a search can create very significant negative outcomes, and even possibly legal liability, for your team.

Let's review the timeline we find in the start of any emergency response.



1. **EVENT** – the event that causes the emergency situation may be an immediate, acute happening, or it may be a chronic event that gets slowly worse over time. In the cases of searches for depressed, disturbed, or ill people, it often represents a chronic condition. On the other hand, a hiker falling, a child getting off the bus at the wrong stop, or a vehicle breaking down in a remote area is a rapid onset acute event.

2. **DETECTED** – from the emergency response system's perspective, if no one realizes that someone is missing, then no one will look for them. Some detections are easy – a three car accident with injuries in front of a fire station when the engine company is in quarters, for example. Some are harder and are delayed – for example, a person who goes missing on the first day of a three-day weekend may not be identified as missing until someone from her work calls on the second day she is absent from her job.

3. **REPORTED** – an incident can be detected, but not recognized and reported. Someone might decide that he does not want to get involved or that it is

none of his business. A driver who sees a ripped-out section of guardrail could believe it to be an old accident site. A vehicle down an embankment has probably already been reported, so why overburden the public safety answering point with yet another call about something they already know? Reports of missing or lost persons can be made to a variety of different agencies, each of which may respond to such reports in a different way and with a different sense of urgency.

4. **ALERTED** – at some point the agency which receives the report may alert regular emergency response and/or search and rescue units. This may be in terms of minutes for a public safety answering point (a 911 center) or hours or days for a missing person report to a police department or a report to an agency that does not normally perform emergency responses.

5. **RESPOND** – and then the responders have to respond. Fire, police, and emergency medical services response to an emergency incident is measured in minutes. If the missing or lost person is not perceived as an emergency, there may be a considerable lag between the alert and the response, especially if the agency is understaffed for its normal load of emergency calls. Response by volunteer search and rescue groups is typically initiated immediately on being alerted, but it takes these organizations longer to get out the door because members work and have to notify people, rendezvous at their equipment cache, start accountability, load vehicles, etc. Thirty minutes is a fast response under these conditions; one to two hours may be realistic.

6. **ARRIVE** – in a city, fire and emergency medical services are expected to arrive on scene within 5 minutes of being dispatched by their dispatch agency. Their response areas are designed to give this speedy response. In search and rescue cases resources may come from across the state. If you have been asked to respond to a search in a wilderness area, travel time may be hours. Road conditions, other traffic, the need to refuel vehicles in route all delay arrival.

7. **START** – once you are on scene, you don't simply climb out of your vehicle and rush off to search. Much as a fire officer climbing out of his engine has to assess the scene and make a quick initial attack plan or a paramedic has to assess the scene and the patient, you have to establish command, report on scene, make a quick plan, assign people to tasks, etc.

This is a complicated timeline with a lot of parts, any one of which can substantially impact whether or not a missing person who was living when they went missing is

found still alive. Four specific factors combine to make an emergency response necessary.

LAG IN THE RESPONSE SYSTEM

The timeline we have identified means that there will always be a lag between a person actually becoming lost or missing and the time that the search starts. How long that lag is depends on how much of the missing person's time each step consumes. Anything you can do to reduce the time required has the potential to make a positive impact on the outcome. However, in the process do not take unsafe actions or actions that have the potential to overlook critical information in the quest for speed.

The first three steps, event, detection, and reporting, are often critical, but they are the part of the time line over which you have the least control. There may be a long delay between the time someone goes missing and the time he or she is reported missing. Family and friends may assume the missing person is late or has diverted to some other activity. Parents of missing children may organize family, friends, and neighbors for an improvised search and work for several hours before calling for help. Finally, when the expected time of return for a boater or hiker is well past (midnight is common), the realization sets in that the person may be lost. If the individual does not have anyone waiting for them at home, the understanding that something went wrong over the weekend may not come until the start of work on Monday. As a result, SAR response often does not start until hours or even days after the actual event.

VICTIM SURVIVAL LIMITATIONS

Chances of finding a missing person alive in a search drop rapidly. Historical data shows that 50% of the living victims are found in the first 24 hours; over 75% are found in the first two days. There are many cases of lost persons surviving extended lengths of time, sometimes because conditions were good, sometimes because the individual did the right things to actively work to survive, and occasionally in spite of what the person did to get in trouble. But your chances of finding them and their chances of surviving are better if you find them as soon as possible after the incident occurs.

A number of factors contribute to the threat to the missing person's survival:

1. Injuries – the individual may be lost because they are injured or they may become injured in their efforts to self-rescue from the situation.

2. Weather – a substantial number of incidents involve bad weather. Cold weather and rain increases the risk of hypothermia. Hot weather increases the risk of dehydration and heat illness. And bad weather of any type makes travel more difficult and dangerous.

3. Unprepared people – search and rescue statistics in some areas have recorded a doubling of search and rescue cases in the last decade. A low level of survival awareness and outdoor skills in an increasingly urbanized population contributes to this. Rescuers now routinely respond to people who have not planned their route or consulted weather forecasts, have inadequate clothing for conditions that could be reasonably expected, have inadequate equipment for the activities they are undertaking, and expect that rescue will be immediate, summoned by cell phone.

LIMITING THE SEARCH AREA

An adult male in good condition and experienced in outdoor travel hiking through open forest on generally flat terrain can travel approximately 2 miles in an hour. This means that the theoretical search area at the end of that hour is approximately 13 square miles. If he hikes for 2 hours, the area expands to almost 50 square miles. One of the searchers' priorities must be to keep the possible search area from growing, and to use clues and information to actually shrink it.

Three factors reduce the search area before you even show up to search. First, natural or man-made features may restrict the direction and speed of travel. For example, if our hiker was hiking along the side of a lake that covers half the theoretical search area, we would “only” have to search approximately 6½ square miles.

Second, there is a large body of data that gives search managers a very good start at understanding lost person behavior. The bookstore run by dbS Productions (<http://dbs-sar.com/Books/Books.htm>) includes a variety of lost person behavior materials that reflect the current state of the art. This research helps restrict and direct search efforts to the highest probability areas.

Third, the missing person may have helped restrict the search area. If he or she told someone their destination or route, this provides a starting point for search efforts.

Any evidence left behind by the missing person may be a vital clue in determining the where of the search problem and in limiting the initial search area.

INFORMATION IS FRAGILE

A key to finding the missing person is locating clues that help you establish where they have been and where they are going. Clues are very perishable. Witness who may have seen the person may leave the area and never realize that a search is ongoing for the person they saw. Memories of things heard or seen may fade or be changed by publicity about the search. Tracks may be destroyed by other persons, animals, vehicles, rain, etc. Scents disperse making tracking by dogs more difficult. Disturbed vegetation may return to its normal position. Items the person drops, such as clothing, backpacks, or children's toys, may be picked by others and taken away. A quick response increases the potential for locating these clues.

Safety Alert: Although we are emphasizing that search is an emergency, the operating principle is make haste slowly. Drive defensively, watch out for other emergency vehicles, park where you do not block access or egress, think before you act, consider hazards, move deliberately, and pay attention when someone says “this is dangerous” or “this makes me uncomfortable.” Don't become part of the emergency.

For Discussion:

- (1) Do you remember a recent search for a missing person in your area? Did any of the four factors above play a part in the incident?
- (2) Given the timeline in this chapter and the factors that make an emergency response necessary, what steps can you take to speed up your team's response?
- (3) When you talk to people about emergency preparedness, what are some topics that you could emphasize that they should do to help searchers if they are missing?

III. ACTIVATING THE SEARCH AND RESCUE SYSTEM

The SAR system is a combination of Federal, state, local, and volunteer agencies, with a common approach to emergency operations, and the procedures, facilities, and people needed to search for, locate, provide emergency care, extricate, and recover those who are lost or missing. To understand the big picture of how the SAR system works, you need to be familiar with the Incident Command System and the National Response Framework (a good source for this knowledge is completing the Federal Emergency Management Agency Independent Study Courses IS-100, IS-200, IS-700, and IS-800).

To activate the SAR system someone with knowledge of an emergency must contact an organization with search and rescue responsibility. These organizations vary based on the law in each state. However, in general, the following guidelines apply:

- On the navigable waters of the United States, including coastal areas, the Great Lakes, and major rivers:
 - Any US Coast Guard station
 - State marine police
 - Local jurisdiction water rescue agency (typically a fire department or police department)
- For an incident within a National Park – the National Park office (US National Park Service).
- For an incident with a National Forest – the National Forest office (US National Forest Service).
- For a missing or lost person on land or on local bodies of water – the law enforcement agency of the local jurisdiction, typically the sheriff.
- For a missing aircraft – any manned facility of the Federal Aviation Administration, including a control tower, flight service station, or air route traffic control center.
- For a presumed or reported aircraft crash – typically the state police.

- If you are unsure or cannot reach the appropriate agency directly, call your public safety answering point, usually found at 9-1-1.

Although the above list is based on United States public safety and emergency services practice, the same principles apply in most nations, although the specific agencies that have responsibility for managing searches will be different.

Often the person making a report of a missing or lost person will not know how to get help. They will call the agency or person in their community most accessible to them. That may be a call for help on a CB, GMRS, FRS, or amateur radio. It may be someone who knows that you do emergency response work. Or it may be someone who runs into you in a frantic search in a park for a missing child. It may even be a social media post. As the first point of contact, your actions are crucial to a successful rescue. You are now part of the SAR system; you must pass their report on to the appropriate agency, accurately, completely, as quickly as possible.

FIRST - TREAT THE SITUATION AS A SERIOUS MATTER

Let the person making the report know that their report is important. This establishes your good faith. If the missing person is found dead or seriously injured, your taking the initial report seriously may help alleviate some of the reporter's concern as to whether they did the right thing.

SECOND - GET NAME, ADDRESS, AND PHONE NUMBER

You must be able to get back in contact with the person making the report if you or others need more information.

