

# NORTH CENTRAL REGION HAWK

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To Be Ready, Responsive, and Relevant

## SEMPER VI

### Space Time Continuum

In science there is a concept called the space-time continuum. Its concept is rather complicated and boring. Professor Stephen Hawking in his book, 'A Brief History of Time' describes it as "the four-dimensional description of the universe from relativity, uniting the three space dimensions and the single time dimension". Huh?!? Albert Einstein described it in the form of relativity, "It is the relativity of time when you watch a beautiful, setting sun for a minute which is fleeting, but that same minute sitting on a hot stove is an eternity". Leave it to AI to put things in a proper perspective.

For the purposes of SAR adaptation, the old let's choose Einstein's description to work with. We are interested in the occupation of space by the victim from the relativity of time. In the case of an aircraft crash, there are certain statistics that apply.

Of those 29% surviving an aircraft crash, 60% will be injured. Of those injured in an aircraft crash:

- 81% will die if not located within 24 hours of the crash
- 94% will die if not located within 48 hours of the crash

Of those 40% uninjured in an aircraft crash:

- 50% will die if not located within 72 hours of the crash
- Survival chances diminish rapidly after 72 hours

Understanding the time element is the critical first step in a search and rescue mission. From the first notification of Air Force Rescue Coordination Center concerning a 'missing' aircraft, time has been running and working against the victims.

The average time from the last known position of the aircraft to AFRCC notification:

- No filed Flight Plan 15.6 hours
- Filed VFR Flight Plan 3.9 hours
- Filed IFR Flight Plan 1.1 hours

By the time CAP resources are activated, time has been running and working against the victims.

The average time from CAP activation to site location:

- No filed Flight Plan 44.6 hours
- Filed VFR Flight Plan 12.6 hours
- Filed IFR Flight Plan 9.5 hours

The average time from the missing aircraft's last known position to CAP location and recovery:

- No filed Flight Plan 62.6 hours
- Filed VFR Flight Plan 18.2 hours
- Filed IFR Flight Plan 11.5 hours

As you can see by the numbers, any victim of an aircraft crash has occupied a certain space for a considerable amount of time, and to the victim that time is an eternity. This means that every minute lost in preparation or conduct of the mission by the responder may seem insignificant, but in relativity every one of those 'lost' minutes to the victim can mean the difference between life and death.

In reviewing these statistics, it is apparent that the most critical time to locate a victim is within the first 18-24 hours following the victim becoming 'lost'. To the average responder it would appear that our average response times do a good job of getting to the victim in 'time'. It is important to point out that these represent an average number, meaning that 50% of the response times are faster, and 50% are slower. There is one other statistic to bring out that puts a different perspective on the picture.

The average time from last known position to location and recovery:

- With an ELT signal                      23 hours
- Without an ELT signal                 4 days and 18 hours

This means the average responder must treat every minute during their response as critical and relative to the victim while they occupy space at the crash site.

So, with all those numbers spinning around in your head, what does this mean to the average responder? Let me state it this way, "STOP DINKING AROUND!" In everything you do during a mission, find ways to do it better, smarter, and faster!

- Prepare a mission ready bag that has all of your essential mission equipment in it for immediate use during the next mission. Restock the bag immediately following the next mission, because you will forget to do so if you do not. This includes uniforms. Every minute you waste trying to locate your flight boots or BDU Cap are minutes the victim does not get back.
- Prepare an efficient, working recall system that will allow you and your team to respond and be enroute to the mission base or sortie within 40 minutes of notification. Every minute you waste getting to your vehicle or aircraft and 'wheels up' are minutes the victim does not get back.
- When arriving on base, prepare your vehicle or aircraft and equipment in anticipation of an immediate briefing and dispatch on a sortie.
- Following your operational briefing, conduct a quick and thorough crew briefing, but get moving. Every minute you waste getting off base and on with your sortie are minutes your victim does not get back.
- When you get an assignment, report to your grid, route, or access coordinates as safely and quickly as possible. Every minute you waste stopping for breakfast at Mickey Dees is minutes the victim does not get back.
- When you arrive at or over the site, immediately begin the site recovery procedures. Every minute you waste not contacting mission base with appropriate information, not leading in a ground team, or waste dismounting from the vehicle and getting into the field are minutes the victim does not get back.

