



Government  
of Canada  
National Search  
and Rescue  
Secretariat

Gouvernement  
du Canada  
Secrétariat national  
Recherche et  
sauvetage

# *Critical information for Emergency Responders*

*A Lifeline to Survival: COSPAS-SARSAT Distress Beacons*



[www.nss-snr.gc.ca](http://www.nss-snr.gc.ca)

Canada

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## ■ It could happen...

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... It is a dark night, and blowing snow is obscuring visibility. You have to lead the search for two men who are overdue on their snow machines. A signal from a Personal Locator Beacon registered to one of the men is being received by the search and rescue satellite system. The satellite-generated coordinates have been provided by the Canadian Mission Control Centre, but with the current weather conditions and darkness, finding the men will still be challenging.

... You have just been advised that the pilot of a local charter flight transmitted a “mayday” while approaching the local airport. The aircraft never arrived. You contact the Joint Rescue Coordination Centre (JRCC) and confirm that federal authorities have already been notified, and that a Canadian Forces search and rescue aircraft is on its way. The JRCC Coordinator advises that an Emergency Locator Transmitter signal is being received from the missing airplane, which appears to have gone down in a heavily wooded area about five kilometres short of the airport’s main runway. The JRCC Coordinator asks if you can send a ground search team into the area to help locate the aircraft and its occupants.

... A major storm has just passed through your coastal town. Although there are no reported injuries, damage along the waterfront is significant, and a number of vessels have been swamped or set adrift. The JRCC calls to advise that a signal is being received from an unregistered Emergency Position-Indicating Radio Beacon in the main harbour. A Coast Guard vessel sent to investigate has just been diverted to a distress call from a sinking ship. The JRCC Controller asks if your marine unit can locate the source of the beacon transmission, and determine if it is an actual emergency, or a false alarm triggered by the storm.

**Learn the basics about the radio distress beacons used by individuals, aircraft, and vessels, and how they can be tracked and located in support of search and rescue operations.**

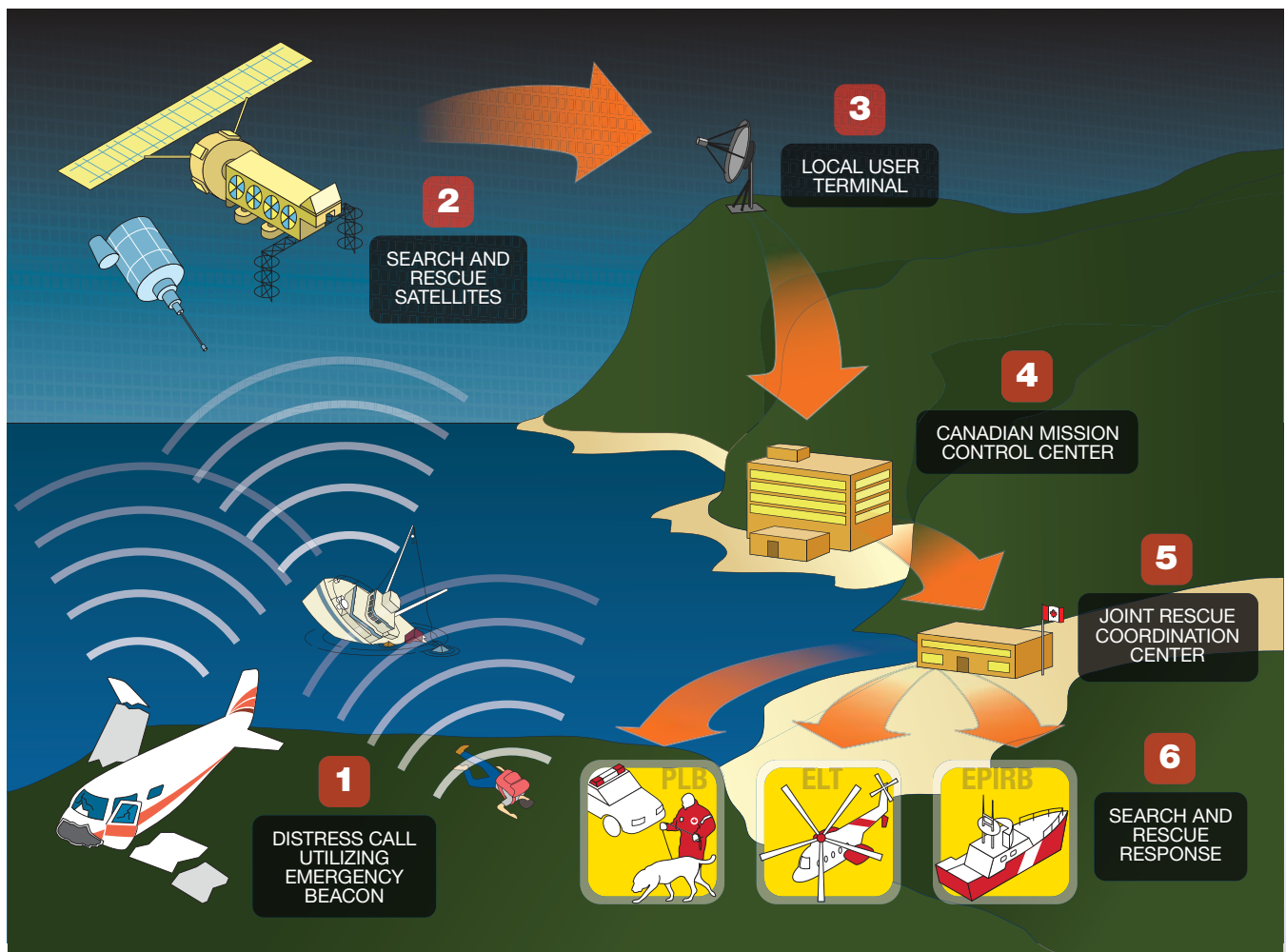
# What are COSPAS-SARSAT distress beacons?