THIRD - GET EVERY BIT OF INFORMATION YOU CAN

If you receive a report that may trigger a search incident, it is vital that you gather and record as much information as practical about the missing person, and then provide that same information verbatim to the agency you contact. The standard questions that news media reporters use to gather information for their stories provides a good way to organize your information gathering:

- **WHO** – who do we need to look for:
 - the number of persons missing
 - their names, ages, and gender

- physical description with clothing and shoe size and type
 - physical condition, mental state, or medical condition
 - description and type of their vehicle, aircraft, or boat, including color and registration
 - any survival training or equipment that they may have
 - any signaling equipment that they may have
- **WHAT** – were they doing?
 - what was the activity in which they were participating
 - what was their destination
 - what was their proposed route of travel
 - what were weather conditions like at the time
- **WHY** – were they doing what they were doing?
 - was it business or pleasure
 - were there alternate activities that they could have engaged in and that would have changed their route
- **WHERE** – where was the missing person last seen?
 - where was the person, aircraft, boat, or vehicle last seen
 - what were the conditions at that time
 - was the person making the report the last person to see him or her
 - did the person making the report watch the person until they were out of sight
- **WHEN** – are the key times?
 - when did he or she depart
 - when were they supposed to contact the person reporting
 - when were they supposed to arrive or return
 - when did the person making the report last have contact with them

These are by no means all the questions that may need to be asked. Some information has to be gathered from friends, coworkers, or persons the victim did business with rather than from the family. However, the family of the victim knew that person best and is usually very cooperative in supplying information. Try to get as much information as possible early in the search to improve your chances of finding the victim alive - ask!

Some questions are best asked by trained investigators in follow-up interviews because of their potential to upset the family or to cause the individual making the report to disengage. Asking if the missing person might have run off with an illicit lover, was suicidal, or was engaged in illegal activity may fall in this category.

Always end with the question: “Is there anything else that you can think of that might help us find (*insert the person’s name*)?”

FOURTH - MAKE SURE THEY CAN CONTACT THE SAR SYSTEM

It is possible the person who makes the report may remember something that he or she did not tell you the first time. Or it is possible that the missing person makes contact with them 20 minutes after they make the initial report. Give them the name of the agency you will pass the report to and its phone number, and let them know that someone from that agency may contact them for more information.

FIFTH - CONTACT THE AGENCY WITH SAR RESPONSIBILITY

Turn the problem over as quickly as possible to the agency responsible for coordinating searches in your area. Don’t try to run your own private search – you may not have all the facts, the problem may be significantly different from what was reported to you, and you may confuse rather than help the situation.

SIXTH – IF APPROPRIATE, OFFER ASSISTANCE

If you have a team that can respond, offer your assistance. If you offer, make sure you can do what you offered – be realistic. If your team has 8 members, all of your members work, their employers do not have a liberal emergency response policy, and it is 2:00 pm, don’t tell the coordinating agency that you can have 15 people there in 15 minutes. Offer to have a team available at 6:00pm with five trained searchers. If the agency says “yes, we need your help,” respond with what you offered. If they say “no, we have other resources,” you have still performed a critical function in this search by alerting the system to the emergency.

Learning Activity: Identify the agencies in your jurisdiction that have search and rescue responsibility – and get the 24 hour alerting numbers for reporting a search incident to them.

For Discussion: Have your members take turns reporting a missing person to the other members taking this training. If possible use details from actual searches with which you may be familiar. Have the members receiving the report complete the steps described in this lesson to activate the search and rescue system.

IV. IF YOU ARE FIRST ON SCENE

In any emergency incident there are several basic steps that responders take to start to gain control of the incident and set the ground work for as successful an outcome as possible. These equally apply to searches.

FIRST – PARK YOUR VEHICLE

Park your vehicle? Really? Yes, but where is the important thing. Park your vehicle where it will not block access for emergency vehicles, and where you have a reasonable chance of being able to drive away when you are demobilized or if you need to move to another assignment. Yes, you want to get as close as possible to the starting point of your search, right up there where the witness is waiting for you. But if that is up a one lane road with no room to turn around, you will be there until the last vehicle that parks behind you leaves.

SECOND – ESTABLISH COMMAND

The Incident Command System expects the first officer or team leader on scene to assume command and start to manage the incident. You assume command by your team leader clearly stating “*your team name* assumes command.” When you report to the coordinating agency that you have assumed command, include the incident name and where you are. Incoming resources will expect to find an incident commander, even if it is only to relieve that commander with a more qualified incident commander or with an incident commander with the appropriate legal authority.

THIRD – CONDUCT A SIZE-UP

What do you have, where is it located, what witnesses are available, what do they know, what have the people on scene already done, what are the hazards. Resist the impulse to jump out of your vehicle and immediately rush into action. Take the time to get an initial grip on the problem. This should not be a lengthy process, two to three minutes should suffice in most incidents.

FOUR – IDENTIFY WHAT RESOURCES ARE NEEDED

Unlike in fires or mass casualty incidents where the first due unit can follow well practiced department procedures to order a second or third alarm or a mass casualty response, you probably will not be able to make a good guess as to the eventual

number of search resources needed. But you probably can identify that you will need a trained incident command team to manage the incident, make an initial estimate of the number of search teams you will need, and determine if the situation will require water rescue, technical (vertical rescue), etc. resources.

FIVE – REPORT

Contact the coordinating agency and provide an initial report. The following is an example:

- High Country REACT has assumed Beavers Trace command. *[assumption of command]*
- We are located on Beavers Trace approximately one quarter mile north of State Road 422. *[where you are]*
- We have made contact with the Jones Family and they report that the father and the 10 year old son departed this morning to hike up the trail to Sunset lookout, and have not returned. They and two other campers went up the trail but have been unable to locate the two missing persons. *[the size-up]*
- We need a search incident command team with a qualified incident commander, a dog team, and at least three additional search teams. *[resources needed]*

SIX – START TAKING ACTIONS

Make a quick plan for initial search actions. Assign team members to specific tasks and start search actions. Start a log and record which members are assigned to which tasks, what the results are, clues found and new information received, etc.

SEVEN – BE READY TO HAND OVER COMMAND

When a more experienced and better qualified incident commander arrives, be ready to hand over command. To transfer command:

1. Brief the incoming incident commander on what has happened to this point in the search. Include:

- What you know about the missing person
- What happened before you arrived as related to you by people who were on the scene when you assumed command

- Your initial action plan
- What resources you have
- What tasks these resources are currently assigned to perform
- What you would recommend as the next steps in the search

2. Answer any questions the incoming incident commander may have to the best of your knowledge. Do not make assumptions about what might have happened or about missing details. Be factual.

3. Formally turn over command. When the new incident commander says “I am assuming incident command,” reply “you have incident command.” This verifies that both of you understand that the transfer has been completed, and that the new incident commander is in charge.

4. As directed go back to leading your team or to performing an incident command staff position.

It is possible that, if you are doing a good job and the incoming incident commander knows you, he may not immediately assume command to allow himself to get a better appreciation for the flow of search actions or to not disrupt critical ongoing tasks.

For Discussion:

(1) Choose an area in your or a neighboring jurisdiction in which there could be a search incident. Have one member simulate the role of family members on scene, and have the others go through the steps they would take immediately upon arrival on scene.

(2) Design a simple form that would let you organize the information you gather from the individual making an initial report of a search incident.

V. BASIC SEARCH THEORY

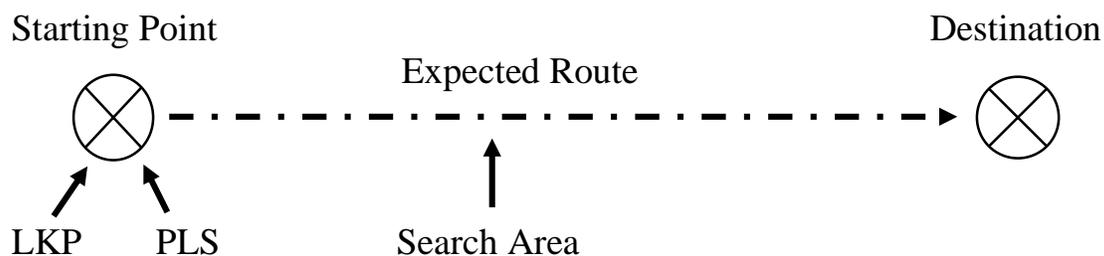
Search and rescue is about finding information and using that information to find the missing or lost person. If Joe leaves his house to walk 6 blocks to school along the same route he uses every day, but does not arrive, where is Joe?

For the purposes of this example we will exclude the possibility that Joe has been abducted, has decided to go somewhere other than school, etc. Yes, these are real possibilities that have to be explored in an actual search, and that can change the nature of the search dramatically, but to keep the discussion manageable we will examine the simple, initial problem.

To start we know five things: the starting point, the Last Known Point (commonly abbreviated LKP), the Place Last Seen (PLS), the expected destination, and the expected route. Now, how do you know where to search? After all, if you know where the missing person is, it is not a search anymore. In every search there is a logical starting point. This can be any of the following:

- The starting point of the missing person (in this case Joe's house).
- The Place Last Seen – this is the last place anyone actually saw the missing person.
- The Last Known Point – this is the last place we can establish that the missing person actually was.
- The destination – where the person intended to go.

There is usually a lot of overlap between these locations. In our case, we have a starting point - Joe left his house on the start of the trip to school. If we can confirm that his mother saw him go out the door, this becomes the PLS and also the LKP. And we have a destination – the school. So at the start the search looks like this:

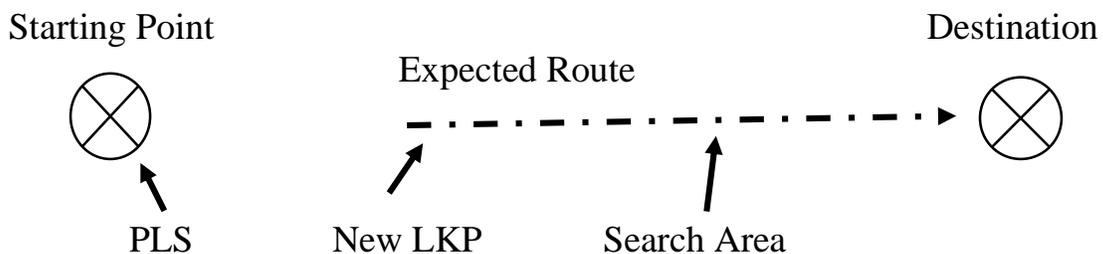


For the purposes of our search, we are going to execute a route search as the first step. A route search sends teams to cover the route that the best information you

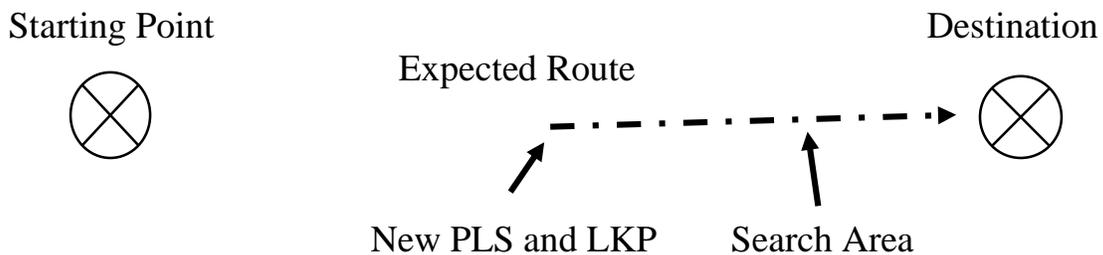
have indicates that the missing person may have taken. The basic assumption is that the individual you are looking for either got into trouble along that route or that he left some clear sign that he departed from the route.