There is a concept in emergency medicine called the 'Golden Hour'. It states that in many cases victims die if they are not given proper medical care within 60 minutes following their location and recovery. The victim has a tendency to quit their 'fight for survival', because they anticipate an end to the situation after seeing a rescue plane, ship or first responder.

- The moment you spot a crash site or locate the missing person, start the clock. You will have less than 60 minutes to recover the victims and hand them over to the next chain in emergency medical care.

In any emergency services operation you as the responder are working for the victims. The only person who really matters is the potential survivor. That person's time is critical. Your time as the responder is insignificant by comparison, unless you waste it. We need to practice as we are expecting to play. Those bad habits we demonstrate in an exercise are what will find its way into an actual mission response. It is all relative.

## **ALCYONEUS NOW**

In Greek Mythology, there is a tale of Hercules in battle with the giant Alcyoneus. To his dismay, Hercules found he could not defeat Alcyoneus in any form of combat. When Hercules would take this formidable foe out, Alcyoneus would spring back up revived. Hercules was confounded by his inability to defeat this enemy of Olympus. In his despair he turned to Athena, the Goddess of Wisdom. She told him the secret to Alcyoneus' ability to survive. Alcyoneus could not be defeated while standing on his own soil, protecting his home country of Phlegra. He was invulnerable defending his home territory. In order to defeat Alcyoneus, Hercules had to maneuver him out his homeland and into the land of Boeotia. Once Alcyoneus was away from Phlegra, Hercules readily defeated him. The modern military concept from this is called the "Alcyoneus Principle", where the ideal plan for war against an aggressor is to defend your homeland, while drawing your enemy away from defending his. The Civil Air Patrol as the United States Air Force Auxiliary is now the "Eyes of the Home Skies" where we are to contribute to the deterrence of an enemy's operation within the United States. It is this strategic defense that will be one of the corner stones for defending our country against acts of terrorism. It is 'Alcyoneus Now' for the Civil Air Patrol. It is our role to help protect our nation's communities, be it in the form of disaster relief or the crisis and consequence management of a terrorist attack.

### **'Game On' with Homeland Security**

In Northern Ireland of the United Kingdom back in the mid-1990s a new strategic defensive concept was introduced to limit the potential for terrorist attacks against the citizenry. The security forces there decided to provide a security presence of strategically identified targets of opportunity often selected for terrorist attack by politically dissident groups. The strategic plan involved providing tactical reconnaissance of randomly selected potential targets to provide a mobile and helicopter security presence at random times of the day or night, and days of the week. This randomly 'mobile' security presence had an almost immediate affect in disruption of terrorist activity. A terrorist planning an attack does not like a security force showing up unexpectedly. The terrorist likes to be able to predict when and where security teams are at all times, because they rely on a security absence to make the attack feasible. When a security team is spotted, the selected target loses its appeal. Terrorists will attack where their enemy is weakest, the least prepared, and at a time when their enemy least expects it. What this means to the Wings and Squadrons of the Region is that we can have an immediate effect in counter-terrorism by planning our exercise scenarios and proficiency training to include randomly selected potential targets of opportunity. The rest is up to the teams in those airplanes and vehicles to keep their eyes open and report irregular or suspicious type activity. Imagine if you will a potential planner of a terrorist attack being deterred because of the presence of "those damned little red, white and blue airplanes and white vehicles" when they least expect it. For the most part, in the past seven years it has worked well in Northern Ireland.

## **CREW'S CONTROL**

### **Fatigue and Crew Rest**

Fatigue is one of the worst enemies an emergency services crew or team can face. Fatigue can lead to a decrease in performance, and with prolonged exposure or in the presence of stress it can lead to severe safety concerns. It is estimated that 80% of all accidents are caused by human

error, and fatigue is the leading contributor to that error. Fatigue cannot be prevented, but it is unnecessary and can be avoided. There are three types of fatigue:

- Physical Fatigue caused by physical exertion and activity
- Mental Fatigue caused by mental effort or strain
- Emotional Fatigue caused by stress, anxiety, frustration, or boredom.