## ■ COSPAS-SARSAT System

Since 1982, specially-equipped satellites have been detecting and relaying the location of vessels, aircraft, and people in distress by capturing the signals from their emergency radio transmitters. The International Satellite System for Search and Rescue, COSPAS-SARSAT, was originally founded by Canada, France, the United States, and Russia and now includes 41 participating countries and organizations worldwide. As of December 2008, the system had provided assistance in saving over 27,000 lives. More information on this 'lifeline to survival' can be consulted at [www.cospas-sarsat.org](http://www.cospas-sarsat.org).

When an emergency signal is captured by a search and rescue satellite, it is re-transmitted to a ground station (called a Local User Terminal), which relays it automatically to a mission control centre. The Canadian Mission Control Centre located in Trenton, Ontario, forwards these alerts to a rescue coordination centre for response.

As an emergency beacon transmits its distress signal, the COSPAS-SARSAT system continually updates its location and status. As a general rule, the more satellite passes that occur, the more accurate the calculated position will be. The Canadian Mission Control Centre can therefore provide updated information on the beacon's location until the case is resolved.






The COSPAS-SARSAT System: "A Lifeline to Survival"

## ■ Types of distress beacons

The emergency radio transmitters detected by the COSPAS-SARSAT system are purpose-built for search and rescue. Commonly referred to as “distress beacons”, they are grouped into three categories:

- » Emergency Locator Transmitters (ELTs) for aircraft;
- » Emergency Position-Indicating Radio Beacons (EPIRBs) for vessels; and
- » Personal Locator Beacons (PLBs) for individual use.

