ELT(DT) Implementation

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Operational Distribution of ELT(DT) Alerts

- ELTs for distress tracking (i.e., ELT(DT)s) were specifically developed to support new ICAO Standards as part of its Global Aeronautical Distress and Safety System (GADSS)
- Unlike other ELTs, ELT(DT)s are designed to be activated, either automatically or manually, *while* the aircraft is still in flight
- Alert messages from ELT(DT)s will be distributed by MCCs directly to SAR authorities
- As of 01 January 2023, Cospas-Sarsat declared that FGB ELT(DT) alert data may be distributed operationally; the FMCC, SPMCC, and USMCC are configured to do so

ELT(DT) Activation Triggers

Activated when the plane is still flying via 4 main automatic triggers (manual activation available):

1. **Unusual attitude** - The conditions may include, but are not limited to, excessive values of roll, pitch, and yaw and their corresponding rates of change
2. **Unusual speed** - The conditions may include, but are not limited to, excessive vertical speed, stall condition, low airspeed, overspeed, or other speed conditions
3. **Collision with terrain** - The conditions may include, but are not limited to, high rate of closure to terrain or inappropriate altitude for the current position
4. **Total loss of thrust/propulsion on all engines** - The parametric data used to define this condition may be engine performance parameters or other parameters that result from loss of thrust

Expected to be very rapidly unfolding events – original crash studies showed average event timeline of 6 minutes from activation to crash

ELT(DT) Transmission Schedule

- ELT(DT) transmissions primarily provide encoded (GNSS) locations – position data provided from onboard navigation system to beacon
  - Time of encoded position update provided for FGBs as either “0 - 2 SECONDS”, “2 - 60 SECONDS”, or “1 MINUTE TO 4 HOURS”
  - Time of encoded position update for SGBs (when fielded) provided with 1-second resolution
  - DOA locations computed by a Mid Earth Orbiting (MEO) Ground Station used only if the Ground Station is commissioned to provide locations for fast moving beacons
- ELT(DT) Burst Transmission Specification
  - Every 5 seconds within the first 2 minutes (24 messages)
  - Every 10 seconds from 2 - 5 minutes (18 Messages)
  - 42 messages total in the first 5 minutes
  - Every 30 seconds after 5 minutes
- Updated Alert Distribution via the Cospas-Sarsat System
  - Distribution of ELT(DT) alert data to SPOCs/RCCs for each received burst will be limited to the first 30 seconds (up to 7 bursts) after beacon activation
  - With an alert distributed to SPOCs/RCCs every 10 minutes thereafter. (Reduction from 42 initial messages to 6 messages, and the **best** new alert distributed every 10 minutes rather than the **last** alert every 10 minutes)
- Message distribution to the Location of an Aircraft in Distress Repository (LADR)
  - **Once LADR becomes available;** at least one message for each received burst will be sent to the LADR

Nodal MCCs plan to Populate the LADR (after it becomes available)

- **The rules and content for LADR distribution are not yet final; the formal LADR Interface Control Document (ICD) is expected to be published in late 2023**
- **ICAO Working with Eurocontrol (Host) – timeline outside Cospas-Sarsat control**
- All C/S MCCs will send all ELT(DT) data to nodal MCCs, and those nodal MCCs will populate the LADR when it becomes available
- Rules for data distribution to the LADR
  - At least one message for each received burst will be uploaded to the LADR
  - If better/newer information for a previously sent burst becomes available (e.g., a GNSS location is received after a usable DOA location was received at the MCC),
    an additional message will be uploaded to the LADR
  - Indication that the distress situation has been cancelled (once confirmed) will also be uploaded to the LADR

ELT(DT) Alert Messages to RCCs and SPOCs

- Indicates “ELT DISTRESS TRACKING”
- Provides the registration “flag” state of the aircraft decoded from the ICAO 24-bit address
- Provides the aircraft operator 3-digit code
- Provides the aircraft position (if available)
- Once ICAO provides access to the OPS Control Directly, the contact information for both Air Traffic Service (ATS) unit and operator will be accessible.
- The USMCC may have additional data available upon request for an ELT (DT) event
- The USMCC can provide clarification on message content (SIT 170 – 179, FGBs to RCC; SIT 370-379, SGBs to RCC; SIT 185 FGBs and SGBs to SPOC)
- The Cancellation Message indicates “USER CANCELLATION ALERT” (SIT 179 or 379 message to RCC, SIT 185 message to SPOC)

Is an Unreliable Beacon Message Associated with an FGB ELT(DT) Activation?

- MCCs that are not FGB ELT(DT) capable will filter ELT(DT) alerts or decode them as “unreliable“ beacon messages and not provide related encoded beacon message data
- For their SPOCs, any associated Doppler or DOA position is likely to be unreliable due to the rapid aircraft motion (no LUT currently commissioned for fast-moving beacons)
- For their SPOCs, the first 11 characters of the two hex IDs will match if they are associated with the same FGB ELT(DT)
  - To compare the 11th character of the two hex IDs, change the 11th character of each respective hex ID to “0” if it is in the range of 0 to 7, and otherwise change it to “1”
- While the USMCC is FGB ELT(DT) capable, US RCCs and SPOCs may exchange info with non-US SPOCs on ELT(DT) alerts decoded as unreliable by a non FGB ELT(DT) capable MCC

Questions & Contact Info

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