Physical fatigue can be replenished with a re-supply of energy. Mental fatigue can be offset with rest, and emotional fatigue (the most difficult) requires considerable rest, coping and relaxation. There are three main causes of fatigue; sleep debt, continuous awake time, and disruption of circadian rhythm. In an emergency services operation, the responder can be subjected to all three within the same incident. Any one of the above can reduce performance by as much as 35% of the normal function. Fatigue takes on many forms, with 'feeling tired' the least prominent. Where people can feel tired, they are not necessarily fatigued. Fatigue is more related to the way mental processes are functioning. Everybody experiences fatigue, but it is the speed and manner of the fatigue effects that will vary. During initial mission activity, an expected and natural adrenaline surge within the individual can mask fatigue for 6-8 hours, but it is only delaying the inevitable fatigue. When the adrenaline is back to normal levels, fatigue will begin to accumulate in the body at a rapid rate until the body gets the rest it deserves. During a mission activity, other inducers can magnify fatigue:

- |                                       |                                       |
|---------------------------------------|---------------------------------------|
| * Length of the work day              | * Time of the day                     |
| * Disruption of the awake-sleep cycle | * Quality of sleep                    |
| * Illness                             | * Self-medication                     |
| * Physical exertion                   | * Dehydration                         |
| * Poor diet, hypoglycemia             | * Stressors (e.g. noise, temperature) |
| * Boredom or monotony                 | * Hangover                            |
| * Caffeine, smoking, alcohol          | * Unresolved stress                   |

Fatigue is gradual and cumulative. It can translate into poor judgment, slow reaction time, degradation of performance, inability to process information, short-term memory loss, and eventually to impaired thinking leading to indifference to the operational assignment and safety precautions.

There are counter measures the crew/team member should take to control fatigue

- Do not begin the activity with a sleep debt
- Proper diet, physical conditioning, with avoidance of smoking and alcohol ingestion
- The limited intake of caffeine, but increased intake of water
- If you feel sleepy and time permits, take a 40-minute nap
- Respect the circadian rhythm patterns; when tired rest, when hungry eat something
- Maximum awake time/work day of 16 hours

A fatigued emergency responder is less vigilant and more willing to accept a low performance standard, which includes blocking out safety precautions. Never work at a mission base, climb into a vehicle, or into a cockpit unless you are 100% ready to cope with everything that is likely to be thrown at you. Do it right for yourself, for your team, for your leaders, but especially for the reason you are responding, the victim.

## **SURVIVAL SENSE**

### **Winter Driving**

As we approach the worst of winter, it is important to focus on the inherent problems associated with winter driving. The first problem is vehicle preparation. It is better to have the vehicle prepared before the snow hits the ground.

- Tires- If you are switching to a set of snow tires, after you mount them condition them by dry hiway driving for about 600 miles so they can develop maximum traction in snow.
- Windshield Wipers- Make sure your wipers are in good working order and effective. The summer heat can be tough on wipers that are not used that often to stay pliable.
- Battery- Do not go into the winter months with a battery that is marginal and not fully charged. Get the terminals cleaned and the connections tightened and get the battery a full charge. If you are not sure about the battery, purchase as new one before it freezes.
- Lights- Make sure the headlights, taillights, brake lights and turn signal lights are functioning properly.
- Locks- Keep the door and hatch/trunk locks well lubricated and deiced.
- Fluid Check- It is important to check the engine fluids before the first freeze:
  - Change to a lower viscosity motor oil
  - Switch to an anti-freeze type windshield washer fluid
  - Check the level and quality of the transmission, power steering and brake fluids
- Fuel- Get in a habit of keeping at least a third to half full fuel tank at all times. The lower the fuel level is, the more concentrated you will find the water in the tank that could freeze in the fuel line when you least expect it. As good as ethanol-blend gasoline is, it is more prone to moisture and water condensation for fuel line freezing. Adding a fuel de-icing solution to your fuel when you fill up the tank about every third or fourth tank will get rid of the water that will find its way into each tank of fuel.