### Types of COSPAS-SARSAT Emergency Beacons

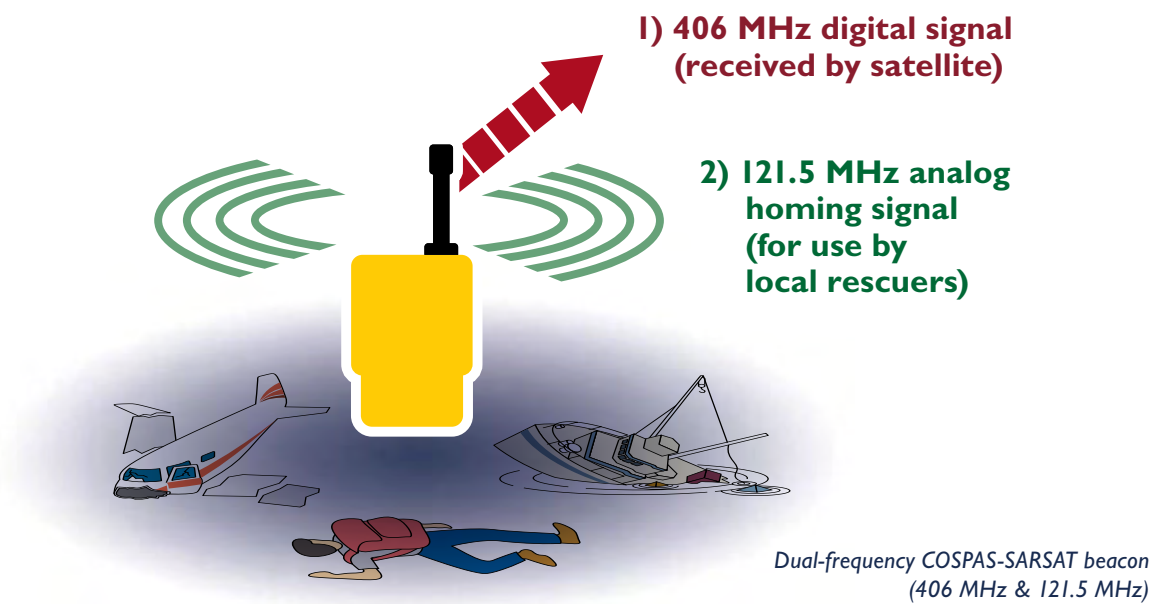
Beacon type & primary use	Description	Radio Frequencies
Emergency Locator Transmitter (ELT) <b>Aviation use</b> 	<ul style="list-style-type: none"> <li>• Purpose-built for use on aircraft.</li> <li>• Automatic activation (crash force sensor)</li> <li>• Manual activation. In addition to an external switch on the ELT itself, some models also have a remote switch in the cockpit that allows the pilot to activate the ELT as soon as a serious in-flight emergency is detected.</li> <li>• 406 MHz models transmit a unique identification number that can be matched to the registered aircraft and owner.</li> <li>• Some models also transmit their GPS coordinates along with the distress signal.</li> </ul>	121.5 MHz only * or 406 MHz and 121.5 MHz  (243 MHz may also be present)
Emergency Position-Indicating Radio Beacon (EPIRB) <b>Marine use</b> 	<ul style="list-style-type: none"> <li>• Purpose-built for use on vessels.</li> <li>• Category/Class 1 EPIRBs are mounted in a special holder. If a vessel sinks, contact with the water will trigger the release mechanism, allowing the EPIRB to float free of the vessel and continue broadcasting its emergency signal.</li> <li>• Category/Class 2 EPIRBs are manually activated; and most are also designed to activate upon contact with water.</li> <li>• Each transmits a unique identification number that can be matched to the registered vessel and owner.</li> <li>• Some models transmit their GPS coordinates along with the distress signal.</li> </ul>	406 MHz and 121.5 MHz
Personal Locator Beacon (PLB) <b>Personal use</b> 	<ul style="list-style-type: none"> <li>• Small, lightweight beacon purpose-built for individuals</li> <li>• Manual activation</li> <li>• Designed to be carried on the person, or in a lifejacket, equipment vest, survival suit, or pack.</li> <li>• Most models can transmit their GPS coordinates along with the distress signal.</li> <li>• Each transmits a unique identification number that can be matched to the registered owner.</li> </ul>	406 MHz and 121.5 MHz  (243 MHz may also be present)

**\* Important Note: Thousands of Canada's aircraft are still equipped with Emergency Locator Transmitters that broadcast on 121.5 MHz only. As of February 1, 2009, search and rescue satellite coverage ended for this frequency. Aircraft that have not been upgraded with a 406 MHz ELT no longer benefit from the early detection and location capabilities offered by the COSPAS-SARSAT system.**

## ■ Radio frequencies transmitted

Most COSPAS-SARSAT distress beacons (with the exception of 121.5 MHz ELTs) are **dual-frequency**, transmitting two distinct signals:

