

Guidance for States, Operators, and Maintenance providers to prevent inadvertent activation when handling and maintaining Emergency Locator Transmitters (ELTs).

Notice to users.

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INTERNATIONAL CIVIL AVIATION ORGANIZATION

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GLOSSARY

Acronyms and Abbreviations

The following **abbreviations** are used in this document:

AIRP	Airworthiness Panel
ELT	Emergency Locator Transmitter
ICA	Instructions for continued airworthiness
MCC	Mission Control Centre
MHz	Mega Hertz
RCC	Rescue Coordination Centre
SAR	Search and Rescue
STC	Supplemental Type Certificate
UTC	Coordinated Universal Time
WP	Working Paper

Definitions

The following **definitions** are used in this document:

COSPAS-SARSAT. A satellite-aided search and rescue initiative. It is a treaty-based, non-profit, intergovernmental, humanitarian cooperative of 45 nations and agencies

Emergency Locator Transmitter. A radio transmitter device that broadcasts distinctive signals on designated frequencies and, depending on the application, may be automatically activated by impact or be manually activated.

G-Switch. A component that senses changes in acceleration and can trigger various responses once a specific impact force is reached.

Maintenance. The performance of tasks on an aircraft, engine, propeller or associated part required to ensure the continuing airworthiness of an aircraft, engine, propeller or associated part including any one or combination of overhaul, inspection, replacement, defect rectification, and the embodiment of a modification or repair.

Operator. The person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Operational Test. A verification of the operating features of an ELT through on-aircraft testing, such as an ELT self-test.

Functional Test. A verification of the ELT functionality through inspections and tests in a shop environment utilizing specialized equipment.

Repair. The restoration of an aeronautical product to an airworthy condition to ensure that the aircraft continues to comply with the design aspects of the appropriate airworthiness requirements used for the issuance of the type certificate for the respective aircraft type, after it has been damaged or subjected to wear.

121.5 MHz ELT. The ELTs capable of transmitting on 121.5 Mega Hertz (MHz) frequency and includes ELTs that transmit simultaneously on 121.5 MHz and/or 243.0 MHz frequencies.

406 MHz ELT. The ELTs capable of transmitting on 406 MHz frequency and include ELTs that transmit simultaneously on 406 MHz and 121.5 MHz frequencies.

Reference

The following reference material may be consulted for information purposes:

ICAO documents

- Annex 6 — Operation of Aircraft, Part I — International Commercial Air Transport — Aeroplanes
- Doc 9760 – [Airworthiness Manual, Fourth Edition, 2020](#)

Other documents

- United States (US) – Code of Federal Regulations (CFR) Part 91, Subpart C, [§91.207\(d\)](#), Emergency Locator Transmitters.
- Canada - Canadian Aviation Regulations (CAR) [Part VI, Standard 625, Appendix C Paragraph 12](#), Emergency Locator Transmitters (ELT);
- Federal Aviation Administration (FAA) AC No.: 91-44A Change 1 – Installation and Inspection Procedures for Emergency Locator Transmitters and Receivers
- Transport Canada [AC 571-025](#) - Maintenance of Emergency Locator Transmitters (ELTs);
- Transport Canada Civil Aviation Safety Alert [\(CASA\) 2020-05](#) – Inspection of Emergency Locator Transmitter (ELT);
- European Union Aviation Safety Agency – Emergency Locator Transmitter and Personal Locator Beacon Annual Testing;
file:///C:/localcache/mtaal/Downloads/EASA_SIB_2019-09_1.pdf
- European Organization for Civil Aviation Equipment [\(EUROCAE\) ED-62B](#) / Radio Technical Commission for Aeronautics [\(RTCA\) DO-204B](#) – Minimum Operational Performance Standard for Aircraft Emergency Locator Transmitters 406 MHz;
- International COSPAS-SARSAT – Handbook of Beacon Regulations [C/S s.007 Iss.2 Rev.2](#) ;
- International COSPAS-SARSAT – Testing your 406-MHz Beacon <https://www.cospas-sarsat.int/en/testing-your-beacon>; and
- International COSPAS-SARSAT – Inadvertant Alerts <https://www.cospas-sarsat.int/en/inadvertent-alerts>.
- Testing Your 406-MHz Beacon – <https://cospas-sarsat.int/en/beacon-ownership/testing-your-406-mhz-beacon>
- 406 Distress Alert Service – <https://cospas-sarsat.int/pro>

Chapter 1

INTRODUCTION

1.0 OVERVIEW

1.0.1 This material is provided for information and guidance purposes and is based on current industry best practices. It is intended to support a uniform implementation of guidance to prevent inadvertent activation when handling and maintaining Emergency Locator Transmitters (ELTs). It may describe an example of an acceptable means of demonstrating compliance with regulations and standards, but not the only means. This guidance does not change, create, amend, or permit deviations from regulatory requirements or establish minimum standards.