Prepare an emergency survival kit for your vehicle in case of an unexpected incident, accident or weather related delays. These items should be place in the vehicle for ready access:

- |                              |   |
|------------------------------|---|
| - Shovel                     | - Tow chain                             |
| - Jumper cables              | - Container of sand                     |
| - Electric air pump          | - Waterproof tarp                       |
| - Blankets                   | - First Aid Kit                         |
| - Quick energy food/snacks   | - Red flag for your vehicle's antenna   |
| - Extra parkas and gloves    | - Candles and matches in a sealable can |
| - Cellular phone             | - Sun glasses and sun block             |
| - Flashlight/extra batteries | - Sleeping bags                         |
| - Reading material           | - Snow boots                            |

Pre-departure Checklist:

- Obtain a current weather forecast
- File a 'travel plan' letting someone know where you are going to go, when you are expected to arrive, as well as the route you are planning to take
- Plan on traveling only during the daylight
- Dress warmly in layers of light-weight clothing
- Carry a supply of high energy food and bottles of water
- Warm up the car engine and scrape the windows clear of ice before leaving
- Remove snow from all lights

Stuck in the Car Scenario:

- Do not panic
- Turn on the vehicle hazard lights
- Stay in the vehicle (do not walk or search for assistance in unless it is visible within 100 meters)
- Display 'trouble' flag on the vehicle antenna
- Run the engine for 10 minutes every hour for heat
- Ensure adequate, down-wind ventilation while running the engine
- Do minor exercises to keep up circulation and warmth to extremities (avoid over exertion)

- Turn on the dome light at night to be visible by work crews
- Try to stay awake and keep watch

Driving in Winter Weather:

- Do not start driving until the engine is warmed up
- While driving, get the feel of the road and drive smoothly, do not make abrupt turns or sudden braking
- Do not use cruise control on slippery or snow covered surfaces
- In traffic driving maintain a safe, manageable speed and at least twice the following distance between vehicles
- On snow or ice it can take up to 3 to 12 times the stopping distance of normal conditions
- Drive with your low-beam headlights on
- When stuck on snow or ice, apply gentle and smooth acceleration, rocking the car forward and backward until directional momentum can be maintained
- When braking on snow or ice, gently squeeze the brakes to activate, do not slam down on them
- If the vehicle is in a skid it is important to let up on the accelerator and brakes, and focus on steering, counter-steering in the direction of the skid
- If in a skid and steering is under control, if the skid is an over-steer (with the rear end of the vehicle swinging around), counter-steer and gently apply smooth braking
- If in a skid and steering is under control, if the skid is an under-steer (with the direction of the vehicle not moving in the direction of the front end), gently apply a small acceleration to compensate

## **MISSION READY**

### **'L-PER HELPER'**

A Ground Team EDF guideline by Maj. Carol Marxsen, Lincoln Composite Squadron- NEWG

#### **Overview**

Electronic direction finding (EDF) is the capability and procedures used to locate electronic location transmitter (ELT) signals emitting from an aircraft or personal location device (EPIRB) used by individuals. The techniques used in a mobile EDF search are the same used in a dismounted EDF search.

#### **Navigational Plots**

The typical EDF mission begins with navigational plots of coordinates or general areas where ELT signals have been heard.

#### **Search and Rescue Satellite (SARSAT) Composite Points:**

A SARSAT composite point is a latitude/longitude coordinate calculated from two or more coordinates obtained from satellite passes and received by AFRCC. It is important that all SARSAT coordinates get plotted along with the projected composite point.

#### **Preparation for Departure**

**ELT Frequencies:** Before departing on an EDF mission it is important to determine what frequency the signal will be transmitting.

Civilian Aircraft ELT Frequency	121.5 MHz
Military Aircraft ELT Frequency	243.0 MHz
Personal Beacon ELT Frequency	406.0 MHz

**Mounting Antenna:**

Using the standard issue L-PER (L-Tronics) unit for EDF search missions, there are two ways to mount the antenna atop the vehicle. They are listed below:

Receive Mode (REC):                    Mounted Fore and Aft

This mode is used when the general area is known, but the general directions are not. \*

\* The REC mode will indicate the direction through sound and signal strength. With fore and aft mounted antenna, the vehicle will be facing the direction of the target with maximum needle deflection and loudest audible sound.