- » A 5 Watt **primary digital signal** on 406 MHz is transmitted and captured by the satellite system. It includes coded information that identifies the beacon, and enables its position to be calculated within a 5 km radius or better. Some 406 MHz beacons are also equipped with a GPS receiver, or can be connected to one. If available, these GPS coordinates are included in the digital signal, providing authorities with an even more precise position – virtually taking the “search” out of “search and rescue”.
- » A 0.25 to 0.4 Watt **secondary analog signal** on 121.5 MHz is also transmitted. This signal helps rescuers find the beacon, *particularly when visibility is reduced due to darkness, tree cover, snow, or fog*. When heard on a radio receiver, the 121.5 MHz signal has a very distinct and continuous “whoop whoop” tone.



## ■ Unique identification: 406 MHz digital beacons






Each digital 406 MHz emergency beacon transmits its own unique identification number. When the owner of the beacon registers the device with the Canadian 406 MHz Beacon Registry, search and rescue officials at the Canadian Mission Control Centre are able to match the distress signal to the aircraft, vessel, or individual that may be in distress. This provides vital information to the search and rescue effort, even while the satellites are calculating the final position of the beacon. This capability also helps resolve false alerts more quickly, and often without the need to dispatch rescue resources that may be needed elsewhere for a genuine emergency. For more information on the Canadian 406 MHz Beacon Registry, visit [www.canadianbeaconregistry.forces.gc.ca](http://www.canadianbeaconregistry.forces.gc.ca) or call 1-877-406-7671.

# Who is responsible for search and rescue in Canada?

## ■ Lead authorities:

### **Air, Marine, and Ground & Inland Water Search and Rescue**

Across Canada, a network of government, military, private sector, and volunteer organizations work together to provide search and rescue services to the public. In order to ensure effective coordination and a specialized response, specific authorities have been given the lead for the following three types of search and rescue incidents:

Type of SAR incident	Lead Authority	Contact information
	<b>Aircraft incidents</b> <ul style="list-style-type: none"> <li>• Anywhere in Canada</li> </ul>	<b>Canadian Forces</b> <p>Call the appropriate Joint Rescue Coordination Centre (JRCC) – Canadian Forces and Canadian Coast Guard:</p> <ul style="list-style-type: none"> <li>• <b>JRCC Victoria</b> (BC &amp; YT): <b>1-800-567-5111</b></li> <li>• <b>JRCC Trenton</b> (NT, AB, SK, MB, ON, Western parts of QC and NU): <b>1-800-267-7270</b></li> <li>• <b>JRCC Halifax</b> (NB, NL, NS, PE, Eastern parts of QC and NU): <b>1-800-565-1582</b></li> </ul>
	<b>Marine incidents</b> <ul style="list-style-type: none"> <li>• On the oceans</li> <li>• Within the federal waters of the Great Lakes/St. Lawrence River system</li> </ul>	<b>Canadian Coast Guard,</b> with air support from the Canadian Forces
	<b>Persons who are lost, missing, or in distress</b> <ul style="list-style-type: none"> <li>• On land (e.g. hikers, hunters, persons with Alzheimer's disease who wander from home)</li> <li>• On inland waterways (e.g. pleasure boaters, anglers, paddlers)</li> </ul>	<b>Provincial/territorial governments;</b> usually delegated to the <b>police force of jurisdiction.</b> <p><i>Note: For ground and inland water incidents that occur within National Parks, Parks Canada has the lead for search and rescue.</i></p> <p>Contact the appropriate police agency's emergency number <b>(911 or direct dial number)</b></p>

## ■ Mutual aid

Due to weather, distance, or equipment availability, the primary search and rescue authority may not always be the closest or the best responder when a search and rescue incident occurs. Since time can make the difference between life and death, search and rescue authorities frequently call upon other agencies to help with missions. This type of mutual assistance is a critical component of Canada's National Search and Rescue Program, giving it added strength and flexibility. Being familiar with the emergency alerting devices used in each of these environments – air, marine, and ground and inland water – can enhance the ability of one agency to help another.

# Locating a distress beacon using its 121.5 MHz homing signal

The speed at which rescuers can reach an aircraft, vessel, or individual in distress may have a significant impact on survivability. Injuries may be treated before they become more severe; and indeed, lives may be saved.