1.1 Purpose

1.1.1 This guidance aims to raise awareness and provide guidance on handling and maintaining Emergency Locator Transmitters (ELTs) to lower the frequency of false activations to avoid unintentional deployment of Search and Rescue (SAR) operations.

1.2 Applicability

1.2.1 This document applies to operators and maintenance providers handling, removing, installing, testing, and repairing ELTs. It should be referenced when developing procedures to ensure ELTs are not inadvertently triggered, initiating unnecessary SAR operations.

Chapter 2

2.0 BACKGROUND

- 2.0.1 During AIRP/6, the Panel discussed concerns associated with incorrect ELT test procedures activating false search and rescue alerts. Worldwide data by COSPAS-SARSAT indicated a high number of false alerts worldwide caused by a broad range of reasons generally classified as ‘mishandling of ELTs.’ The data did not have enough details to indicate that incorrect maintenance procedures significantly contributed to the false alerts. Further information received from other States, mainly through members of the Panel during AIRP/7, suggested some problems associated with test procedures for the newer type ELTs may be causing false alerts.
- 2.0.2 Activating a beacon for reasons other than to indicate a distress situation or without prior coordination with the COSPAS-SARSAT Mission Control Centre (MCC) is considered an offense in many countries/territories. If you inadvertently activate the beacon in its operational mode, contact the appropriate agency in your region responsible for search and rescue coordination or the [nearest COSPAS-SARSAT MCC](#) as soon as possible and cancel the distress alert.
- 2.0.3 To maintain an ELT’s reliability, maintenance is required to be performed as part of an aircraft’s maintenance schedule/program. The typical broadcast frequencies for ELTs are 121.5 MHz and 406 MHz. Some ELTs transmitting on 121.5 MHz also transmit simultaneously on the 243.0 MHz frequency. ELTs operating in either broadcast frequency are monitored differently and thus have different requirements and procedures for conducting maintenance and handling.

Chapter 3

3.0 SCOPE

- 3.0.1 This guidance contains measures to prevent inadvertent activation of emergency locator beacons and unnecessary deployment of SAR services. This guidance is designed to reduce the frequency of accidental ELT activations during handling and maintaining an ELT.

Chapter 4

4.0 INSTALLATION, REMOVAL, REINSTALLATION, AND HANDLING OF ELTs

4.0.1 Care should be taken in handling ELTs during installation, removal, and transportation to prevent the inadvertent activation of a distress beacon and the deployment of SAR operations.

4.1 Removal

4.1.1 As a good practice, an ELT should be disarmed prior to removal. This could be as simple as moving the ELT activation switch to the 'OFF' position. However, depending on the type and model of ELT, the disarming procedures may differ. It is important to refer to the applicable removal instructions to properly disarm the ELT and remove it from its mounting tray/bracket.

4.1.2 This will help ensure that any inadvertent mishandling of the ELT during removal will not activate the beacon and initiate SAR services or a signal of distress to COSPAS-SARSAT MCC.

4.2 Reinstallation

4.2.1 When reinstalling an ELT into its mounting tray/bracket, it is important that the ELT is not armed to activate the ELT. The aircraft manufacturer's recommendations may not provide additional precautions when reinstalling an ELT. The ELT manufacturer's instructions, including other published recommendations such as service bulletins, should be consulted. Where applicable, Supplemental Type Certificate (STC) instructions for continued airworthiness (ICAs) should be followed to ensure proper reinstallation.

4.2.2 Inconsistent reinstallation practices can lead to the ELT not performing its intended function. The mounting tray/bracket, and the fastening system should be inspected upon installation. It may degrade over time due to wear and environmental degradation from vibration, temperature, or contamination.

4.2.3 When reconnecting the ELT to the aircraft, it is advisable to perform an ELT operational test to ensure the ELT is operating correctly and that the ELT is in arm mode. Maintenance providers should follow the most up-to-date instructions when performing this test.

4.3 **Handling of ELTs for Transport or Shipping**

- 4.3.1 When transporting or shipping an ELT, it should be properly packaged so it is not activated while in transit. Rough handling could actuate the ELT G-switch if it is not secured in the off position or remains in the armed position.
- 4.3.2 Disconnecting the battery may be the most effective way to avoid inadvertent activation. Refer to the ELT manufacturer's instructions to determine if this is a practical option or if they provide any other shipping recommendations.