We will start at the starting point, because we want to push the LKP closer and closer to the destination or to the point where we find Joe along the expected route. If our search of the route does not locate Joe, we will have established two things: (1) we have to expand the search area, and (2) we can devote less attention to the expected route because we have searched it to an acceptable probability of detection (POD – the probability that the searchers would have found the missing person had the person been within the search area).

As our search team goes along the route, they find a spiral notebook for Chemistry class with Joe's name in it two blocks away from the house. This clue creates a new LKP. As a result the search can now focus on the remaining four blocks of the route.



One block further along we find a witness who knows Joe and says he was walking with several other young adults toward the school. Now we have a new PLS, which establishes a new LKP, further restricting the search area, and we have several witnesses that we need to locate and interview to determine what they know about where Joe may be.



This is a simple search example. In reality, other efforts would be ongoing at the same time to exclude criminal activity, such as an abduction, make sure that the missing person does not leave the search area, do a hasty search of likely places

where Joe may be based on interviews with his parents, etc. However, the basic principles apply to any search:

- Identify where the missing person started, where she was going, and what route she was following.
- Establish the PLS and LKP.
- Decide on the first search tactic you will use.
- Use clues and interviews to further reduce the search area.
- If the initial search was unsuccessful, there is some probability that the missing person is not in the searched area. Based on conditions you may have to search it again, but you also need to expand the search to cover other areas and possibilities.

For Discussion: In your jurisdiction, develop a scenario for a lost person, identify a starting point and a destination, discuss the most likely route between the two, and identify where you might find clues or people to interview along that route based on the time of day and the weather conditions of the scenario.

Terms and Abbreviations: “LKP” is Last Known Point, the last point at which we can establish the missing person’s presence by physical evidence. “PLS” is the Place Last Seen, the last place anyone actually saw the victim. “POD” is the probability of detection, the numerical assessment of how well the search area has been covered by the available searchers. These terms are normally spoken as the three letter acronym.

VI. SEARCH TACTICS

This chapter is an introduction to basic search tactics. This is not a complete coverage, and is tailored to the types of tasks you may be asked to perform.

PROTECTING THE LKP

Once you have identified where the missing or lost person is last known to have been, it is important to protect the scene. The LKP is a starting point for intensive search efforts and may have clues that will be needed for a successful search. If you are the first team on scene, this means:

1. **Approach with caution and on foot** – the ground may have footprints or other tracks that can be identified and used to track the lost person. Even a parked car on the roadside should be approached carefully.
2. **Identify the scene** - the use of a light weight cord, crime scene tape, or similar symbolic barrier shows everyone the area is controlled.
3. **Limit access** - only people who need to be on scene should be there. Keep the number at the scene down – more people mean more footprints, more opportunities for the introduction of false clues. and more scents to confuse tracking dogs.
3. **Don't Handle Things** – discarded clothing, other belongings, food wrappers, and other clues can be visually identified. Leave them where they lie, so that they can be properly processed.
4. **Document** - have a system to map, log, and preserve all clues.
5. **Control resources** – by staging search teams away from the scene, calling them in as needed, and immediately assigning them on specific tasks, confusion is reduced. Searchers, especially untrained volunteers, often mill about while waiting for assignments, eager to get going on a task. This has the potential to obliterate tracks and create confusing false clues. Teams waiting for dispatch into the field should be staged well away from the LKP.
6. **Know who the players are** - a wide variety of people need to be involved including law enforcement, rescue, coroner, family, the press, elected and

appointed government officials, etc. Have a way to clearly identify the legitimate, organized responders.

SPECIFIC CONSIDERATIONS FOR AIRCRAFT CRASHES

It would be very unusual for a REACT team to be first on scene for an aircraft crash – if it does happen it is most likely to be a smaller general aviation aircraft. Obviously rescue and emergency first aid for survivors is a key consideration. So is safety of your personnel because of the dangers posed by debris, fuel, fire, etc.

Aircraft crash scenes must be protected, but for a different reason. Aircraft crashes have a variety of causes, and each crash is investigated to determine the cause. Accident investigators must have access to the aircraft in as good condition as possible. This means:

1. **Don't Destroy the Aircraft** – if victims are trapped and alive, do what you can to get them out. This does not mean you should destroy the wreckage. Flight controls, engine and fuel systems, panel instruments, all are critical for the accident investigators. It is especially important not to change the setting of any controls.

2. **Don't Take Bits Home with You** – the most insignificant piece of metal may be vital to the investigation.

3. **Don't Move Anything You Don't Have To** - the exact wreckage pattern gives investigators a detailed picture of what failed when and how. If you do move something, mark its original location. Anything you move should be moved as a unit and not disassembled. Leave all evidence in its original condition (dirt, grime, grease, blood, and all).

4. **Remember the Appearance of the Wreckage** - investigators will want to know if there was ice on the wings, if you smelled fuel, or where pools of fluid were.

CLUE CONSCIOUSNESS

From the start of a search, searchers should concentrate on looking for clues. Any missing person will generate a number of clues that can help the searchers – there will be more clues over a wider area than just the single lost person. Look for:

- Anything that is out of place – that doesn't belong
- A trip plan of any sort
- A car, motorcycle, bicycle, or other mode of transportation
- Discarded backpack or equipment
- Discarded clothing
- Food wrappers
- Log entry in a trail log
- Tire prints
- Foot prints
- Disturbed vegetation and evidence where someone has moved from a road or trail and into the brush
- Credit cards or other receipts
- Sign of fire or camp site

This list is by no means complete – be constantly aware of the potential for clues and search actively for them. Some clues may serve to establish where the missing person intended to go (a trip plan as an example), some may establish with a reasonable degree of probability that the lost person was where the clue was located (discarded clothing that matches clothing the individual was known to be wearing, for example), but other clues require more work to validate that they may be associated with the individual (foot prints or tire prints require matching the print with shoes the individual wore or tires with a tire pattern the individual had on his bicycle).

Remember, don't handle clues. Mark them and only move them if directed by the agency in charge of the search. Marking may be flagging with surveyors tape or using stake flags. Document the location, when found, and a description in your log and photograph them in place.

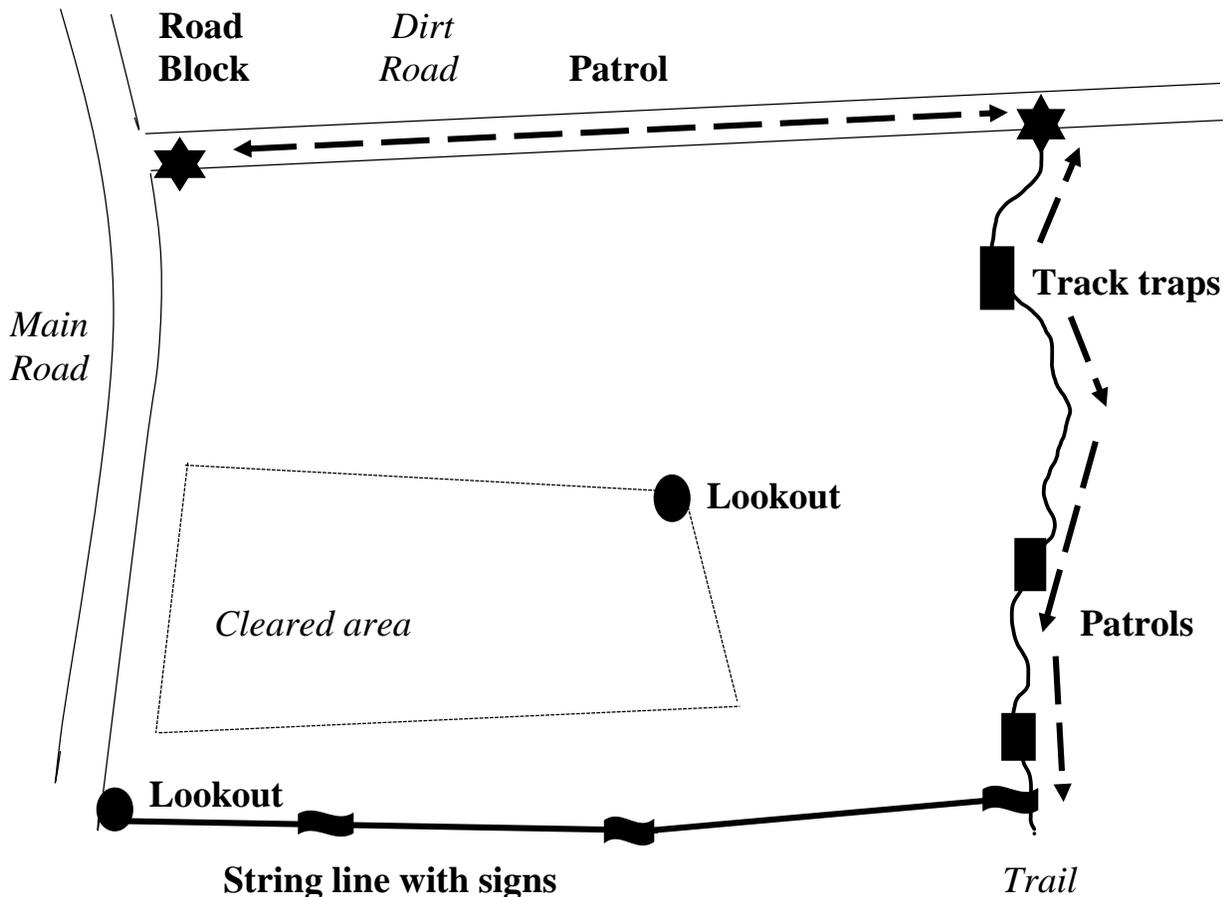
CONFINEMENT

Once you start a search, you do not want to have your search area continue to grow in size, or to allow the missing person to leave the search area. That means you need to use proven techniques to detect the missing person when they do cross the perimeter of your search area, and even to help them self-rescue. These tools include:

1. **Lookouts** – lookouts equipped with radio communications and binoculars can be stationed on high ground to watch for movement in open areas or along roads.