Emergency responders who have the ability to rapidly locate COSPAS-SARSAT beacons using the 121.5 MHz homing signal can therefore make a significant and positive contribution to the outcome of a search and rescue incident. Sometimes beacons are triggered accidentally, but each alert must be investigated. Having the ability to rapidly locate a beacon, and confirm that it is a false alert, ensures that specialized rescue resources remain available for a real emergency.

## A life saved ...

*In late October 2007, a small aircraft crashed in the mountains shortly after departing Golden, British Columbia. The ELT activated automatically, and a set of coordinates were relayed to the Canadian Mission Control Centre in Trenton, Ontario.*

*Poor weather prevented a Canadian Forces rescue helicopter from reaching the area. Instead, the Joint Rescue Coordination Centre in Victoria, BC, called upon the local Alpine Helicopters base to assist. As nightfall approached, the civilian pilot flew two Canadian Forces Search and Rescue Technicians and a local ground search and rescue volunteer toward the coordinates.*

*Using a Seimac ProFIND 121.5 MHz homing unit, the ground search and rescue volunteer was able to direct the helicopter toward the source of the 121.5 MHz ELT signal. Soon after, the white aircraft was spotted partially inverted in a creek bed. It was difficult to see against the snow-covered terrain and trees.*

*Sadly, the pilot and front-seat passenger had been killed on impact. However, a three-year old girl strapped into a baby seat in the rear of the aircraft survived with only minor injuries. It is doubtful that she would have survived a cold night in the mountains if she had not been found and rescued by the team following the 121.5 MHz signal.*



## Equipment

There are two means of homing a 121.5 MHz signal, either through the use of:

- » Specialized direction-finding equipment, purpose-built for the task; or
- » A VHF-AM air band radio or scanner, used with the “body shielding” technique.

### 1. Specialized direction-finding equipment

There are a number of hand-held and vehicle-mounted systems specifically designed for locating 121.5 MHz beacons – and in some cases, 406 MHz frequencies too. These devices process the 121.5 MHz signals and provide the user with the direction to the beacon. This may be indicated through both visual and/or audible indicators. This type of equipment is ideal for most users, regardless of their experience operating radios.



L-Tronics Little L-Per LL-16

The following are some of the manufacturers who currently distribute 121.5 MHz direction-finding products to the North American market:

- » ACR Electronics (Cobham) – Vecta 3 ([www.acrelectronics.com](http://www.acrelectronics.com))
- » Becker Avionics – RT-500M ([www.beckerusa.com](http://www.beckerusa.com))
- » L-Tronics – LL-16 Little L-Per ([www.ltronics.com](http://www.ltronics.com))
- » Seimac (Cobham) – ProFIND SAR DF ([www.seimac.com](http://www.seimac.com))

When purchasing specialized direction-finding equipment, consider the following:

- » What radio frequencies can the equipment track (e.g. 121.5 MHz)?
- » Is it weather and shock resistant?
- » Is the display easy to use both at night, and in very brightly-lit conditions?
- » If it emits an audible signal, can it be used with a headphone in noisy environments?
- » How is it powered, and how long can it operate under normal conditions?

- » Are spare power packs or batteries easy to obtain?
- » What is the operating temperature range for the equipment?
- » Is the equipment intuitive and easy to use?
- » Does it come with a comprehensive training guide?
- » Is a training radio transmitter available for practice?
- » What frequency does the training transmitter operate on, and is it approved for use by Industry Canada?



Cobham/Seimac ProFIND SAR DF

## 2. Hand-held radio (air-band)

ICOM A-6 air-band transceiver



Emergency responders that do not have access to specialized direction-finding equipment can still locate a 121.5 MHz beacon using a simple radio receiver. Though the results may not be as rapid or precise as those delivered by a purpose-built direction finder, it is still possible to get the job done with the right technique, training, and practice. Unlike specialized direction-finding equipment, this method requires the operator to develop basic knowledge of the behaviour of radio signals, and be capable of making frequency and sensitivity adjustments to a hand-held radio.