Direction Finding Mode (DF):        Mounted Left and Right

This mode is used when a specific area and direction of the signal is known (e.g. SARSAT coordinates). \*

The DF mode will indicate the direction of the signal left or right of the vehicle's direction. An increasing sound indicates the vehicle is getting closer, with a decreasing sound indicating the vehicle is getting farther away.

It is important to double-check the mounting of the antennas before the vehicle departs.

The vehicle departing on an EDF mission must make three assumptions:

1. The EDF equipment is not as prepared as it is thought to be.
2. The target (ELT signal) can be located anywhere.
3. Any electronic signal can disrupt the EDF signal receiver.

With those assumptions, a few pre-departure rules can be made:

- Confirm the ELT frequency you will be trying to locate.
- Verify the EDF antennas are mounted on the vehicle correctly.
- Before leaving the vehicle staging area, turn the EDF equipment on with the vehicle engine running, radios on (sending and receiving a practice transmission), as well as the headlights on to see if normal vehicle operation affects the EDF receiver.

**Mounted/Mobile EDF Search**

The mobile EDF mission begins at the mission base. A high number of ELT signals are often found on or near airports. Turn on the EDF equipment before leaving the mission base, and monitor for ELT signals in route to the 'target' area (particularly by airports and private airstrips).

**Mobile EDF Procedures:**

1. Mount the antenna on the vehicle for the selected mode (REC/DF) to track the ELT signals.
2. After turning the EDF equipment on, adjust the Sensitivity to maximum and the Volume to an acceptable audible level.
3. Drive the vehicle towards the 'target' area, monitoring for ELT signals enroute.
4. If the target area is based on SARSAT composite/merge coordinates, the mobile unit should travel to the plotted point(s) with the thought that the SARSAT point is a 'best guess' and the target could be anywhere in the vicinity. The team should be prepared to begin an expanding

square search from the plotted coordinates until an audible ELT sound is heard the EDF techniques can be used.

5. When an ELT signal is heard, determine the direction of the signal and plot the indicated direction of the signal from the known position of the vehicle.
6. Drive the vehicle by the best means of navigation towards the signal.
  - As you get closer to the signal, turn the 'Sensitivity' down to stabilize an erratic signal.
  - As you get closer to the signal, the sound of the signal will get louder so the 'Volume' can be turned down to an acceptable audible level.
7. It is important for the mobile team to make numerous ELT directional plots enroute to the 'target'. The more directional plots that intersect at a point, the more accurate the location. \*  
  
\* Long range intersecting directional plots will be accurate, and less affected by reflective signals.
8. The mobile team must follow the navigational direction determined by the plots until an EDF dismounted search is required.

### **Mobile Search Methods**

#### **Vehicle Landmark Alignment:**

An effective method to determine the direction of the signal from the vehicle's position is to align the vehicle (fore and aft) directly facing the signal at an available intersection or turn in the road. The vehicle would then be facing a visual landmark or compass heading for plotting.

#### **Team Vehicle Triangulation:**

A quick and accurate method of locating an ELT signal is by using two or more vehicles approaching the signal from different directions. One vehicle is sent directly to the 'target' area by the most direct route possible, referred to as the 'front door'. This team will monitor for the ELT signal and plot directional headings along the way. A second team is dispatched to the same area from an opposite direction or by way of an offset parallel track. This is referred to as the 'back door'. The responsibility of the 'back door' team is to provide the 'front door' team with intersecting directional plots from established locations along the route. This quick-moving directional triangulation of ELT signals can provide an efficient and effective method to locate the ELT source. The key to this method is keeping the target between the two or more vehicles as much as possible as they converge on the target area.

#### **Dismounted EDF Search**

The dismounted EDF mission begins in route to the 'target' area. The dismount equipment must be readied as soon as practical. It is also important to transfer all navigational plots of the ELT signals to an appropriate map for dismounted navigation by the team.