2. **Road Blocks** – road blocks with communications can be stationed on trails or roads that exit the search area. Lighting at night and public address announcements may assist the lost person to reach one of these roadblocks. However, using such attractive tactics may be inappropriate for those who fit in categories of missing persons who are frightened by them and will tend to try to evade rescuers.

3. **Patrolling** – patrolling roads, trails, fence lines, and power line cuts to check for tracks or other signs of someone leaving the area may actually encounter the missing person.



Above is a diagram of a possible deployment of resources to confine a search area. The specific types, location, and quantity of these resources depends on the specific situation.

4. **String Lines** – a heavy weight string stretched along the border of the search area with signs at frequent intervals with an arrow and wording THIS WAY TO HELP provides a soft barrier that can direct a mobile missing person to a road block, lookout, or the search base.

5. **Track Traps** – using a standard lawn or garden rake to rake areas with dirt or sandy surfaces creates a trap that will record whether or not anyone passes along a trail and their direction of travel.

ROUTE SEARCH

If you know the route the missing person may have taken (or can make a reasonable assumption, either based on what he has done before or because of routes of travel most people use), one of the first tactics to consider is a route search. Dispatch a small team with communications to follow the same route to the expected destination. This will not result in a wide area coverage, just that of the expected route, but it will eliminate the possibility that the individual has stopped, for whatever reason, on the most logical route itself. Be clue conscious, and alert to the possibility that the individual may have left tracks or signs that she departed the normal route. Pay particular attention to identifying where the route may divide into two or more routes or where there are unmarked or overgrown trails leaving the main route. Exactly the same thing applies to alleys off city streets.

HASTY SEARCH

Hasty Search is a quick coverage of the high probability search areas. Again these searches do not cover a large area, but they eliminate areas that have proven to be dangerous, attractive to missing persons, or that could provide shelter. Hasty searches should be quick, but thorough, and will use a lot of personnel if there are a number of sites to cover. You are looking for clues as well as for the person. Typical hasty search targets include:

- In the immediate area of the LKP or PLS, possibly out as far as 100 yards – you are specifically looking for indications that the person changed direction or turned back on their track.
- Trails off the main route or branches of the main route where the individual could have become confused.
- Power line cuts.

- Drainages, either wet or dry.
- Hazards, including wells, mine shafts, caves, swampy terrain, etc. – confined spaces such as wells, mineshafts, and caves, should be reported, but not entered as specific training and equipment is needed for work in these features.
- Buildings and outbuildings, particularly those abandoned or not in daily use.

BASTARD SEARCH

Bastard searches take their name from what tired searchers call the missing person when checks of a favorite tavern, girl or boyfriend's house, or their own house reveal that they are safe and sound. Regular checks of these may turn up the missing person, who may well not even know that she is missing because she knows exactly where she is.

PARKING LOT CHECKS

Depending on the specific situation of the search it may be useful to check parking lots the individual may have used. Is his car in the parking lot at his work or school. Is it in the parking lot nearest the LKP? If you are looking for a missing boater, for example, a check of boat ramp parking lots for the vehicle and boat trailer may identify where the boat was launched or whether it is probably still out on the water.

SPECIALIZED SEARCH RESOURCES

Trackers. Tracking makes maximum use of clue awareness. A tracking team will identify the direction in which the lost person has gone, and will follow the actual trail of the missing person. Trackers need:

- To be able to work the area around the last known point before it is contaminated by the tracks of a large number of searchers.
- An accurate description of the person's shoe type, size, and tread pattern.
- A description of the shoes of everyone else who has been in the vicinity of the LKP.

Search Dogs. Search and rescue dog teams, normally a dog and handler, are very valuable resources. Air scent dogs detect human scent carried in air currents and are very effective in the initial stage of the response. Ground scent dogs (the traditional bloodhound) are a tracking resource like human trackers. Dog teams need:

- An accurate LKP as a starting point.
- An article with the missing person's scent on it is mandatory for ground scent dogs and helpful for air scent searchers.
- To be able to work the area before it is contaminated by large numbers of searchers.

Cadaver Dogs. Cadaver dogs are a specialized type of search dogs, trained specifically to locate human remains. If the missing person is believed to be deceased, either initially or because the time elapsed and conditions indicate that survival is unlikely, cadaver dogs may be employed to locate remains on the surface, that have been buried, or are in bodies of water.

Search and cadaver dogs are working dogs. Do not distract them by trying to pet them or otherwise interact with them.

Both trackers and search dogs can be very effective in quickly locating a missing person when properly employed. However, the longer the period in the search before they are brought in, the lower the chances of their being successful. Therefore, they should be notified quickly and be one of the first resources deployed in the search if at all possible.

INTENSIVE SEARCH

Intensive search requires more resources to cover the entire possible search areas that has been defined by victim behavior, the terrain, and any clues found. Your route and hasty searches have been through, but they cover only a small part of the overall area. If they do not result in finding the lost person, the area is divided into sectors, and each sector is searched by ground search teams. The sectors are searched based on the search incident command staff's assessment of the probability that the person is in the specific sector. In the early stages, wide spacing between search team members may be used to cover more ground quickly while there is a reasonable chance of finding the person alive. In the later stages of the search very close spacing may be required to locate a body or locate evidence needed in a possible criminal investigation.

ACCOUNTABILITY PROCESSES

It is not unheard of for the missing person to walk out of the woods, see the mass of searchers, walk over, volunteer to help, and actually start to search. Make certain

that everyone who is on scene is identified and registered. In the case of potential criminal incidents, it is not unheard of for the perpetrator to join the search as a way of keeping track of the investigation. It may be a wise idea to photograph each search team as a group to provide a record of who was present as a member of that team.

THE FLOW OF THE SEARCH

Searches commonly develop along a timeline of actions and shifts from one tactic to another until either the missing person is located or all likely areas have been searched thoroughly to a high probability of detection with no results. The typical process is:

1. Initial report of a missing person.
2. Interviewing the person making the report, family, friends, co-workers to determine a LKP, PLS, starting point, route, destination, and intentions.
3. Location of the LKP and protecting it.
4. Initial deployment of:
 - Search dog teams
 - Tracking teams
 - Route search
 - Hasty search
 - Confinement
 - Parking lot search
5. During the initial deployment, location of witnesses and further interviews.
6. Sign cutting across the expected route to try to advance the LKP.
7. Bastard search.
8. Intensive search.

9. As the search thoroughly covers the search area, operations may be scaled back when it becomes increasingly likely that the missing person is somewhere else, somewhere that efforts to date have not identified as a possibility. Searches cannot continue forever – there are not enough resources to do that.
10. And at some point your team will no longer be needed (or will be replaced by another resource) and you will be demobilized and released to return home.

Safety Alert: We do not cover the specifics of demobilization in this course. Be aware that this may be the most dangerous part of the search for you. You have been working under stress for some period of time, you are tired, you may be dehydrated from not drinking adequate quantities of fluids, and your energy reserves are low because you are hungry. Don't immediately jump in car to drive home – more than one searcher has died in a traffic accident on the trip back. Take a nap in the car if you need it. Take a few minutes for the team to talk about what they have done and to decompress. Eat and drink to get the body back to normal. And use extra care as you drive home.

For Discussion: Use a local map that depicts a park or other area in which someone could become lost. This can be either a map specific to the area, a topographic map, or even a street map printed from one of the online direction services. With a bit of preplanning you can use Google Earth to fill in topographical features, buildings, etc. Assign one person to be the exercise controller, and have that member determine where a missing person was last seen, where they were going, and how they planned to get there. Have the other members use the map to determine where they will run (1) a route search and (2) a hasty search, and (3) where and how they could confine the area. If desired, the exercise controller can act as a witness to be interviewed to get more information to help direct the search.

VII. WITNESS INTERVIEWING

One of the most valuable sources of clues in a search incident is a person who has actually seen the person for whom you are looking. Your objective is to find such people and get from them every bit of information possible to help you find the search objective.

There are a number of guidelines that may help you conduct an effective interview:

1. **Wear a team uniform polo shirt** - it identifies you as a person who has a legitimate need to ask questions and gives you authority in the eyes of the person you are interviewing. Avoid being covered in patches – they distract the interviewee. Avoid wearing badges – the regular emergency services will think you are trying to represent yourself as having authority you do not have. Be clean, neat, low key.
2. **Identify yourself** - in our culture we feel more at ease if we are talking to someone whose name, title, and organization we know.
3. **Record** - if you can, record the interview with a digital voice recorder or smart phone. Be sure to ask "do you mind if I record this so we can be sure we get all the details right?" If the person is at all nervous about the recorder don't use it. Note that video recording creates a whole new dynamic, and may make the person you are interviewing self-conscious.
4. **Take notes on everything said** - unless the witness appears nervous about having notes taken. In that case immediately after the interview make detailed notes of everything said. In general, it is a good idea to use a two person interviewing team – with both listening you increase the chances of capturing subtle details.
5. **Interview witnesses one at a time** - if several people are listening there are a wide variety of forces working to modify the story that either this witness or others will tell.
6. **Get face to face with the witness at their level** - don't make the witness look up at you while you are interviewing them. But make sure you maintain a comfortable personal space for the interviewee.