All VHF-AM aeronautical band radios and many radio scanners can be tuned to receive 121.5 MHz. Unlike a simple radio receiver or scanner, however, a two-way aeronautical radio or transceiver can serve a dual purpose since it may also be used to communicate with search and rescue aircraft. Most major manufacturers of two-way radio equipment (e.g. ICOM, Kenwood, Vertex, Yaesu) produce air-band transceivers. It is important to note that unless an air-band radio is intended for use on board an aircraft, the equipment should be licensed with Industry Canada. Anyone planning to broadcast on an aeronautical frequency must also obtain a *Restricted Operator Certificate – Aeronautical (ROC-A)*, also issued by Industry Canada.

When purchasing an air-band transceiver or scanner in support of 121.5 MHz homing operations, consider some of the following criteria:

- » Can the sensitivity control (“squellch”) be adjusted manually? Manual control is preferable for using the radio for direction-finding.
- » How weatherproof is the unit? Does it come with a carrying case to protect it?
- » Is the display easy to use both at night, and in very brightly-lit conditions?
- » Are the radio buttons and function keys backlit for night-time use?
- » Is there a headphone jack to better hear the radio in noisy environments?
- » How is the radio powered, and how long can it receive and transmit (as applicable)?
- » Are spare power packs or batteries easy to obtain?
- » What is the operating temperature range for the equipment?

## ■ Basic Homing Techniques

This guide is meant to introduce emergency responders to COSPAS-SARSAT beacons, and how to pinpoint their location using the 121.5 MHz homing signal that each one transmits. This guide is not intended, however, to provide detailed instruction on the science and technique of radio direction-finding. Emergency responders interested in developing advanced skills are strongly encouraged to contact an equipment supplier or a search and rescue unit already experienced with this work.

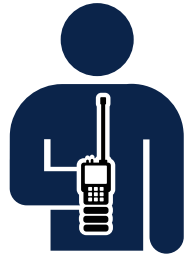
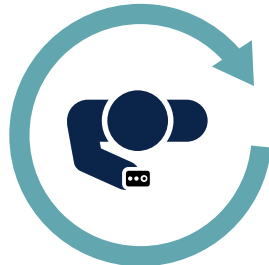

Here are some basic principles, however, to provide emergency responders with a working knowledge of what is involved:

### **STEP 1: Move to a location where the signal can be heard.**

- » If you have been given a set of geographic coordinates by the Canadian Mission Control Centre, or have a general indication as to where the distress beacon may be located, proceed to that area.
- » When in the vicinity, turn on your direction-finder or hand-held radio and tune in 121.5 MHz. If you cannot hear the beacon signal, try moving to higher ground such as a hill, highway overpass, bridge, or the roof of a building. Since these radio signals travel in a straight line, increasing your view of the surrounding area may also increase the chance of being within the line-of-sight of the transmitting beacon.

## STEP 2: Determine the general direction of the signal.

- » **Direction-finding equipment:** If you have special direction-finding equipment, follow the manufacturer's instructions to determine the direction and strength of the signal.
- » **Hand-held radio or scanner:** If you are using a hand-held air band radio or scanner, the responder's own body mass can be used to temporarily block the emergency beacon signal, indicating the direction to the beacon. This method is often referred to as the "body-shielding" or "body-blanking" technique

