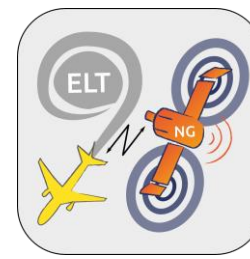




RTCA

THE GOLD STANDARD FOR AVIATION SINCE 1935



WG-98 SC-229

“Aircraft Emergency Locator Transmitters (ELTs)”

White Paper on Inputs and outputs of triggered in-flight ELT

**AEEC SAI Subcommittee
Coral Gables
15 February 2017**



GADSS-AG tasks



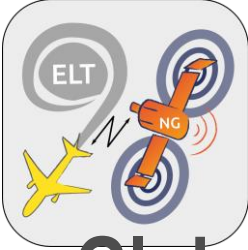
GADSS-AG Tasks

- ✓ Update and keep current the High-Level GADSS CONOPS on normal aircraft tracking, autonomous distress tracking, data retrieval and search and rescue
- ✓ Provide advice on the development of work program items in the form of job cards for ICAO to review and make the appropriate working arrangements
- ✓ Monitor the progress of provision development to ensure consistency and alignment with the GADSS CONOPS and
- ✓ Establish close working arrangements with the NATII-2 and other groups that may be working on similar issues

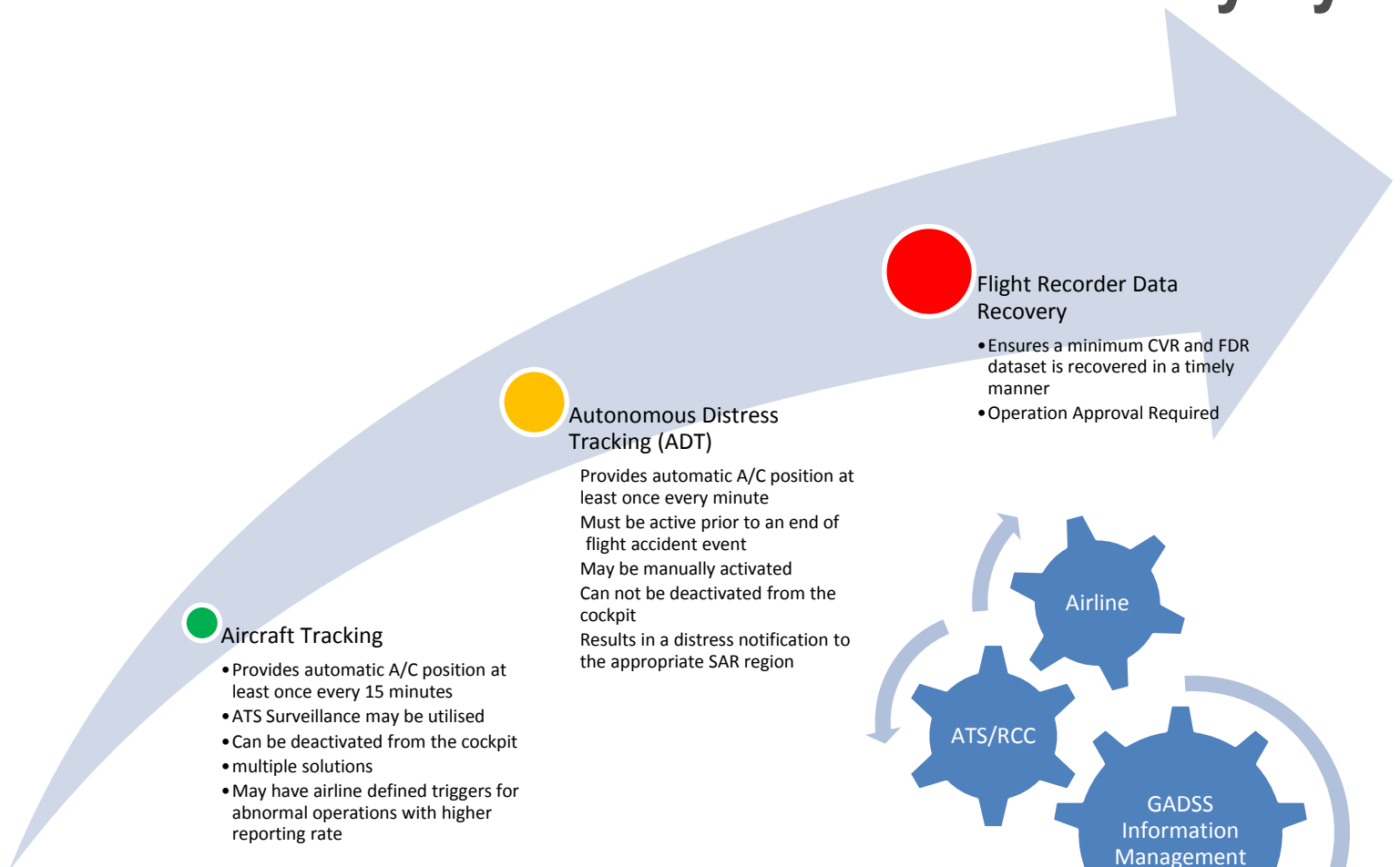


GADSS-AG Tasks

- **Ensure the position of the aircraft is continuously known**
-
- **Enable timely detection of aircraft in distress**
 - **To timely initiate SAR actions**
- **Enable tracking of aircraft in distress and timely availability and accurate location of end of flight (contact with surface)**
 - **To accurately direct SAR actions**
- **Expedite retrieval of flight recorder data**
- **Enable efficient and effective SAR operations**
 - **Be seamless across ATS unit boundaries**
 - **Facilitate the sharing of relevant information in support of emergency situations**
 - **Facilitate that relevant stakeholders are contactable when required**
 - **Clarity of responsibilities for inflight emergency response**