7. **Listen!!!** - listen to what the witness says, and don't put words in his mouth. Listen to how they say it as well. Very often allowing silence to continue after the witness finishes a statement will encourage them to provide more information.

8. **Get the witness to show you** where she was standing and the direction in which the victim traveled. Many witnesses will be uncertain of exact direction - showing is worth a thousand words.

9. **Calm, de-escalate, protect yourself** – witnesses, especially family members or friends may be difficult to deal with due to the stresses of the event. A calm manner in the face of questions as to why you are wasting time asking questions with an emphasis on your need for the answers may defuse the situation. Never raise your voice. In some cases, you may have to simply back away and turn this interview over to law enforcement. And understand that in some communities you may be completely unwelcome because of your race, your gender, or your appearance as part of the government. Stay aware of the situation around you. Interview outside in public view. Make sure you have a clear exit route. And if someone says get off my property, do so, backing away. Go in teams of two, and maintain communications with the search base.

What information is important? Virtually everything! This includes hard facts and impressions the witness has. You need information on the search objective, but you also need information on the environment. A witness may be able to contribute vital information on the weather conditions or on environmental hazards in the area. One of the larger errors in interviewing is to discount witness statements that he didn't see anything. Very often she didn't see anything because there wasn't anything to see - this establishes where the missing person wasn't at a given time, eliminating one more search possibility.

To get information from a witness you must give him some to start with to allow him to pinpoint the event you are interested in. The key is to give enough information without giving so much that either (1) he simply confirms what you want to hear or (2) you accidentally exclude the real story by limiting the event too closely based on your preconceptions. As an example, you are interviewing a woman whose deck overlooks a popular hiking trail in a search for a hiker who should have called home by noon. She says that she has spent time on the deck this morning because the weather has been nice.

Did you see a hiker go by? (*probably at least a thousand during her life time ...*)

Did you see a hiker go by today? *(on a busy day this might limit it to 100 people ...)*

Did you see a hiker go by this morning? *(better ...)*

Did you see a male hiker go by this morning? He is tall and has a beard. *(now you have given her enough data ...)*

Did you see a male hiker go by this morning? He is tall and has a beard. He was headed up the trail about nine hours ago. *(you get an honest "no" because she saw the hiker coming back down the trail four hours ago, but was watching television when he went up the trail earlier ...)*

Did you see a male hiker go by alone? He is tall and has a beard. He was carrying a black and red pack and had shorts on. *(you could get any possible answer. She may say no because she thinks the pack was green - and she was right because your data was bad. She may say yes because she saw another hiker with a black and red pack, and she is focusing on the pack part of the description, even though the hiker was clean shaven. She may say no because the hiker had joined another hiker on the trail. She may say no because the hiker had stopped and put on his wind pants ... etc., etc. Save details like these for a sanity check to make certain the hiker is the one you want.)*

Be aware of factors that can limit the quality of the information you derive from interviews. You may not be able to do anything about some of these, but when you can identify them make certain that you report that you believe they impact the quality of the interview.

1. **Preconceived notions about the search** – maintain an open mind about the reports witnesses give you. Often we assess what we hear based on our assumptions based on what we know about the search. If information contradicts what we “know,” or seems to make no sense, it is important to report it. Combined with other information it may completely revise our understanding of where we should be searching.

2. **Filtering information based on who we talk to** – maintain an open mind about the person you interview. Their appearance or cleanliness, quality of speech, your guess of their level of intelligence or sophistication, the quality of their clothes or outdoor equipment, and even whether they are impaired or not does not necessarily make them a better or worse witness. If you think there is a factor that limits the quality of the report, record that and report it, but do not discard the report as useless.

3. **People who tell you what they think you want to hear** – watch out for these, as they can waste a lot of time and resources. These people want to help so badly that they will make up a story to help you, sometimes without even realizing it. There are several good interviewing practices that can help prevent this:

- **Give only minimal information** – be careful with what you reveal to all witnesses. Provide only enough to let actual witnesses filter out other things that they may have seen, but that don't apply to the search.
- **Don't give feedback** – and this includes both oral feedback and facial expressions that indicate that they are telling you what you expect to hear.
- **Don't suggest answers** – “he turned right at the fork, didn't he?” will get you an solid “yes” whether he turned left or right or did not come this way at all.

4. **Be the first person to interview a witness** – if at all possible. Take good notes and ask every possible question the first time. Some people improve their story with each telling (and genuinely believe the improvements).

5. **Interview couples separately** – in any couple there are a wide variety of factors at work with nothing to do with the incident. Desire to show dominance, fear of being thought stupid, not wanting to show up the other person, etc., all make it difficult to get the best possible information. This may be difficult to do; one strategy is to stress that you have to interview both, and that because time is critical interviewing separately is much faster.

6. **Interview children separately** - from their parents. Parents tend not to believe their own children's capacity as witnesses and may suppress a truthful story because they can't believe the child is a capable and accurate observer. This may be difficult to do; one strategy is to stress that you have to interview both, and that because time is critical interviewing separately is much faster. If you do this, make certain that you remain near to and in the full view of the parents, and that you do not touch the child at any time.

For Discussion:

(1) What types of information do you think that you could release to possible witnesses?

(2) What would indicate that a witness is a good witness? A bad witness?

VIII. THE SEARCH TEAM IN THE FIELD

Land search used to be done by calling for community volunteers. Typically, several hundred untrained persons responded to such a call. The search manager lined these people up and had a few disciplined responders (law enforcement, fire, rescue squad) try to keep the line together as it plowed through the woods. Maybe no one was hurt in the process. Under any conditions, search efficiency is minimal - the searchers are not looking for clues, search consistency is poor, and a lot of time is spent just trying to control the mass of humanity.

There is a better way. A smaller number of people in trained search teams can do a more effective job of searching because:

- Trained team members know how to work as a team, search aggressively, and are clue conscious.
- Each team is small enough to be easily controlled by the team leader.
- A small team can maintain the formation and spacing required for good coverage.
- Each team can move without reference to what other teams are doing, allowing them to work more rapidly through the area.
- Teams have the mix of skills needed for the search problem.

The preferred size for search and rescue teams is 4 to 6 team members because:

- This number results in a search line of 3 to 5 people, a length that it is easy for a team leader to control.
- All required skills can be represented in the team.
- The 6 person team can start a litter evacuation. Two 4 person teams can be joined together to form a litter team. Additional teams can be added in standard packets to relieve the litter bearers.
- The team can be transported in a single vehicle.
- There are enough team members to carry any specialized equipment that may be needed.

Experience shows that the following are key positions that must be filled in a team that will operate in the field:

TEAM LEADER

- Leads the team in the field.
- Controls team operations.
- Constantly evaluates all activities for safety to reduce the chances of injury to team members and to the individual being rescued.

- Receives assignments from the search incident commander or operations section chief.
- Briefs team members on their assignments.
- Reports the results of the search as directed.

COMMUNICATOR

- Maintains contact with the search incident command post.
- Maintains contact with adjacent search teams.
- If aircraft are involved in the search, maintains contact with search aircraft as appropriate.

FIRST AIDER

- Evaluates the injured.
- As the most qualified emergency care provider directs triage, care of multiple casualties, and other emergency care actions.
- Responsible for patient packaging for evacuation.
- Monitors physical condition of team members for cold, heat, or altitude illness.
- Enforces water and food breaks as required.

LAND NAVIGATOR

- Maintains the orientation and the course of the team in its assigned area.
- Knows where the team is, where it has been, and how far and in which direction it has to go to get where it is going.

What if fewer than 4, or more than 7, members respond for your search response? Can you still search? Obviously, yes. A 3 person team works well with all 3 members on the search line. The leader is positioned in the center and serves also as the land navigator. A 2 person team can still check trails, man a road block, or do interviewing. If you have 8 or more respond, split them into smaller teams of 3 or 4 under the leadership of your most experienced members.

When the team arrives at the search base, a set routine should be followed:

1. Team vehicle is parked in a staging area to reduce congestion along the access road or around the incident command post.
2. Team members report to the incident command post and follow the sign-in process established for the incident.

3. Team members check equipment and be ready for assignment. If a general briefing is given all report to the briefing.

4. Team leader reports to the appropriate section chief or branch director that the team is available and ready and receives an assignment. How this works will depend on the size of the incident. In the early stages or a small incident, sign-in may be a clip board, and the incident commander grabs you and tells you to immediately move out to do a task. In a large incident, the sign-in may be with the logistics section and you sit in staging until you are needed.

Time is not included for socializing, wandering around to “see who is here and what is happening,” or other nonproductive activity. You came to the search to search – be prepared to go out to search as soon as you arrive and sign-in. Be cautious of incident commanders who say “well, we will have a briefing in a couple of hours” or “we will think of something for you to do in just a minute.” An incident commander or operations section chief who has a handle on the situation in most incidents will have many more tasks that need doing than he has trained resources available to do them. If you have dead time, rest.

There are some basic guidelines that any searcher should follow. It may be a good idea to put the key words on a card, laminate it, and stick it in your response pack for a last minute check before you are dispatched:

FLUID – never go into the field without fluid. A full canteen (more than one in hot weather) is a must. This should be filled with water or an electrolyte replacement drink such as Gatorade.

WHISTLE – always carry a whistle – the whistle is your most basic communications tool. The following is a short and easy to remember code:

1 blast	move forward
2 blasts	stop
3 blasts	help or emergency or assemble on me

SURVIVAL KIT – always carry a minimum personal survival kit. Include first aid items to repair minor scrapes and cuts, moleskin for blisters on your feet, a means of conserving heat (such as a space blanket), pain relief for you (Tylenol, aspirin, or nonprescription ibuprofen), matches, and a good pocket knife. Include, and use, strong protection factor sunscreen (survival includes avoiding skin cancer).

FOOD – always carry a minimum supply of food such as high energy bars.

STAY WITH THE TEAM – never get separated from your team. Your first responsibility is to maintain contact with your other team members at all times.

SEPARATED? – if you do get separated, sit down where you are and sound the emergency call on your whistle. If you are moving you are harder to find. Use your whistle to help your team get you back in the search effort. If separated, don't delude yourself into believing your team members are just around the next tree, over the next hill, or around the next building – they never are, and you only get more and more lost.