Here's how the body-shielding method is used with a standard radio receiver or scanner:	
<ul style="list-style-type: none"><li>» Ensure the radio or scanner is on and tuned to 121.5 MHz, and is receiving a beacon signal</li><li>» Hold the radio vertically against the front of your torso, with the radio's speaker facing out</li><li>» Position the radio so that the antenna is kept close to your body, but not touching it (leave about a 5 to 10 cm gap)</li></ul> <p>Adjust the volume so that you can hear the 121.5 MHz signal well. If you are in a noisy environment and the radio has a headphone jack, plug in an earbud-style headphone so that you can more closely monitor the signal.</p>	
<ul style="list-style-type: none"><li>» While standing in the same spot, turn slowly in a 360 degree circle, listening to the quality and strength of the radio signal.</li><li>» Note at what point during the 360° scan that you lose the signal, and where you regain it.</li><li>» If you continue to hear the signal throughout the full rotation, the incoming signal is too strong for useful homing. Make one or more of the following adjustments to permit the signal to fade or disappear completely at some point while completing your 360° turn:<ul style="list-style-type: none"><li>– Adjust the sensitivity (squelch) of the radio; and/or</li><li>– Off-tune the radio (e.g. down to 121.45 MHz or up to 121.55 MHz). As you get closer to the distress beacon the signal strength will increase, and you may have to off-tune the radio more aggressively (e.g. down to 121.30 MHz or up to 121.70 MHz).</li></ul></li><li>» Once these adjustments are made, keep the settings constant as you complete another full 360° rotation. Note again where the signal faded or disappeared, and where it was the strongest. Ideally, these two points should be opposite one another.</li></ul>	
<p>During your 360° rotation:</p> <ul style="list-style-type: none"><li>– the signal faded or was lost when your body was blocking or shielding the radio receiver from the transmitting beacon; and</li><li>– the signal was the strongest when you and the radio receiver were likely facing the beacon.</li></ul> <p><i>Note: If you heard more than one peak signal as you turned through 360°, this suggests that you are also receiving one or more reflected signals, in addition to the primary one. This is probably due to the primary signal bouncing off terrain, buildings, or other obstructions located between you and the beacon. To help eliminate these secondary peaks and reflections, either:</i></p> <ul style="list-style-type: none"><li>– Off-tune the radio, or reduce its sensitivity setting until only the strongest signal – assumed to be the beacon – can be heard; and/or</li><li>– go to a different location that may have fewer bounced or reflected signals</li></ul>	

### Bonus search and rescue application:

This "body-shielding" technique can also be used to determine the direction of virtually any radio transmission, not just a 121.5 MHz beacon. For example, if your team is in radio contact with a lost or injured person on the ground who isn't certain of their location, ask them to speak and transmit continuously on the radio for about 15 seconds. As they do so, use the 360 degree turn to determine their probable direction from you. Repeat at necessary intervals as you make your way toward them, being mindful that repeated transmissions of this kind will more rapidly deplete their radio battery.

### STEP 3: Find your way to the beacon.

- » Once you have determined the initial direction toward the beacon, how you get to it will be greatly influenced by the local environment. If there is a network of roads or pathways available, it is strongly recommended to use them to “box in” the beacon by taking one or more additional bearings using a compass or handheld GPS. This technique helps confirm: (i) the beacon’s probable location; and (ii) the easiest way to get to it. There is little value in wading through several hundred metres of wetland, when a gravel path could take you more rapidly and directly to the source of the signal. This general technique is often referred to as “triangulation”. Having a good set of maps for the area – electronic or paper – can also be very useful in visualizing the location of the beacon, and the best way to reach it.
- » Taking the time to triangulate the beacon can be of considerable value when working in an area with hilly terrain and/or large structures (e.g. airport hangars) that will reflect or restrict the beacon signal, making homing more difficult. For example, the PLB signal from an injured climber stuck on the side of a cliff will likely radiate for several kilometres out from the cliff face. Virtually no signal will be detected in the opposite direction, however, due to the shielding effect of the rock.



Localizing the 121.5 MHz signal from a distress beacon.

### STEP 4: Manage the scene.

- » When arriving at the scene of a distress incident, follow your organization’s standard emergency protocols for managing the scene and taking care of injured people.
- » If you are working with a Joint Rescue Coordination Centre (or the Canadian Mission Control Centre), advise them that you have located the beacon and the scene of the incident, and provide them with your geographic coordinates, if available.
- » If another rescue unit is on its way to assist, particularly a Canadian Forces aircraft, do not shut off the beacon. The crew of the aircraft may also be using its signal to guide them to the site, particularly in conditions of darkness or reduced visibility.
- » Once the rescue phase is concluded, the beacon may be turned off, if it is accessible. Advise the Joint Rescue Coordination Centre (or Canadian Mission Control Centre, as applicable) of the time the beacon was shut down.
  - Remember that in certain aircraft, there may be a remote switch in the cockpit that can be used to turn off or reset the ELT. If serviceable, this switch may be easier to use than attempting to access the ELT itself, which is usually mounted inside the tail of the aircraft.
  - If possible, collect information on the beacon type (ELT/EPIRB/PLB); the manufacturer and model; and its general condition. Provide this information to the Joint Rescue Coordination Centre you are working with.

