

Search and Rescue

Background

The general aviation accident rate is continuing to decline, but that does not mean search and rescue service workers are out of a job. We still saw 242 accidents in fiscal year 2022. There were 42 people rescued from 28 aircraft incidents that the [Air Force Rescue Coordination Center](#) managed in 2022. Many crashes are survivable if rescuers can get to you in time.

Here's how to make their job easier.

General tips

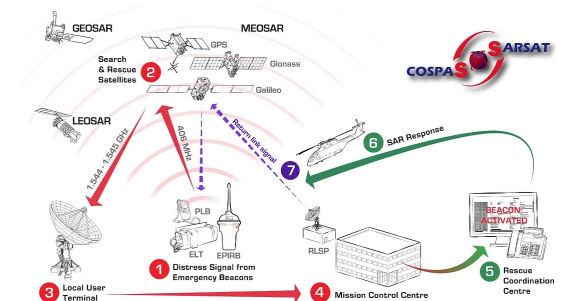
- Always file a flight plan.
 - A VFR flight plan is good, an IFR flight plan is better.
 - Not having a flight plan may add days or weeks before anyone realizes you're missing, and initiates a search.
 - A search is initiated 30 minutes after the expected arrival time
- Use flight following when available.
 - Flight following is the next best thing to flying IFR, and it's available to all pilots in most areas where radar coverage exists. If a problem arises while you're in radar contact, ATC will know immediately, and help will be on the way.
- Make position reports frequently.
 - If you can't get flight following, make frequent position reports to flight service. This information helps rescuers determine where not to look for you, and can speed rescue operations considerably.
 - Make position reports directly to a flight service station, or relay them to FSS through FBOs or other aircraft in a better position to communicate by radio.

General tips

- Choose a safe route that follows roads, populated areas, and low terrain, and file the route in your FAA flight plan.
 - For a flight in mountainous terrain, file the exact route, checkpoint by checkpoint. This will make it easier for rescuers to find you in the event of a search.
- Carry survival equipment.
 - Darkness and inclement weather can delay search efforts, so be sure to carry at least a minimum of survival equipment. This should include water, warm clothing, first aid supplies, some basic tools, a survival manual, materials to start fires, and signaling equipment such as a mirror.
- Activate the ELT.
 - If possible, activate your ELT and squawk 7700 on your transponder, and radio a mayday on 121.5 MHz or a frequency on which you're talking to someone as soon as you know you'll be making a forced landing. The sooner someone gets a fix on your position, the better.
 - Remember that a soft landing (in trees or on snow-covered terrain) may not activate the ELT, so be sure to turn it on.
- Signaling and communication equipment is a must.
 - Helping searchers locate your exact position can save precious minutes in a rescue operation.
 - Signal mirrors, flares, a fire, a handheld communication radio, or even a cell phone can be invaluable for summoning help to your location.

Signaling Satellites

- An emergency locator transmitter (ELT) that is also GPS-enabled using 406 megahertz (MHz).
 - The accuracy of a standard 406 MHz beacon is 2–3 nautical miles, but if the beacon is equipped with a GPS receiver, activation coordinates could be within 100 yards.
- Note: the FAA does not require the 406 MHz ELT, however...
 - In 2009, satellites stopped monitoring 121.5 MHz ELT signals.
 - An FAA study indicated that 134 extra lives and millions of dollars in search and rescue resources could be saved every year if everyone upgraded to a 406 beacon.
 - If your aircraft is not equipped with, consider carrying a 406 MHz personal locator beacon (PLB) secured by a clip or in a pocket.
- If your aircraft has a 406 ELT, the key to success is registration.
 - With a 98% false alarm rate, accurate registration information (beaconregistration.noaa.gov) means that most inadvertent activations can be resolved with a phone call.
 - Make sure to recycle the batteries and dispose of them properly to avoid searchers having to dig through a landfill
 - An inadvertent beacon activation could interfere with an actual distress situation.
- Make sure to include the phone number of the cell phone you fly with in your ELT registration
- Confirm Test procedures
 - <https://youtu.be/6JqAt0aGO7U>



