

MEMORANDUM FOR RECORD

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Sr. Air Safety Investigator
Office of Aviation Safety-Eastern Region

Date: April 3, 2025

Subject: ERA24LA030

Contact: Emergency Locator Transmitter (ELT) Information, Activation, and Attenuation

The ELT installed at the time of the accident was an Artex Products, ACR Electronics, Inc., ELT 345, which would automatically activate during an accident and transmitted a standard sweep tone on 121.5 MHz. After the first digitally encoded 406 MHz burst, approximately every 50 seconds later the 406 MHz transmitter would turn on and transmit an encoded signal of either 440ms or 520ms, depending on the beacon programming protocol. The encoded signal would be received by the Cospas-Sarsat Search and Rescue satellite system monitored by National Oceanic and Atmospheric Administration (NOAA).

In 2009, the satellite constellation stopped monitoring 121.5/243 MHz, and now only monitors 406 MHz ELTs. The 406 MHz encoded signal from the accident airplane was not received by the NOAA monitored satellite. The 121.5 MHz transmissions could be monitored by an aircraft communication transceiver or ground based radio station monitoring 121.5 MHz.

As part of the investigation related to the emergency locator transmitter (ELT), Bryan Shelton of Pilot Training Center Homestead (PTCH) provided an e-mail with a timeline to NTSB and FAA indicating that the pilot of N31AT dispatched from their facility to search for the missing airplane and spotted the wreckage at 1020 hours local. He also indicated by e-mail on September 4, 2024, at 0817, "The ELT in N140FS was working and installed correctly but wasn't registered. The pilot that found it originally heard the [ELT] signal on 121.5."

FAA airworthiness inspector Michael Torrent who visited the crash site and also the wreckage immediately following recovery of the wreckage to land reported that

the ELT whip antenna was nearly fully submerged at the site. He and the recovery crew were unable to access the ELT in the baggage compartment at the site because the airplane was nearly fully submerged.

Following recovery of the wreckage to land, FAA inspector Torrent reported that the ELT remained secured in the bracket, the light emitting diode on the ELT was flashing indicating activation, the BNC antenna connector remained attached to the ELT, but the 15 pin "D-SUB" connector was not attached to the ELT.

A representative of the ELT manufacturer advised by e-mail on March 31, 2025 that without the "D-SUB" connector attached to the ELT at impact, which would short pins 5 and 12 to complete the G switch loop circuit, the ELT would not transmit the 406 MHz signal to the COSPAS-SARSAT satellite. The same representative also advised verbally on April 2, 2025 at 1651 EDT that more power is needed to transmit the 406 MHz signal to the satellite, and that attenuation due to partial water submersion of the ELT antenna is a possible reason why the 406 MHz signal did not reach the satellite.