The Circle of Life-saving Satellites

The **COSPAS-SARSAT** system uses a number of different satellite constellations. They include both low earth-orbiting (**LEO**) and geostationary (**GEO**) satellites. Together, these satellites enable distress signals to be received by the system from virtually anywhere on the planet.

Polar (Low Earth Orbiting) Satellites

NOAA's Polar-orbiting Operational Environmental Satellites (**POES**), circle the Earth every 102 minutes at an altitude of 528 miles. Russia's COSPAS polar orbiting satellites circle every 105 minutes at an altitude of 620 miles. Both scan a surface area of about 2,500 (sq.) miles as they move through their orbits. Onboard receivers pick up and track signals from activated distress beacons as the satellites pass overhead. Then, using doppler technology, the satellites relay the information to ground stations (**LUTs**) that are able to calculate a location for the beacon.

Geostationary Satellites

NOAA's Geostationary Operational Environmental Satellites (**GOES**) are in a synchronized orbit with the Earth, at 22,320 miles above the equator, giving each satellite a fixed view of approximately one third of the planet. Because the coverage is constant, these satellites can receive distress signals emitting from emergency beacons within their coverage area almost instantaneously and relay them immediately to ground stations (**LUTs**) for verification and response.

In case of an accidental false alert please call;

For an ELT or PLB: The Air Force Rescue Coordination Center at 1-800-851-3051.

For an EPIRB: Contact the U.S. Coast Guard.

"Having a (registered) 406 beacon tremendously increases your chances of survival. It accelerates the rescue process so we do not have to search as long for you, and can instead concentrate on retrieving you. A 406 beacon is a wise investment"

Col Benjamin C. Wash, USAF
Former Commander, Air Force Rescue Coord. Center
Langley AFB, Virginia

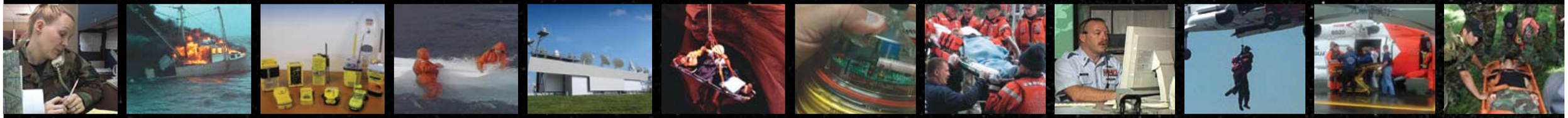
"It's been very hard to come up with words that say thank you with meaning. I'm just one person with one life, but I owe my life to them."

Mike Ryan
Hollywood, California
Plane crash survivor

COSPAS-SARSAT

Search and Rescue Satellite Aided Tracking System

Taking the Search out of Search & Rescue



The COSPAS-SARSAT Satellite System: Saving lives is our mission

COSPAS-SARSAT is the international, humanitarian Search and Rescue Satellite-Aided Tracking System that has been providing emergency distress alerting and locating information to search and rescue authorities for more than twenty years. Since its inception in 1982, COSPAS-SARSAT has been credited with saving thousands of lives in the United States and around the world. The satellite system tracks and locates activated emergency beacons carried by ships, aircraft and individuals in distress. It is a way of signaling for help when all other means of communication have failed. In many instances this system has proven to be the last resort for people in trouble at sea or in the wilderness.

SARSAT (the U.S. component of the international satellite system) is managed and operated by the National Oceanic and Atmospheric Administration (NOAA), the U.S. Air Force, the U.S. Coast Guard, and the National Aeronautics and Space Administration (NASA).

What happens when a COSPAS-SARSAT beacon transmits a signal?

COSPAS-SARSAT satellites detect 406 MHz distress signals 24 hrs a day, 7 days a week, in many cases nearly instantaneously. They can pick up these signals from virtually anywhere in the world. However, satellites can only pick up a distress signal if the beacon has been activated, either manually by the user, or automatically when a vessel sinks or an aircraft crashes.

Why satellites are important to search and rescue

Satellites provide a vital link between people in distress and search and rescue authorities. They are like "eyes in the sky" always monitoring distress frequencies for emergencies. When a satellite picks up a distress signal originating in the United States, it is relayed to a network of ground stations on Earth and ultimately to the U.S. Mission Control Center (USMCC) operated by NOAA. The USMCC processes the signal and notifies either a U.S. Coast Guard or U.S. Air Force Rescue Coordination Center (RCC) nearest the alert with information concerning who is possibly in distress and, more importantly, where they are located. The RCC uses this information – including beacon registration data – to quickly confirm whether the alert is a real distress (or an accidental activation) and where to send the rescue teams. Truly, SARSAT helps take the "search" out of search and rescue.

How COSPAS-SARSAT beacons work

Each 406 MHz beacon has a unique fifteen digit identification (ID) code embedded within its signal. This ID is used by the owner to register the beacon with NOAA, as required by law. Having a registered beacon means that if the beacon is activated, search and rescue authorities will be able to determine not only the location of the beacon, but also, who and what they should be looking for.

In every distress situation, time is of the essence. Having this information enhances the speed of a rescue. Up to date beacon registration is a vital part of providing a rapid response to distress incidents.

Types of beacons

There are three types of specialized COSPAS-SARSAT distress beacons available for use:

- **ELTs** (Emergency Locator Transmitters) – for aircraft;
- **EPIRBs** (Emergency Position-Indicating Radio Beacons) – for boats and vessels;
- **PLBs** (Personal Locator Beacons) – for general outdoor use (hiking, mountain climbing, etc.)

Some 406 MHz beacons also have built-in **GPS** (Global Positioning System) receivers that are able to calculate precise location coordinates. These coordinates are sent to the satellite along with the other ID data. This provides search teams with even greater distress location accuracy and potentially reduces search time even further.

Where to find COSPAS-SARSAT beacons

COSPAS-SARSAT beacons are available throughout the country at marine retailers, wilderness outfitters, or avionics shops. There are also organizations that will rent 406 MHz EPIRBs or PLBs.

Beacon registration is free, intentional false alerts are NOT

It is the responsibility of every 406 MHz beacon owner to register their beacon with NOAA at the time of purchase and to keep this information up to date. Beacons can be registered or updated online at: *www.beaconregistration.noaa.gov* or by mail or fax.

There is no charge for this service.

Intentional false alerts, however, are not free. In the United States and elsewhere in the world, if a distress beacon is activated as a hoax, with no distress occurring, fines and/or jail time can be imposed.

Prevent false alerts by carefully referring to the beacon's user manual for instructions on properly installing, operating, testing, maintaining and/or stowing the beacon. Take a moment to check the beacon after a day of boating, hiking, or flying to make sure it hasn't been accidentally activated. Beacons should be turned off when not in use. Always use the utmost care! These are important factors in reducing the number of false activations.

Want more information? Then visit the following:

NOAA - SARSAT Program
www.sarsat.noaa.gov

United States Air Force Rescue Coordination Center
www.laf.acc.af.mil/units/afrcc

United States Coast Guard Office of Search and Rescue
www.uscg.mil/hq/g-o/g-opr/g-opr.htm

NASA Search and Rescue Mission Office
www.searchandrescue.gsfc.nasa.gov

International COSPAS-SARSAT Program
www.cospas-sarsat.org

Many beacon manufacturers and retailers also provide a wealth of information on their websites about COSPAS-SARSAT beacons and their safe handling and operation.

SARSAT – Taking the Search out of Search and Rescue!