Incident

- Timing is everything.
 - On Nov. 14, 2021, a 53-year-old pilot and his 13-year-old daughter disappeared over heavily wooded state game lands in Pennsylvania. The FAA issued an alert just after 7:30 p.m. about the overdue aircraft.
 - In coordination with the FAA, [Civil Air Patrol](#)'s National Radar Analysis Team used radar data to determine that a crash was likely and appeared to be survivable. The Air Force Rescue Coordination Center then activated a search mission, knowing that the sun had just set, there was freezing rain, and the probable crash location would be hard to reach.
 - What wasn't clear was what, if any, other electronic devices were onboard.
 - If you think an emergency could be brewing, turn your cell phone on and/or turn airplane mode off to help provide critical location data.
 - Many cell phones and smartwatches also have crash-detection modes and can provide easy ways to contact emergency personnel once activated. More data makes it easier for searchers to find you.

Incident

- It was not until a 911 call from the spouse came in at 10 p.m. — two hours into the search — that searchers learned that there was a cell phone on board the aircraft. The local sheriff's office made the connection to the 911 call and the search for the missing airplane. The pilot's phone number and bonus data about an onboard iPad became integral to the mission.
- Civil Air Patrol's National Cell Phone Forensics Team was activated to fine-tune the search areas by combining cellphone tower and distance information, the last known radar hit, and GPS information from the iPad. The data from the tablet made all the difference, providing local search and rescue teams with a location accurate to within 11 yards.
- Just after 2 a.m., search teams found the survivors. They were exposed to the elements and began suffering from hypothermia. Rescuers carried them nearly a half-mile in the freezing rain to waiting ambulances.



- Using 21st-century technology and the tools to analyze location data makes search and rescue operations more efficient. If you are not already using Automatic Dependent Surveillance-Broadcast (ADS-B), consider installing it. File a VFR flight plan and ask for flight following. Make sure people on the ground have information about any personal electronic devices onboard. Upgrade your ELT. The speed of finding you when needed depends on how much data is available for the search.
- Rescue Coordination Centers
 - Air Force: 1-800-851-3051
 - Alaska: 1-800-420-7230
 - Coast Guard: 1-855-406-8724



IMPORTANT INFORMATION ON 406 MHz DISTRESS ALERTING BEACONS

HELP PREVENT FALSE ALERTS
SO SEARCH AND RESCUE CREWS CAN FOCUS ON ACTUAL DISTRESS SITUATIONS!
406 BEACONS SAVE LIVES



98% OF ALL 406 ELT, EPIRB AND PLB BEACON ACTIVATIONS ARE FALSE ALERTS!

False Alerts can take search and rescue (SAR) resources away from **REAL EMERGENCIES**.
False alerts can place SAR Responders in **HARM'S WAY**.
Notify authorities immediately if your beacon was **ACCIDENTALLY ACTIVATED**, even for a few seconds.
Follow **MANUFACTURER'S** guidance for **TESTING** your beacon.
Follow manufacturer's instructions when **DECOMMISSIONING** and **DISPOSING** of old beacons.



KNOW YOUR 406 BEACON - LIVES DEPEND ON IT - MAYBE YOURS!

Follow manufacturer's **INSTRUCTIONS** when **HANDLING, TESTING, REPAIRING AND INSTALLING** a 406 beacon. Most **FALSE ALERTS** occur during testing and maintenance.
To test your beacon, **USE THE TEST SWITCH ONLY**.
Brief all members of your crew or group on **HOW YOUR BEACON WORKS**.

WHAT HAPPENS WHEN A 406 BEACON IS ACTIVATED?

Rescue Coordination Center personnel are immediately alerted when a 406 BEACON SIGNAL is **DETECTED**.
They do everything possible to get SAR Responders **TO THE SCENE OF THE DISTRESS** as quickly as possible.
Make sure your **BEACON IS REGISTERED**. It's easy... Call 1-888-212-7283 or register at beaconregistration.noaa.gov
This is the simplest and fastest way for SAR authorities to **RESPOND TO A DISTRESS** or **CONFIRM A FALSE ALERT**.

IF A 406 BEACON IS ACCIDENTALLY ACTIVATED

CALL:

US COAST GUARD: 1-855-406-USCG (8724)
US AIR FORCE: 1-800-851-3051

References

- [When Pan-Pan Becomes Mayday. Search and Rescue in the 21st Century, FAA Safety Briefing, Mar 2023](#)
- [Search and Rescue - AOPA](#)