



Timothy Monville
Senior Air Safety Investigator
Eastern Region Aviation

NTSB Accident Number: ERA17FA231 – Homestead, Florida
Emergency Locator Transmitter – Postaccident Examination and Testing

The airplane's emergency locator transmitter (ELT), an Ameri-King 450 approved under FAA Technical Standard Order (TSO)-C91a, was found out of its normally secured position but remained partially secured by its clamp. The switch was in the arm position and the antenna remained connected. A red light emitting diode (LED) light was illuminated. The switch was placed in the off position for recovery.

Following recovery of the airplane, the ELT was removed from the bracket, and while the antenna remained connected to the ELT, twice, the switch was placed in the on position and a single momentary click sound was heard; however, no sound was heard on a portable VHF transceiver monitoring 121.5 MHz. An exemplar ELT of the same model was then tested, and after the antenna was connected, the switch was placed in the on position and the ELT signal sound was heard on the transceiver. The accident airplane ELT had a sticker indicating that the battery replacement date was December 2025.

The ELT was examined at the manufacturer's facility with FAA oversight. According to the manufacturer, it was manufactured more than 7 years earlier; therefore, its Manufacturer Traveler sheet and manufactured test data was not available. With the switch of the ELT in the ARM position and using an exemplar remote to turn the unit on, the ELT's LED illuminated, indicating that it was active, but no audible tone was heard on the receiver. The same test was repeated several times on the accident ELT with the same results. An exemplar ELT was tested in the same way using the same equipment and an audible tone was heard. All 6 alkaline "D" cell batteries of the accident ELT measured 1.36 volts each, for a total voltage of 8.16 Vdc (specification is 1.5 Vdc +0.00/-0.2 Vdc). The accident ELT was abruptly and forcefully shaken multiple times to test G-switch activation, but the unit never activated; the reason for its failure to activate could not be determined. The accident ELT Power Output Peak Effective Radiated Power (PERF) was tested several times and indicated between 0.4 dBm and 0.8 dBm. TSO-C91a specifies that the PERF for 121.5 MHz ELTs should be not less than 17dBm throughout a 50-hour period at specified hot and cold temperatures. The accident ELT was then disassembled, which required the BNC connector to be de-soldered from the circuit board. Inspection of the

circuit board revealed no evidence of impact damage, but it did not match the FAA-approved circuit board. The BNC antenna lead was re-soldered to the circuit board, and the ELT was re-assembled.

The following day, the battery pack voltage measured 8.2 Vdc. New batteries were installed and the battery pack was reinstalled in the ELT. The ELT was activated but no signal was detected until the connection to the antenna fitting on the ELT was wiggled/tightened. The measured antenna power output was -15.6 dBm. The test was repeated while wiggling the antenna connector and the antenna power output was 0.7dBm. At that time, a “very slight tone” that faded after initial activation was detected on the receiver. The volume of the receiver was turned to high and the tone was heard. The inspector noted that the silence during testing the day before could have been because the receiver was not turned up to a sufficient level.

On December 28, 2015, the FAA issued an emergency cease and desist order to Ameri-King Corp. after learning that the company had manufactured, sold, or distributed parts and articles for installation on FAA type certificated aircraft which did not conform to an approved design, but were represented as being FAA approved. Unapproved Parts Notification No. 2016-2013NM460018, specified that, based on a FAA investigation, the FAA was not confident parts and articles manufactured by Ameri-King Corp. prior to December 28, 2015 were manufactured in accordance with FAA-approved design.

A review of the airplane’s maintenance records revealed an entry dated June 27, 2017, indicating that the ELT was inspected in accordance with 14 *CFR* Part 91.207 appendix D, which specifies inspection for proper installation, battery corrosion, operation of the controls and crash sensor, and the presence of a sufficient signal radiated from its antenna.