



**NTSB**

***SAFETY ALERT***

National Transportation Safety Board

★ **“Armed” for Safety: Emergency Locator Transmitters** ★

***Verify your ELT is switched on and attached to your aircraft to ensure it will work when needed***

***The problem***

- ELTs can save pilots’ and passengers’ lives by helping search and rescue (SAR) personnel locate a downed aircraft after an accident and even minimize risk to SAR personnel during SAR operations. However, these lifelines can be rendered inoperative if the switch position is improperly set or if the ELT becomes detached from the aircraft.
- As of December 2013, about 180,000 general aviation aircraft were equipped with ELTs that had 121.5-megahertz (MHz) transmitters, which are less effective than 406-MHz transmitters. At that time, only about 38,000 general aviation aircraft were equipped with 406-MHz ELTs.

***Related accidents***

Several NTSB accident investigations have found ELT switches in the “off” position (thus, not “armed”) and ELTs detached from the airplane, which rendered them inoperable. In these cases, the inoperability of the ELTs delayed the aircraft’s discovery and/or the rescue of occupants. The NTSB is concerned that these examples of ELT issues represent a more widespread problem that could endanger the lives of pilots and passengers who survive an aircraft accident in a remote area.

- A pilot and passenger died when a Cessna A185F airplane impacted terrain. Although the flight instructor on board initially survived the accident, he died due to serious injuries before the airplane was found. After the airplane had not returned to the departure airport by nighttime, fixed-base-operator personnel checked data from the flight instructor’s personal locator, which was configured to send GPS position reports about every 10 minutes, and noted that the transmissions from the previous 12 hours had been sent from the same location. No emergency or alert notifications were received from the personal locator or the airplane’s ELT during that period. SAR efforts were then initiated, and the wreckage was located the next day. The personal locator was found ejected from the airplane. Although the airplane was equipped with a 406-MHz ELT that activated during the accident, it had become separated from the airplane’s structure (and thus its antenna), which limited its transmission range and prevented it from effectively transmitting an alert signal and providing SAR personnel with a rapid indication that an accident had occurred. With prompt ELT notification, medical response would have been initiated in a timely manner, and the flight instructor might not have succumbed to his serious injuries. (NTSB accident number [WPR12FA184](#))
- An airline transport pilot and four passengers died and four passengers sustained serious injuries when a de Havilland DHC-3T airplane impacted terrain. A search for the airplane was not initiated until hours after it had crashed because its overdue status was not noticed right away, and no signals from its ELT were received. The investigation found that the ELT, which was secured by a hook-and-loop style (Velcro) mounting mechanism, was dislodged from its mounting tray and detached from its antenna, thus the radio signals from the ELT were not transmitted. If the ELT had remained attached to its antenna, its signals likely would have been

detected soon after impact, and rescue personnel would have received timely notification of the accident and its location and could have reached the survivors hours earlier. ([ANC10MA068](#) and NTSB report number [AAR-11/03](#))

- A private pilot died when a Cessna 182D airplane collided with terrain about 35 miles from the flight's intended destination. After the flight failed to arrive, concerned family members contacted the FAA. SAR operations commenced, but the wreckage was not located until a week later. The 121.5-MHz ELT switch was found in the "off" position. SAR personnel flew almost directly over the accident site with monitoring equipment that could detect 121.5 MHz; therefore, although in this case an operable ELT would not have saved the pilot's life, if the ELT switch had been armed, SAR personnel would not have been as extensively exposed to severe weather conditions during the SAR operations. ([WPR13FA053](#))

### ***What can pilots, aircraft owners, and maintenance technicians do?***

- Confirm that the ELT unit is "armed" and properly installed in the aircraft.
- Follow manufacturer instructions for properly securing the ELT and inspecting the fasteners.
- Remember that ELTs secured to the aircraft via Velcro-style mounting mechanisms can be susceptible to strap looseness and misalignment during installation and inspection. Further, the retention straps may degrade over time due to wear, vibration, temperature, or contamination, and they may not properly restrain the ELT during an accident.
- Consider upgrading to a 406-MHz ELT, which the NTSB has long recommended be mandatory due to its superior position accuracy reporting, timeliness of alerts, and ability to provide aircraft identification and other information.

### ***Interested in more information?***

The reports for the accidents referenced in this safety alert are accessible by NTSB accident number from the NTSB's [Aviation Accident Database & Synopses](#) web page at [www.nts.gov/aviationquery/index.aspx](http://www.nts.gov/aviationquery/index.aspx). Each accident's public docket is accessible from the NTSB's [Docket Management System](#) web page at <http://dms.nts.gov/pubdms/>.

FAA Advisory Circular (AC) [91-44A](#), "Operational and Maintenance Practices for Emergency Locator Transmitters and Receivers," provides guidance information, in part, about ELT operational characteristics, mounting mechanisms, maintenance, and testing. A link to the AC can be accessed from the FAA's AC web page at [http://www.faa.gov/regulations\\_policies/advisory\\_circulars/](http://www.faa.gov/regulations_policies/advisory_circulars/).

The NTSB has issued safety recommendations, including [A-99-63](#), [A-07-51](#), and [A-10-169](#) and [-170](#), to the FAA regarding ELT technological standards (recommending 406-MHz ELTs or equivalent technology), mounting requirements, and retention tests. These recommendations can be accessed from the NTSB's safety recommendations query page at <http://www.nts.gov/safety/safety-recs/layouts/nts.recsearch/RecTabs.aspx>.

Special Airworthiness Information Bulletin (SAIB) HQ-12-32, "[Hook and Loop Style Fasteners as a Mounting Mechanism for Emergency Locator Transmitters \(ELTs\)](#)," which was issued in response to NTSB Safety Recommendation A-10-170, discusses problems with certain ELT fasteners. A link to the SAIB can be accessed from the FAA's regulations and policies web page at [www.faa.gov/regulations\\_policies/](http://www.faa.gov/regulations_policies/).

This NTSB safety alert and others can be accessed from the NTSB's [Safety Alerts](#) web page at <http://www.nts.gov/safety/safety-alerts/Pages/default.aspx>.