BE CONSERVATIVE – if a little voice says “why are we doing this?”, it is probably a good time to stop and rethink the problem. Every team member has a responsibility to say “we have gone too far” or “this is dangerous.” And every other team member has a responsibility to listen and act accordingly.

IF SOMETHING DOESN'T FEEL RIGHT – stop the search and investigate. The nagging sense that something was there is often a sensory realization of a clue that hasn't made it to the conscious recognition level.

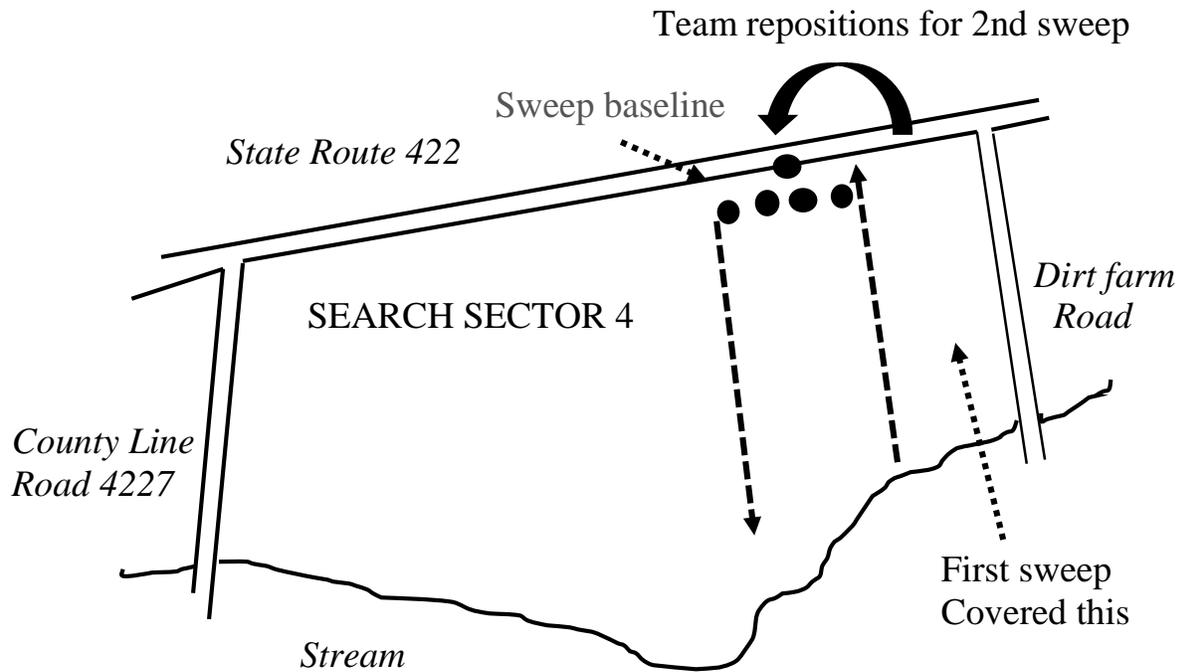
STOP THE LINE – every team member can stop the line. If you hear something or see something that needs investigation, sound the stop signal.

SEARCH AGGRESSIVELY – believe that you are going to find the critical clue around the next tree. Concentrate on what you are doing. Be resolved that you are going to be the searcher who solves the incident. Positive attitude will greatly increase your performance. Never, no matter how tired or discouraged you are, just go through the motion of searching.

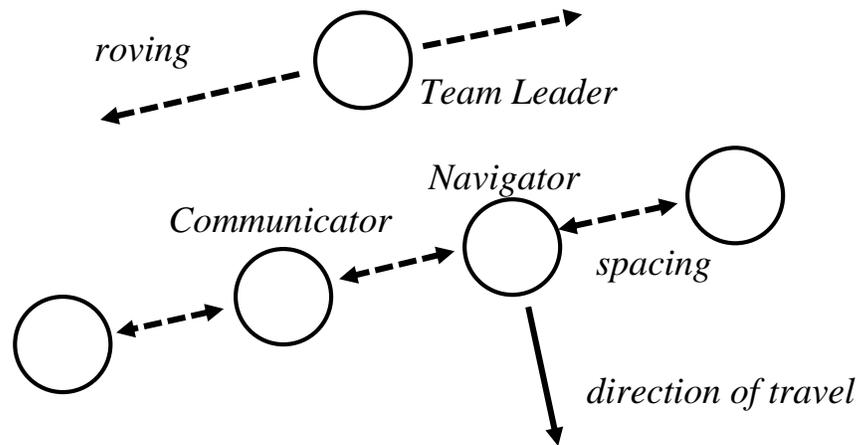
LOOK BEHIND YOU – you will get a different view of the terrain you just covered. You may see something in a different way or see something that you could not see before because it was hidden from the front.

BE CAREFUL WHAT YOU SAY – never criticize the missing person, imply that the incident was the person's fault, or assess chances of survival. Never joke about the search. The family of that person may be standing right behind you. And do not give personal interviews to the press. Refer all requests for information to the incident commander or incident public information officer. They have the big picture, and the experience to talk to the media.

After the first day, your team may be used to do intensive search. The most common type of such searching is commonly known as a grid search. Gridding covers a sector of the search area by methodically crossing it, back and forth, to ensure that there is a reasonable probability the person will be found, if in that sector.



In gridding each team is assigned a search area and a desired probability of detection. For searchers, this probability is expressed in a spacing, a set distance apart the searchers should maintain as they proceed through the area. The search team is deployed in a line and advances along a route set by the land navigator. Each team member keeps the proper spacing from the persons on either side, and the entire team guides on the navigator. The team leader roves behind the team checking team members, the navigator's course, and any areas that appear to need further attention.



Typical spacings between team members might be as much as 100 feet in open ground with short grass, down to 20 to 10 feet in dense brush or forest. A simple way to pick spacing is to have a member of your team lie down on the ground and see how far away you can spot your “victim.” In searching for clues or evidence, spacing may be even closer based on the size of the expected items. The team should never be spaced so that team members cannot see the person on either side of them. Spacing is established when the team is on the baseline for the sweep, ready to step off on the search pass through the area.

As the search team sweeps through its grid search, marking what has been covered becomes an issue. Without a system for establishing lanes through the grid, the searchers may spend time searching ground that has already been searched. One technique is for the searchers on one end of the search line to mark the area covered by using surveyors tape at regular intervals, hung on bushes, tree limbs, signs, fences, or other easily visible features. On the next pass in the opposite direction, one end picks up the markers; the other end hangs new markers.

Searches typically end or scale back after sunset. Night searching is more dangerous for searchers and requires training in working together as a team at night. However, lost persons are generally less likely to travel at night, making them easier to find. Sound may travel further, helping in detection of the lost person’s signals. The bottom line is that failing to search at night means giving up part of the lost person’s survival time. If you intend to have a night search capability, train regularly, and make sure your members are comfortable and skilled at moving over the terrain in your area in the dark.

The following are some ideas that may help your night search efforts.

Have headlamps – searchers need to have their hands free. Battery powered headlamps are available in many outdoors shops.

Move slowly – the team will have to move at a slower pace, because visibility is restricted and more time has to be spent making sure you avoid hazards.

Closer spacing – the distance at which you can see a missing person, large clues, and small clues is greatly reduced in each case. Spacing between team members must be much closer, and the area covered with each pass is much smaller.

Shorter field of view – because of the restricted visibility, each member must spend more time looking at the ground, and will cover a smaller area when doing so.

Regular checks of direction – the navigator must check the team’s direction of travel very often. It is easy to become disoriented at night and to deviate from the intended course.

Watch out for helicopters – sometimes helicopters are used to support a night search with their floodlights. Although the light is nice to have, the circling floodlight is very disorienting – if you are not prepared for it, you may end up going in a circle chasing the light. The navigator must often check the compass course, sometimes literally from tree to tree. In addition, the noise from a low level helicopter completely masks sounds from other sources, including the missing person and even communications within your team.

Light sticks – one way to keep track of team members is to have everyone pin a chemical light stick to the back of their shirt or jacket collar. The team leader can then easily see the location of the team members.

Search tactics – the limitations of darkness make some types of search activity very difficult. Route searches, hasty searches, confinement, and tracking all can be done at night. Grid searches are probably impractical unless the area is quite small.

For Discussion:

- (1) Take a detailed map for a local area and identify features that could be used to establish sectors for grid searches.
- (2) How would your team choose who would serve as the team leader, land navigator, communicator, and first aider?
- (3) What communications equipment and frequencies would you use for search in the field?

IX. RUNAWAY AND ABDUCTED PERSONS

A small percentage of people who disappear are truly lost in the wilderness. People disappear for a wide variety of other reasons: runaway children, abducted children, victims of murder, other criminal activity, mental disease or impairment, or because they just want to leave their present situation. The basic techniques already described in this manual work in the initial stages of the search for those who disappear.

However, the reasons for and way in which an individual disappears and the delay in reporting the disappearance play are major factors in determining the appropriate search tactics. For example, if a child is abducted from his front yard by individuals in a vehicle, and the care giver does not realize the child is missing for an hour, the possible search area starts at 40 or 50 miles in any direction in which there are roads. Confining the area based on information on how far small children typically travel, hasty searches, and intensive search are not going to locate the child. If no one reports seeing the abduction, it may take another day or more to exclude the possibility that the child is truly lost or hiding and to shift to a search for an abducted child. At this point the search area is measured in terms of states if there is no other evidence to limit the area.

This means that very quick identification of the nature of the incident, rapid mobilization of resources, and use of the best possible information on victim behavior is critical. Unless the nature of the incident means that they will be ineffective, standard search tactics should be started as soon as trained searchers arrive on scene. Thorough hasty search, careful confinement of the area, preservation of any clues, and thorough documentation of the area covered and how it was covered are absolutely necessary. In the case of the disappearance of small children, this search must be conducted from the perspective of the child, including the identification of attractive places to play or hide, and where the child could have gone that appear to be impassable for adults.

For young children and teenagers, interviewing is critical in developing leads on favorite locations for play or other interaction, other friends or acquaintances (especially those that the parents may not approve of), activities and patterns of activities, and possible illicit activities. The following guidelines may help:

Avoid assuming a father or authority figure role – rapport is critical to gaining useful information. Especially in teenagers, an authority based approach may be resented.

