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EUROCAE WG-98 / RTCA SC-229
“Aircraft Emergency Locator Transmitters (ELTs)”

Inputs and outputs of triggered in-flight ELT

In 2016, ICAO has amended Annex 6 with Standards and Recommended practices (SARPS) on Autonomous Distress Tracking (ADT). The Standard is mandating the installation of means that shall autonomously transmit information from which a position can be determined at least once every minute, when in an aircraft is in distress, for newly manufactured large transport aircraft (above 27 Tons) after 1st January 2021.

EUROCAE WG-98 and RTCA SC-229 are jointly updating EUROCAE ED-62A and RTCA DO-204A to address the latest design, performance, installation, and operational issues for 406 MHz ELTs. Cospas-Sarsat, the international satellite system for search and rescue, is upgrading its ELT detection capability by placing search and rescue transponders on new Medium Orbit GNSS satellites. This will provide accurate positioning data to first responders.

In addition, EUROCAE WG-98 has developed specifications (ED-237) for in-flight triggering criteria to detect a distress situation and to start the transmission of sufficient information from which a position can be determined on ground.

Both a first generation ELT providing the GNSS position and a second generation ELT may be means of compliance to fulfill the ADT requirements when triggered in flight.

When the emergency situation is detected some information must be provided to the ELT to fulfill the MASPS ED-237 requirements and to comply with the ICAO Autonomous Distress Tracking (ADT) SARPS.

The inputs/outputs of the ELT may be fulfilled by discrettes or by an ARINC 429 labeled message(s) for large transport category aircraft. It is expected that the development of such label(s) will ease the work of both ELT and airframes manufacturers.

A presentation will be provided to the SAE Committee describing the requirements for information to be provided to (input) and from (outputs) from the ELT which are summarized in the following lists.

ELT Inputs

- Manual trigger from flight deck
- Manual cancellation of the manually triggered alert
- Automatic trigger from airplane
- Automatic cancellation information of the automatic trigger
- Information on criteria triggering the activation
- External navigation (GNSS) device input
- Self-Test command (ED-62 2.4.3)
- Reset command (ED-62 2.4.3)
- Armed (ED-62 2.4.3)
- Indication of availability or loss of power External power supply (28 V DC)

ELT Outputs to aircraft systems

- Information to the cockpit indicating the ELT has started transmitting
- Self-test results
 - Sufficient information to assure that the battery has enough power for the ELT to operate at specifications.
 - GNSS self-test results, both external or internal GNSS receiver
 - Status of the antenna system
- Indication of receipt of RLS acknowledgment Service feature
- Indication that the ELT received an automatic trigger from airplane
- Indication that the ELT received an automatic cancellation of an automatic trigger
- Indication that the ELT received a cancellation of a manually activated trigger