There are only three basic elements of an EDF search that must be kept in the mind of every dismounted EDF search team:

- Get to a point where the signal can be heard.
  - Establish a direction to the target.
  - Get to the target by the best means possible.
1. Dismount from the vehicle and mark the dismount position on the navigational map.
  2. Set up the hand-held EDF equipment quickly after dismounting, respecting the 'golden hour'.



3. From the dismount position determine a heading (along with associated short, intermediate, and long range landmarks) to travel towards the 'target' as indicated by the EDF equipment. Mark this heading on the navigational map.
4. The dismounted team should use a search formation that is effective \* for EDF.
 

\* It is recommended that a dismounted EDF team use the 'arrowhead' search pattern with the EDF equipment operator at the point of the formation with a navigator (with map and compass) directly behind.
5. The EDF equipment operator follows the signal as indicated by the equipment, while the navigator marks appropriate headings and landmarks along the way.
6. If two dismounted teams are pursuing the same target, it is recommended that the two teams approach the target from different directions. By keeping the 'target' between them, the teams can intersect their headings by landmarks or navigational plots. This lessens the possibility that the team will walk past the target area, and the target can usually be located in half the time.

### **Locating ELT Signals At Airports**

There is a certain amount of difficulty in locating an ELT signal at an Airport. The difficulty comes from the reflective signals off metal hangars, and so many aircraft where the signal could be emitting. It is best to start the search in the middle of the tarmac area as far away as possible from hangars to obtain the best initial readings and potential headings.

Reflective Signals- Reflective ELT signals cause havoc with DF equipment, often making a directional heading difficult, if not seemingly impossible. Signal strength (volume) is not affected by reflective surfaces. The best way to determine the direction to reach the signal is as follows:

1. Set the Sensitivity controls of the DF equipment to a 'moderate' setting, with the Volume controls to a 'minimum' or low setting where the signal can still be heard.
2. The DF equipment operator closes their eyes while holding and operating the DF equipment in the normal manner, using either DF or REC modes.
3. The operator slowly turns completely around, carefully listening for the strongest audible ELT signal. This is done as many times as necessary until the operator believes the equipment is indicating the direction of the strongest audible signal. This is a dismounted form of the 'build and fade' method used by aircraft. \*

If in the REC mode, the general heading will be in the direction of you left shoulder and arm.

If in the DF mode, the general heading will be in the direction you are facing.

\* This technique can also be used in the field where reflective surfaces such as canyon walls or various man-made structures can create confusion with DF directional signals.

4. The operator proceeds (with eyes open) and leads the team in the direction\*\* indicated by the audible signal strength, ignoring the DF headings of the equipment for the moment.

\*\* Sometimes this direction will lead the operator to a reflective surface. This is acceptable, as the heading from the reflective surface will often lead to an even stronger ELT signal and eventually the ELT source. Reflective ELT signals make the location of the source difficult, but not impossible.

5. This process is repeated every couple of minutes until the Sensitivity and Volume controls are set to the minimum settings and the signal is still at its strongest and loudest. This will mean the signal is very close. (Proceed with the 'Isolating the ELT Signal' procedure)

Isolating the ELT Signal- When the DF equipment can no longer differentiate where the signal may be coming from (as in too many aircraft or hangars), it is time to make the DF equipment less sensitive to the incoming signals.

1. Remove the normal antenna masts from the DF equipment and attach a short 'rubber duck' antenna.
2. This will make the DF equipment less sensitive and will allow the operator to determine which target (aircraft or locked hangar) is emitting the signal by the increasing sound as the DF equipment get closer to the target signal.
3. When the DF operator feels that the emitting signal has been identified, the operator should walk away from the suspect target. If it is the aircraft or hangar with the emitting ELT signal, the sound should weaken a great deal as the distance between the signal and the DF equipment is increased. If the sound does not weaken, the target has not been located and isolated.
4. Sometimes within a hangar (containing many aircraft that may be emitting the ELT signal), it is difficult to determine which aircraft has the emitting ELT signal. At this time remove all antennas from the DF equipment, to render the equipment very 'insensitive'. The audible signals will increase (or be heard) only when the equipment is within 1-3 feet from the signal.