Be nonjudgmental – don't impose your views of appropriate behavior on the witness. If the friend says Jimmy was deeply involved in Satanism, your source will dry up in a second if you express disapproval. Be neutral. Drugs, sex, alcohol, and odd beliefs may be completely inappropriate in your view, but keep your values to yourself. You are trying to rescue someone, not convert the witness to your belief system.

Establish confidence – these sources may be very sensitive to having their information recorded or written down. They probably will not want the missing child or teenager's parents to know what they know, and they certainly won't want their own parents to know. Reassure them that the information will only be used to find the missing person.

Get on their level – for smaller children, physically get down as close to their eye level as possible. For teenagers, you have to get to their mindset and understand that different things are more or less important in their lives than in yours.

Interview one on one – you don't need parent-child or social group dynamics at work. If you need to confirm information that has been given to you confidentially, establish that you will treat their replies confidentially by not naming the source. Instead say “we heard that Susan liked to ...”

Every bit of information is important – relationships of people and events are complicated, and are often understood when a key bit of information is gathered.

For runaways, abductions or extended searches, a poster campaign can help turn up leads. A good, clear, high quality recent picture of the person can be turned into a poster quickly by most printers or quick copy centers. Posters should include:

- The individual's name
- A recent picture
- Physical description – height, weight, age, facial hair, hair color, visible tattoo or birth marks, jewelry, and clothing worn or carried
- Pack, school bag, or anything carried
- Description of vehicle
- General area where missing from
- Name, phone number, and e-mail of the agency coordinating the search.

Posters are part of the initial response for runaway, abducted, or lost children not in a wilderness setting. Poster distribution should be dense, including to every public place that will accept and display them, drivers of vehicles at roadblocks, transportation services and hubs, and medical facilities.

Note: Posters are also a valuable tool for searches for persons lost in the outdoors. Post at outdoor suppliers in surrounding towns or cities, businesses in the general area of the search, trailheads, boat ramps, public latrines, camp site areas. Make certain to get landowner permission for posting on private property, or permission from park officials or rangers for posting in parks and forest areas.

As you distribute materials, keep a record of where they go. When the search ends with a find, go back and recover them. If the person is found alive, this can prevent confusion and reports well after the rescue. If the person is found deceased, it may eliminate a source of stress for the family.

Be aware that abductors and murderers have been known to become involved in the search in order to keep track of the investigation and the danger it poses to them. Identify all searchers, consider photographing all search teams, and identify everyone who attends any public meetings or briefings about the search. Have a sign-in roster on which everyone must enter their name and contact information – a reasonable cover for this is to simply state that it is needed for insurance purposes.

Finally, make certain that you notify and coordinate closely with the authorities who have the legal responsibility for criminal and missing person investigations. Have them clear any actions you take before regular incident command is established on scene. Do not run a private search – it destroys your credibility as a member of the emergency services system and may impede an ongoing investigation.

For Discussion:

- (1) Review the events of any search your team has been involved with for a missing, abducted, or runaway child or adult or for an adult suffering from one of the senile dementias. What were the lessons learned?
- (2) Where in your area would be good places to put up missing person posters?

X. DIRECTION FINDING

REACT is a volunteer communications organization, and direction finding is a communications skill. Amateur radio operators have made this a sport – fox hunting (which has nothing to do with hunting actual foxes). But we can use direction finding to search for and locate electronic distress beacons.

When this course was first written, there were two types of electronic distress beacons, Emergency Locator Transmitters (ELTs) for aircraft and Emergency Position Indicator Radio Beacons (EPIRBs) for vessels. Both transmitted a warbling tone on 121.5 MHz. The situation has become more complex. Today there are:

- old pattern ELTs which transmit on 121.5 MHz. This frequency has not been monitored by the search and rescue satellite system (SARSAT) since 2009.
- military beacons that transmit on 243.0 MHz.
- intermediate ELTs which transmit on 406 MHz frequencies, and allow satellite location within 25 square miles.
- current ELTs which have GPS (global positioning satellite) capability, transmit on the 406 MHz frequencies and allow satellite location to a considerably smaller area
- old pattern EPIRBs which transmit on 121.5 MHz.
- Class C EPIRBs which transmit on Marine channels 15 and 16.
- intermediate EPIRBs which transmit on 406.025 to 406.076 MHz, and allow satellite location to within 2 kilometers in approximately 2 hours.
- current EPIRBs, commonly called GPIRBs, which have GPS (global positioning satellite) capability, transmit on the 406 MHz frequencies and allow satellite location to within 100 meters in 4 minutes.
- personal locator beacons (PLBs) which transmit on 406.00 to 406.10 Mhz, and allow location within 2 miles – these have a low power 121.5 MHz homing signal.
- current PLBs. which have GPS (global positioning satellite) capability, transmit on the 406 MHz frequencies and allow satellite location to within 100 meters – these have a low power 121.5 MHz homing signal.

This may seem confusing, but it all boils down to 3 key factors:

1. The search and rescue system does not listen for 121.5 MHz signals. These ELTs and EPIRBs had a false alarm rate approaching 97%. The only monitors of 121.5 MHz are local airports and commercial aircraft in flight. But the majority

of general aviation aircraft in the United States carry these ELTs today as their only distress beacon.

2. Satellite systems allow rapid identification and location of 406 MHz beacons, allow identification of who the beacon owner is, and have a better than 80% confidence that an activation is an actual distress.

3. Personal locator beacons have a low powered homing signal on 121.5 MHz for ground searchers attempting to locate lost or injured persons.

Cases (1) and (3) above are areas in which a REACT team could make a significant contribution in detection of an emergency incident and response. There are direction finders specially designed for search and rescue. However, they are expensive, and not universally available. Scanners are a familiar tool that can be used for direction finding, and REACT's long engagement with monitoring Channel 9 means that we retain an organizational memory of how to monitor.

To build a capability to react to emergency signals on 121.5 MHz:

ASSESS – is there a need? If your team is located near a general aviation airport you might have 2-3 incidents a year of 121.5 MHz ELT activations as false alarms. If your coverage area includes camping and hiking areas you might have 1-2 distress direction finding incidents requiring 121.5 MHz use. If having the scanner on does not impose a burden, and you don't mind waiting for a distress that may never happen, this may be a worthwhile contribution in the one case when it matters.

SCANNERS – as many members as possible should have scanners capable of monitoring the aircraft band, specifically 121.5 MHz.

ANTENNAS – if at all possible base scanners should be equipped with good outdoor antennas with clear lines of sight to probable activation areas.

COVERAGE – determine what the coverage of your base monitoring stations is. This may be as simple as listening for simplex radio traffic or sending a team unit with GMRS or business radio capability to track how far away you can hear stations.

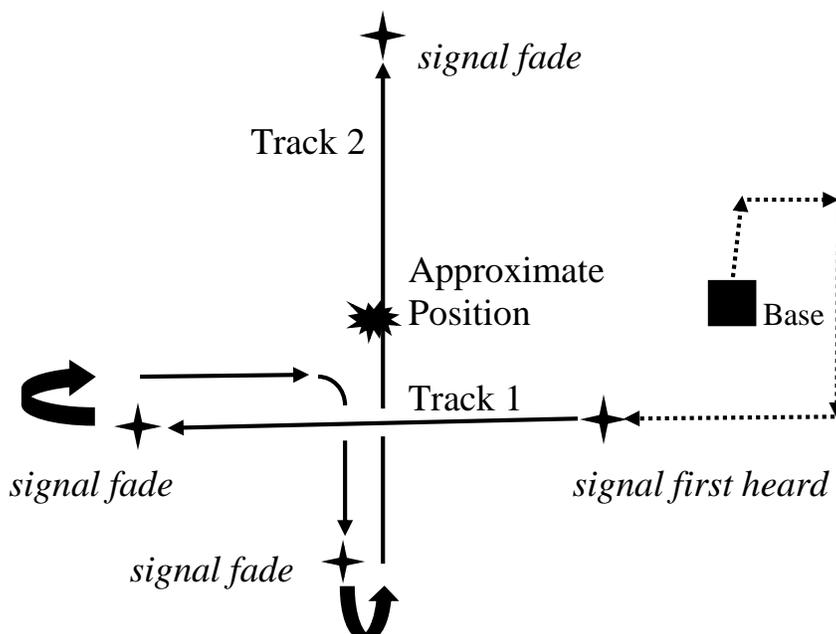
PLOT – the coverage of your base scanners on a local map – when a signal is detected, you can eliminate a lot of search area by seeing where the coverage of the stations that hear it overlap.

MONITOR! If you decide to do this don't be discouraged if you do not hear anything. Keep monitoring. You may never hear anything. But if you do you may be the first person to detect a crash or a person in trouble.

When a signal is detected, the nearest Federal Aviation Administration facility should be notified of time, strength, and duration. Brief test signals may be heard in the first 5 minutes after the hour if you are near an airport – these are normal maintenance tests and should not be reported. Near airports the preferred facility to contact is the nearest Flight Service Station. If you are located near navigable waters and the signal may be from an EPIRB, the first contact should go to the nearest Coast Guard facility. And if you cover park or forest lands away from navigable waters or airports, the applicable law enforcement agency for the area should be alerted to a possible PLB.

Once an ELT/EPIRB/PLB is detected it should be located quickly. A large percentage of these will be false activations, but a false signal can block the aviation distress frequency (121.5 MHz) or mask an actual emergency.

For field work a vehicle mounted scanner will allow you to do an aural search. If you have an area that is likely to be the source, drive direct to that area (this is your hasty search phase). If the signal is heard by your vehicle scanner and increases in strength, you are headed toward the beacon location. If the signal is not heard, it is time to go back to your base station location and start an expanding square search. This may require some adjustment given the roads in your area, but it should look like this:



In this case on one leg of the expanding square, the vehicle scanner picks up the beacon. Immediately start a search pattern:

- Mark where the signal was first heard on your local map.
- Continue in the same direction until the signal fades. (Track 1)
- Mark where the signal fades on your local map and draw Track 1 connecting the signal heard and signal fade points.
- Reverse course and travel back approximately half the length of the track during which you heard the signal.
- Turn left (or right) approximately 90 degrees and travel straight until the signal fades.
- Mark where the signal fades on your local map.
- Reverse course and travel straight until the signal fades. (Track 2)
- Mark where the signal fades on your local map and draw Track 2.
- The beacon should be located near Track 2 approximately half way between the two fades.