### **False alert?**

If you home a 121.5 MHz signal, only to discover a child playing with a PLB, or a pilot who bounced an otherwise safe landing, or a vessel owner calmly washing his boat, inform them that their beacon has triggered a search and rescue response. Unless a radio receiver tuned to 121.5 MHz is nearby, they may not be aware that the beacon has been accidentally activated. Reassure them that the search and rescue system does not generally assess a charge for a false alert, unless it was deliberate and intended to cause mischief. You may also wish to remind them that any COSPAS-SARSAT beacon that has been activated (other than for routine testing in accordance with the manufacturer's instructions) should be serviced by an approved facility. This will ensure that it is restored to good working order, including a fully-charged battery.

As with an actual emergency, if possible collect information on the beacon type, manufacturer, model, and owner; as well as the time and circumstances (if known) that led to it being activated. Share this with the Canadian Mission Control Centre and/or Joint Rescue Coordination Centre.

## **■ Training**

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Initial and ongoing training in direction-finding techniques is essential to ensuring an effective response. Training scenarios should include a range of weather and light conditions, as well as the different physical environments likely to be encountered (e.g. open fields, forests, around buildings, along roads and power lines).

But how can you conduct a training exercise without setting off a real emergency beacon? [Note: Do not do this!] Special training beacons that transmit on an alternate frequency are available. Most manufacturers of specialized direction-finding equipment include the option of purchasing a training beacon as part of a package.

If purchasing a training beacon, consider:

- » Can my direction-finder or radio receiver tune the training frequency?
- » Is the training transmitter and frequency approved by Industry Canada?
- » Can the batteries be easily recharged or replaced?
- » What is the power output of the transmitter? To simulate an actual emergency beacon, it should transmit at no more than 0.5 Watts or equivalent.

Depending upon where you are based, there may be other training resources available in your area. Local volunteer search and rescue organizations, such as the Civil Air Search and Rescue Association ([www.casara.ca](http://www.casara.ca)), may be able to provide advice or assistance with homing 121.5 MHz beacons. Similarly, the local amateur radio club or Amateur Radio Emergency Service group may have in-house expertise to offer on radio direction-finding techniques ([www.rac.ca/ares](http://www.rac.ca/ares)). The Internet also offers a great deal of information, including training materials published by the United States Civil Air Patrol's National Emergency Services Academy ([www.nesa.cap.gov](http://www.nesa.cap.gov)).



## ■ Working Together

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If you become aware of a possible search and rescue emergency, but are unsure if the appropriate authorities have been alerted, contact the nearest Joint Rescue Coordination Centre. Similarly, if you overhear an emergency beacon transmitting on 121.5 MHz, report this as well. Feel free to advise the SAR Coordinator of your capability to home 121.5 MHz signals, if you believe that your organization is in a position to be of assistance.

These communications are important, as acting independently or “self-tasking” without the knowledge of the lead authority may cause confusion or delay, or possibly interfere with the efforts of other rescue units. It’s all about working together to save lives.

## ■ Emergency contact numbers

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### *Joint Rescue Coordination Centres (JRCCs) - Air/Marine Search and Rescue*

<b>JRCC Victoria</b>	<b>1-800-567-5111</b>	(British Columbia and Yukon Territory)
<b>JRCC Trenton</b>	<b>1-800-267-7270</b>	(Canada-wide)
<b>JRCC Halifax</b>	<b>1-800-565-1582</b>	(Atlantic Canada; eastern Quebec and eastern Nunavut)

### *Canadian Mission Control Centre, Trenton – Satellite tracking of 406 MHz emergency beacons*

<b>CMCC Trenton</b>	<b>1-800-211-8107</b>
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## ■ For general information, and additional copies of this booklet

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National Search and Rescue Secretariat  
1-800-727-9414  
e-mail: [inquiry@nss-snr.gc.ca](mailto:inquiry@nss-snr.gc.ca)  
web: [www.nss-snr.gc.ca](http://www.nss-snr.gc.ca)