Chapter 5

5.0 ELT INSPECTION AND OPERATIONAL TESTING – ON AIRCRAFT

- 5.0.1 Proper care during on aircraft maintenance of the installed ELT system is important for its continued airworthiness and to ensure that the ELT is not inadvertently triggered during maintenance. Performing visual inspections or conducting an ELT self-test, precautions, and standard practices should be adopted to prevent false alerts triggered by inappropriate maintenance actions.
- 5.0.2 The ELT and aircraft manufacturer's instructions for inspection and testing should be consulted. Depending on the ELT installation, supplemental ICAs may be available such as those included as part of an STC. Furthermore, local regulations may also have specific ELT testing requirements.
- 5.0.3 All available information should be consulted to ensure that maintenance is conducted in a safe manner and that ELTs are not triggered into distress mode during maintenance.
- 5.0.4 When an ELT operational test is required, the maintainer should follow the manufacturer's instructions and local regulations. This test provides a Go-No-Go indication that the ELT is, amongst other things, transmitting its emergency signal and operating as intended. This test is typically completed with the ELT installed in the aircraft. (See section 5.3.4 for ELT live testing or conducting over-air testing)

5.1 Inspection

- 5.1.1 The aircraft ICAs or supplemental ICAs may not be complete when it comes to the precautions and standard practices when inspecting installed ELTs.
- 5.1.2 Maintenance providers should consult the latest information from the ELT manufacturer for additional inspection techniques or areas of the ELT installation that may need to be inspected based on in-service data. The additional instructions may be in documents such as the ELT manufacturer's service bulletins.
- 5.1.3 As previously mentioned in section 5.2, an inspection of the mounting tray/bracket and the fastening system should also be performed as it may degrade over time due to wear and environmental degradation from vibration, temperature, or contamination.
- 5.1.4 Particular attention should be paid to the ELT activation switch to ensure it is in the correct position and free of damage and wear. Some ELTs have a locking toggle activation switch that has seen failure that should be inspected as described in [Transport Canada Civil Aviation Safety Alert \(CASA\) 2020-05](#).

5.2 Operational testing of 121.5 MHz only capable ELTs

- 5.2.1 Operational test of a 121.5MHz ELT includes the transmission of a distress audio signal. Precautions for when this test is completed need to be considered.
- 5.2.2 The aircraft and/or ELT manufacturer's instructions should be followed when performing the operational testing of an ELT, including how to activate and deactivate the test. Another precaution that needs to be considered is the length of time that the ELT will be activated. Where instructions do not provide clear guidance, standard industry practice is to activate the ELT for no longer than 5 seconds in the first 5 minutes of any UTC (coordinated universal time) hour.
- 5.2.3 It is important to follow local regulations when transmitting an ELT distress signal, including specific times when this test can be done or that SAR or air traffic services need to be advised before testing.
- 5.2.4 Following the Operational test, it may be prudent to monitor frequency 121.5 MHz for a moment to ensure that the ELT does not continue to transmit after the test is terminated.

5.3 Operational testing of 406 MHz and 121.5 MHz capable ELTs

- 5.3.1 Operational test of this type of ELT is typically completed as a self-test function of the ELT.
- 5.3.2 Care should be taken to initiate the ELT self-test only as the ELT manufacturer prescribes, as there may not be a control switch position explicitly identified as "TEST." The test sequence may, in some cases, be initiated by a specific timing and sequence of the 'ON' and 'OFF' controls.
- 5.3.3 ELTs transmitting on 406 MHz during the self-test should comply with COSPAS-SARSAT requirements. The 406 MHz transmission will be a single burst with a specific digital frame synchronization recognized by the COSPAS-SARSAT system as a test message. It will, therefore, not be processed as a real alert. Before conducting any test, it is advised that the functionality of a particular ELT during self-test is confirmed from the manufacturer's data.
- 5.3.4 Where ELT live testing or conducting over-air testing is allowed by local regulations, the ELT manufacturer recommendations, including the owner's manual, should be carefully followed. The testing should also be accomplished carefully following COSPAS-SARSAT instructions and using the built-in test message on the ELT device. The nearest COSPAS-SARSAT MCC and local ATC (Air Traffic Control) should be contacted prior to performing over-air testing. Information on COSPAS-SARSAT MCCs can be found at <https://cospas-sarsat.int/en/contacts-pro/contacts-details-all>.

Chapter 6

6.0 ELT FUNCTIONAL TESTING AND REPAIR – SHOP ENVIRONMENT

- 6.0.1 ELTs requiring functional testing or repair should be removed from the aircraft. Please see section 5.0 above for further guidance on removing and handling ELTs.
- 6.0.2 An ELT repair and functional test is typically performed by an organization capable of performing ELT testing per the manufacturer's instructions. In the absence of the manufacturer's recommendations, the instructions of FAA AC 91-44A change 1 or those of EUROCAE ED-62B could be used.
- 6.0.3 ELT repairs carried out should follow the precautions of the ELT manufacturer's instructions which may include disconnecting the ELT battery. Following a repair, a functional test should be performed to ensure the proper functionality of the ELT.
- 6.0.4 All testing should be conducted as if they were being conducted outside. Proper equipment shielding, direct connect testing, antenna boot, or the use of a dummy load should be used to prevent inadvertent activation of the ELT.