Doing this search exactly is difficult. The road structure may not allow you to make precise right angles or turn at the mid-points. A number of characteristics of the signal itself may make location difficult – these include:

- The signal is generally line of sight.
- The signal coverage area may not be a circle and may have lobes based on antenna position.
- Signals may be reflected off buildings or terrain.
- Dense woods may significantly decrease signal range.
- Canyons, railroad tracks, or power lines may create a strong directional signal.
- Ice or snow-covered fields may create displaced or directional signals.

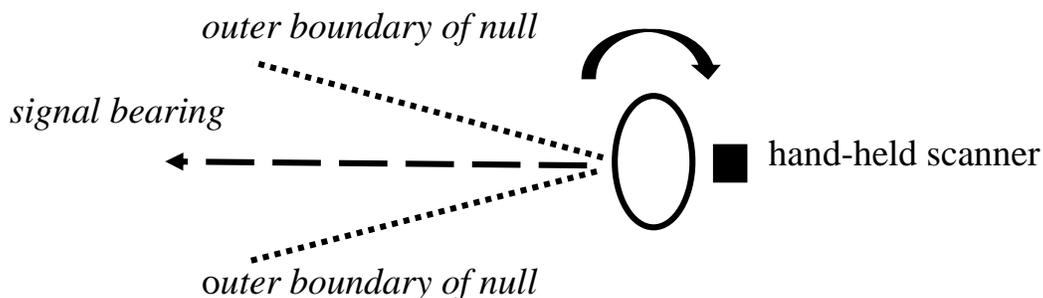
The strongest signal may not be closest to the beacon location. However, if you can establish where the signal fades in a number of places you can restrict the search area.

When you have an approximate location of the beacon you can work on foot to either walk in to the beacon's location or triangulate based on bearings taken from several different points (these need to be well separated because the method described below is not highly accurate). The best and cheapest search tool was the Jetstream dual AM commercial radio station and air band radio made by Radio Shack – if you have

one, keep it – it is an effective short range direction finding tool. However, you can use any scanner with air band coverage capable of receiving 121.5 MHz.

The procedure for direction finding with a scanner is:

1. Make certain you can **hear the signal with your scanner** – then turn off all other scanners around you.
2. **Adjust the volume** so that a weak signal is heard. If more than one person is attempting to direction find at the same time, it helps for each radio to have ear or headphones. The noise from additional units is very distracting.
3. **Hold the radio in front of you**, at mid-chest height, close to the body (but not touching) with the antenna vertical and down.
4. Slowly **turn in a complete circle**.
5. **Note the point at which the signal fades** to its lowest intensity or disappears altogether. This is the null.
6. **The beacon signal is directly behind you** when it nulls.



7. **Turn around and walk toward the beacon.** Repeat this process every 50 to 100 yards.

8. If the signal gets so strong that you cannot find a null, **you may have to tune the scanner off frequency** until it sounds tinny or scratchy and try again. As you get closer you may have to continually retune further off frequency.

9. If you start to get conflicting bearings, **mark each point where you get a null on a map**, even if only a sketch map, and plot the bearings. It may take some time, but eventually you will be able to identify the direction to the beacon.

How can you practice these search techniques? **Do not set off a beacon**, absolutely do not, to use as a training target. You can train using a FRS or GMRS radio by having a team member make regular transmissions, and home on those transmissions.

Note: Direction finding is also an important skill if you are searching for a lost and disoriented person who is attempting to call for help using either a GMRS or FRS radio.

For Discussion:

- (1) If emergency beacon signals are line of sight, where could you go in your community to get better coverage?
- (2) Where is your nearest airport (including small private airstrips), and what is the nearest Federal Aviation Administration facility and its phone number?
- (3) How many of your members have hand-held or base scanners?

XI. LOGS

If you are called out to work on a search or a search and rescue exercise, make sure that you or your team starts, maintains, and keeps a copy of a log recording your actions. This is for your protection in case litigation results from the conduct or outcome of the search. It also may be very useful in reconstructing events for the search debriefing and critique. And it may help in designing training scenarios for new members and the team as a whole.

The log does not have to be fancy – a simple form, a spiral notebook, or a stenographer’s pad will do nicely. What is important is that you write everything down that happens to your team during the search. This includes:

- The name or official mission number of the search and the controlling agency.
- Days and times for all entries – make sure that you identify time as AM or PM or in 24 hour time.
- When your team was alerted and by whom.
- If you were the first organization notified of the missing person, who told you, their contact information, and the details they told you.
- Whom you contacted to alert the SAR system – name of the individual, agency, and contact phone number.
- When the team was requested to respond, when you started notifications, who responded, and what duties they were assigned.
- When you started to travel, where the search base was, and what time your team arrived.
- The gist of the general briefing you received (if the general briefing was distributed to each unit on ICS or other forms, retain a copy with the log), and when you were briefed and by who (position and agency).
- When your team went into staging.

- Each task to which you were assigned, when you were assigned, when you started on task, where it was, when you finished work, and what the results were.
- Frequencies or channels used.
- The condition of the lost or missing person if your team found her, where he was located, and actions taken to effect a rescue and evacuate the individual.
- Any injuries to team members and the actions taken to provide first aid.
- Any damage to vehicles or equipment and the circumstances of that damage (under some conditions this may be reimbursable by the agency who requested your help).
- Costs of any meals consumed by team members (under some conditions this may be reimbursable by the agency who requested your help – keep receipts).
- Other team members who join the search, and any members who are released and demobilized early.
- When the team is demobilized, all members are accounted for, depart the search area, and arrive home.
- And anything else not covered above.

Keep your log for at least the statute of limitations period pertaining to litigation against governmental rescue operations in your jurisdiction.

For Discussion: How does your team preserve its operational records? And how would you ensure that an incident log for the team would be able to be recovered several years after the event?

XII. DEVELOPING A SEARCH CAPABILITY IN YOUR TEAM

If your team is regularly called on to help in searches for missing or lost persons, and if you have interested members, consider making this part of your mission and train and prepare for it. This course has provided you a basic orientation that that is the first step. There are two ways you can help in searches:

1. Do what our core mission is – communications. Be able to provide a communications team that can interface with other radio services and can provide radio operators to staff the search base or to supplement teams in the field. If you take this route, this course will have given you familiarization to help you understand what the searchers are doing. Your equipment needs will be the same as in any field response to a public service event or to a disaster.

2. Develop a trained search team. This is not a simple effort, and one you should undertake only if you are willing to make the commitment required. Advertising that you have a search team obligates you to respond day or night, in good weather or in bad, regardless of other obligations. It also means that you must do a lot of training beyond that normally required of REACT members and beyond what is included in this course.

The first step is to determine which members are interested in search and rescue. Assess your members realistically – some might want to be involved, but be unable to do strenuous work in the field. Don't reject those members – they can help interview, distribute posters, or do a wide variety of jobs at a search base. In fact, you might identify a specific task that your members can do as a group, train for that task, and be a specialized search resource.

Next, start training – have all interested members complete this course. Course completion shows that you are serious and can be important as legal defense in litigation. Start planning now to complete related FEMA incident command system courses, specific search and rescue training, and on meeting certification requirements in your particular jurisdiction.

The third step is to develop an alerting roster of the names and phone numbers of your search team members. Give a copy to each member. Update it regularly, and do practice callouts each month to verify that members have their roster and can use it to pass the word in an emergency.

Fourth, start accumulating basic equipment that you will need – this includes:

For the team:

- Topographic maps, at least for your immediate service area
- Road maps and local street maps
- A good field first aid kit, preferably in a soft sided bag
- Surveyors tape or crepe paper roles to mark the lanes when conducting a grid search
- Stick flags to mark evidence
- Spiral notebook, stenographers pad or supply of forms for the team log
- A hand-held scanner for direction finding

For individual team members:

- The personal survival kit described in Section VIII, page 38 – fluid, whistle, personal first aid kit, and food
- Hand-held radio for team intercom – an inexpensive, low powered radio that can operate on a frequency or channel not likely to be used to coordinate overall search activity
- A tape measure for measuring footprints
- A military lensatic compass or a good orienteering compass
- A pad and pen for interviewing (if available a pocket-sized recorder)
- Sun glasses
- Appropriate shoes and clothing for the environment
- A small pack to hold the equipment
- A walking stick

Next, assign jobs within the team to ensure that the key functions are covered. Try to have each member become capable in at least two duties so that you have some flexibility in staffing. In addition, try to have at least two members trained to start the search and set up an initial incident command post until specialized searchers arrive.

Run training exercises – have a member “lost” in a reasonably sized area (such as a wooded park) and practice locating him. If you run an exercise on public land, notify the responsible agency – it is amazing how quickly an onlooker can report your exercise as an actual event. Design a simple scenario, give instructions to members or friends who will serve as role playing witnesses, and have team members interview them. Have a member simulate a lost person calling for help on an FRS radio, and practice locating her by direction finding.

Then spread the word in REACT – let your regional director and other REACT teams in your state know that you have this capability, so that they will know to call you when they need help. And don't hesitate to call other REACT teams early when you have a search to work.

Get to know the search and rescue community. Many states have search and rescue organizations – contact your state emergency management agency or state police and find the point of contact for the state SAR council. Your local law enforcement agency will know about local SAR teams. Find out who is out there, ask for their help, and train together whenever you can. If there is a state search and rescue organization, join and, even more important, attend meetings. Get to know people by face and name – it makes things much easier when you have to work together on a search.

Finally, advertise. Let agencies in your area with a SAR mission know who you are and that you can help. Don't oversell, but don't hide under a rock. Give your alerting roster to every agency that might call you, and send them the updated versions. And don't be discouraged if calls don't come fast and furious – there are not many incidents, and acceptance takes time. Do a professional job, play nice with others, and you will soon be part of the team.

For Discussion:

- (1) What equipment do team members have now that could be used in a search incident?
- (2) Does your team have an alerting roster? Do you have a copy? Is it current? If not, create one.