

The Airframe

According to the FARs, batteries used in the emergency locator transmitters required by Federal Aviation Regulations must be replaced (or recharged, if the battery is rechargeable)(1) when the transmitter has been in use for more than one cumulative hour; or (2) when 50% of their useful life (or, for rechargeable batteries, 50% of their useful life of charge), as established by the transmitter manufacturer under its approval.

In a study of nonfunctioning ELTs, it was discovered that 14% of the ELTs examined had outdated batteries, while 6% had batteries that were dead. The importance of good preflight and preventive maintenance cannot be overemphasized. You should routinely have the ELT and battery checked; a 100-hour inspection is a convenient time, but certainly at every annual. Periodically test the unit by listening to 121.5 (and 243 if you have a radio capable of receiving on that frequency) and activating the ELT manually. This is an FAA-sanctioned test provided you only conduct it during the first five minutes of any hour and limit it to a few modulations.

In general, it is a good idea to turn the battery off when the aircraft is not in use, but always remember to include BATTERY ON in your preflight. While you're turning it on during preflight, also check the battery expiration date. If it is not readily visible, write it down on the ELT or next to it where it can be easily checked.

When You're the Target

If you find yourself as the object of an SAR effort, there are several things to keep in mind. After checking to make sure the ELT is alive and well, the first order of business is to take the necessary steps to ensure survival. If the conditions are hostile, protect yourself as necessary from the elements.

Remember that the ELT transmits omnidirectional, roughly in a circular pattern, and search aircraft will be using a "build-and-fade" method to locate your ELT signal, as depicted in Figure 1-5. Signals have been received as far as 100 miles away by aircraft operating at 10,000 feet. Transmission is line of sight and can be blocked if the antenna is under the fuselage or any other metal structure; even rough terrain can play havoc with the transmission signal. Of course, a broken antenna is a serious problem but there have been many cases where once an aircraft gets into the general area it has been able to home in on an ELT without an antenna.

If terrain appears to present a problem in signal broadcast, consider relocating the ELT, perhaps higher up in a tree or on a ridge. Finally, it is important to understand that a downed aircraft is extremely difficult to spot from both the air and ground. There have been many instances where searchers have passed within a quarter mile of a wreck and never seen it; aircraft have flown directly overhead with no results. Take whatever steps are necessary to ensure high visibility. Flashing with mirrors and glass are attention getters, as is a smoky fire.

AIRCRAFT ANTENNAS

One of the features of an aircraft that makes it practical for everyday use is the ability to fly in all kinds of weather and operate in and out of airports all over the world. Neither of