#### **RULES OF THUMB: How to prevent things from going wrong.**

1. The REC mode will pick an ELT signal at a greater distance than the DF mode, but the general direction will be less accurate than the DF mode.
  2. The DF mode will be more accurate in pointing in the direction of the ELT signal, but at a closer distance to the signal than the REC mode.
  3. As you approach an ELT signal, the signal should get stronger and louder: Turn down the sensitivity and volume of the equipment down to acceptable levels and keep moving forward.
  4. As you move away from an ELT signal, the signal will get weaker: Go back to where you last heard the signal loud and strong and head in a different direction.
  5. If you are given SARSAT coordinates to the ELT signal, mount your magnetic mount antennas in the Left/Right (DF) positions the length of one antenna width apart. Use the DF mode on the unit as you drive the vehicle to the plotted coordinates.
  6. If you are given general directions to the ELT signal but no coordinates, mount your magnetic antennas in the Fore/Aft (REC) positions the length of one antenna width apart. Use the REC (signal strength) mode on the unit as you drive in the general direction towards the area.
  7. If you are getting audible ELT sounds from the unit, but the needle is not moving in either mode (DF or REC), dismount and use the unit in either mode on the hand-held 'masts' to get needle deflection and a direction of the signal strength. \*
- \* If you cannot get needle deflection with magnetic mounted antenna, the antenna coax has probably been crimped or broken in a shut door or window rendering your antenna worthless.
8. If you are getting an audible signal, but do not get a needle deflection with either magnetic mount antennas or 'masts', check to see if you are monitoring the right frequency.

9. When moving towards an ELT signal, periodically check the direction of the signal by taking a perpendicular heading to make sure the signal is still ahead of you and you have not gone past it.
10. If you are mobile and picking up a strong ELT signal, plot a heading from your current location in the direction of the signal every time you get a chance to.
11. Plot more than once, dismount once. \*
  - \* The more you plot, the less you walk.
12. Unless you are stopping to take a directional compass heading towards an indicated signal, keeping moving and thinking with your DF equipment. Use your senses to tell you where to go to locate the signal. If you stop and think, there is a greater tendency to become confused and over-think the situation, making a simple solution more complicated than it is.
13. When in doubt go to a high point to listen for an ELT signal.
14. If confused by the needle deflections, close your eyes and turn 360 degrees with the unit, listening for the loudest ELT signal strength. That will be the direction you must head.
  - If you are using the DF mode that direction will be the direction you are facing.
  - If you are using the REC mode that direction will be the direction looking over your left shoulder.
15. If trying to locate an ELT signal and power lines or fence lines are a suspected interference to an accurate DF, take a heading perpendicular to the 'line' about 100 meters out and determine the source of the signal strength by ignoring the DF readings. (This is when using the REC mode is effective). Concentrate on the audible signal strength, using the dismounted 'build and fade' method until the source of the signal can be located or accurate DF headings can be used.
16. The more perpendicular to the ground surface you hold the dismounted DF masts, the more sensitive the unit becomes and easier it will be to locate the signal.
17. The more horizontal to the ground surface you hold the dismounted DF masts, the less sensitive the unit becomes and the harder it will be to locate the signal.
18. While dismounted, only remove the unit from the 'masts', to use a single antenna (or no antenna) if you suspect the signal is very close and you need to know if it is within a certain closed hangar or coming from one plane among many.
19. If you are picking up a strong ELT signal with minimum 'Sensitivity' and minimum 'Volume', look around because you are probably standing next to or on top of it.
20. Never forget that the ELT signal is a tool for locating survivors of an aircraft crash and the techniques used are in support of the victims. Never treat an ELT DF mission as anything less than a REDCAP Distress Mission where lives are at risk.

Editor's Comment: As in all procedures presented in this section, the above represents a point of view as a 'best practice' of many good practices. It is up to the reader to determine if the procedure should or should not be used in their operations. At the very least, an inexperienced crew and/or team can benefit from trying them out.

## **GOING FROM GOOD TO GREAT**

### **Making Better Decisions**

Decision-making is a basic ingredient of leadership. It is not important whether the leader actually comes up with the proposed action or simply endorses it. It is important that decisions are being made to keep moving forward.

The dimensions of decision-making are based on the effectiveness of the decision, the acceptance of the decision, and the importance placed on a commitment to a solution based on the decision. A good decision is a balance between the three. The nature of the decision will be between moral, ethical and practical concerns. The decision turns critical when there is a conflict with one or more of the moral, ethical, and practical issues; especially when there is pressure to make a 'good' decision. No matter the nature or need of the decision, good, solid reasoning should back the decision.

Making decisions is a vital part of every leader's job. Of course, some decisions are easier than others. Here are some ways to make a decision when the pressure is on:

- Remember that nothing is forever. Few decisions are irreversible, and a firm decision that is later changed is better than no decision at all. The key is to make the best decision, based on the best information and input at the time, and then monitor the results of your action.
- A delay in making a decision could be disastrous. It is important to face the decision when you have the time to gather input and information. If you delay, there is a potential to find yourself with fewer options when you are forced to decide.
- Do not lump your decisions together. Examine each, one at a time and give it your full attention. When you attempt to make too many decisions at once or under the scope of one decision for all, you will find you can do little justice to any.
- Explore all your options. Do not limit yourself to traditional solutions just because they have worked before. Be innovative and look for creative ways to make a decision or solve a problem.
- Look to your staff for ideas and opinions. The best information will come from those who work closest to the problems. Their insights may give you the valuable information you need to make the right decision.
- Sometimes it is important to distance yourself from the stress of the situation. Take a few moments to relax. You will be better able to approach the problem from a fresh (or different) perspective, to make a good decision.
- Like everything else, your decision-making skills will improve with practice. There are few decisions that can come out of a book or flow-chart. Take advantage of opportunities to make low-level decisions and observe how they turn out. Identify the pitfalls of decision-making and learn to make good decisions with time.
- Learn the difference between decisions that require a 'cool head' or a 'warm heart'. Be able to distinguish the difference between practical and personal matters. Recognize what your heart is saying in personal matters and what your head is saying in practical matters. Then teach yourself to focus on the immediate situation and deal with other associated problems at the appropriate time.

Occasionally a poor decision will be made. Nobody expects you to be perfect. Hold on to your principles of trying to do what is right. What counts is how well you handle the situation when a poor decision is made. After all, sometime a poor decision is better than no decision at all.

## **DID YOU KNOW?**

### **Losing Body Heat**

The body loses heat five ways when it is cold: conduction, convection, evaporation, radiation and respiration. A six-degree drop in the body temperature will leave the victims of cold incapable of helping themselves. Half of the heat lost from the body in the cold will be from the head, neck and face. Most clothing loses almost 90 percent of its insulation value when it becomes wet. Wet clothing extracts heat 240 times faster than dry clothing. Also, you lose ten times more heat by breathing out through your mouth, than breathing through your nose.

When you plan on working out in the cold, the best advice here is to wear a hat, stay bundled up around the face and neck, stay dry, breathe through your nose, and do not talk too much.

### **CHECK IT OUT!**

If you are interested in learning more about the Incident Command System and how it relates to our missions, I encourage you to check out this web site for a FEMA Independent Study Program. It is an excellent training course you can download free, and even take the final exam on the Internet. It is one of the better ICS programs I have gone through, with a unique twist to the format that makes this course worthwhile. Following successful completion of the course you will receive a certificate of completion from FEMA.

<http://training.fema.gov/EMIWeb/is195.htm>

IS-195 Basic Incident Command System

### **Words of Wisdom- Coffee Cup Advice from the Military Pros**

When faced with a problem, work the problem not the worry.

Success in the field comes down to trust...trust in your equipment, trust in your training, trust in your team, and trust in yourself.

Not knowing the answer and being stupid are two different things. Don't do them both.

A good horse never comes in a bad color. (From an old U.S. Cavalry saying)

### **FAMOUS QUOTES:**

There are no great men. There are only great challenges that ordinary men face.  
(Gen. George Patton)

### **SUBMISSIONS:**

Queries, suggestions, and news items are welcome. Please submit to the following addresses:

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The next issue of the 'North Central Region Hawk' will be sent out on or about 15-Feb-2003. Please have information you would like to be considered in that issue to my attention no later than 01-Feb-2003.