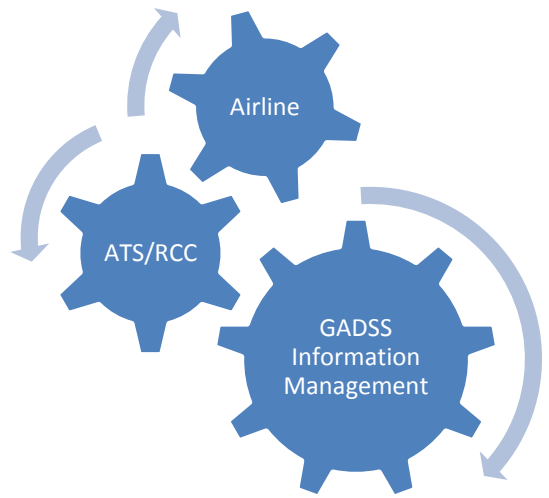
Global Aeronautical Distress Safety System



- Aircraft Tracking**
- Provides automatic A/C position at least once every 15 minutes
 - ATS Surveillance may be utilised
 - Can be deactivated from the cockpit
 - multiple solutions
 - May have airline defined triggers for abnormal operations with higher reporting rate

- Autonomous Distress Tracking (ADT)**
- Provides automatic A/C position at least once every minute
 - Must be active prior to an end of flight accident event
 - May be manually activated
 - Can not be deactivated from the cockpit
 - Results in a distress notification to the appropriate SAR region

- Flight Recorder Data Recovery**
- Ensures a minimum CVR and FDR dataset is recovered in a timely manner
 - Operation Approval Required





DISTRESS TRACKING



TRIGGER

- Automatic
- Manual
- Ground



AUTONOMOUS

Trigger Examples:

- ⊙ unusual attitudes
- ⊙ unusual speed
- ⊙ Unusual altitude
- ⊙ loss of power on all engines



AOC



6 NM



ADFR
ELT

Retrieval of
CVR/DFR data

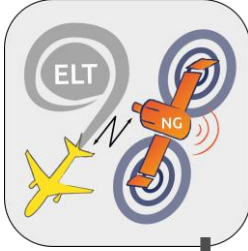


RESCUE COORDINATION CENTER

GADSS CONCEPT

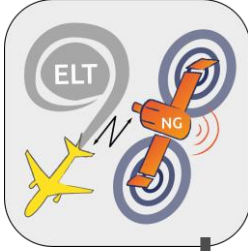


ICAO Annex 6 SARPS on ADT & FRDR



Location of an Aeroplane in Distress

- ✓ **6.18.1 All aeroplanes of a MCTOM of over 27 000 kg for which the individual certificate of airworthiness is first issued on or after 1 January 2021, shall autonomously transmit information from which a position can be determined by the operator at least once every minute, when in distress, in accordance with Appendix 9.**
- ✓ **6.18.2 reco – for more than 5.7 tons**
- ✓ **6.18.3 The operator shall make position information of a flight in distress available to the appropriate organizations, as established by the State of the Operator.**



Location of an Aeroplane in Distress

- ✓ Appendix 9
- ✓ *Location of an aeroplane in distress* aims at establishing, to a reasonable extent, the location of an accident site within a 6 NM radius.
- ✓ *Note 2.— A distress alert can be triggered using criteria that may vary as a result of aircraft position and phase of flight. Further guidance regarding in-flight event detection and triggering criteria may be found in the EUROCAE ED-237, (MASPS) for Criteria to Detect In-Flight Aircraft Distress Events to Trigger Transmission of Flight Information*



Flight Recorder Data Recovery

6.3.5.1 All aeroplanes of a maximum certificated take-off mass of over 27 000 kg and authorized to carry more than nineteen passengers for which the application for type certification is submitted to a Contracting State on or after 1 January 2021, shall be equipped with a means approved by the State of the Operator, to recover flight recorder data and make it available in a timely manner.



Flight Recorder Data Recovery

6.3.5.2 In approving the means to make flight recorder data available in a timely manner, the State of the Operator shall take into account the following:

- the capabilities of the operator;
- overall capability of the aeroplane and its systems as certified by State of Design;
- the reliability of the means to recover the appropriate CVR channels and appropriate FDR data; and
- specific mitigation measures.

Note.— Guidance on approving the means to make flight recorder data available in a timely manner is contained in the Manual on Location of Aircraft in Distress and Flight Recorder Data Recovery (Doc 10054).



EUROCAE WG-98 & RTCA SC-229 Activities



DC-229 & WG-98 Work

- ✓ The joint WGs are updating DO-204A & ED-62A standards that address the latest design, performance, installation and operational issues for 406 MHz ELTs including Distress Tracking ELT (ELT-DT)
- ✓ The updated MOPS will become the foundation for a new revision to TSO & ETSO -C126x
- ✓ With a joint effort the WG-98 developed the specification MASPS ED-237 for criteria to detect in-flight aircraft distress events to trigger transmission of flight information
- ✓ This MASPS is referenced by the ICAO Annex 6 SARPS to trigger the Aircraft in Distress Tracking



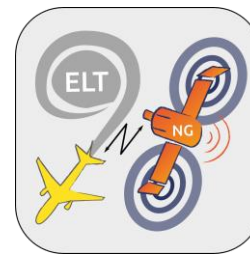
WG-98 / SC-229 Meetings

- ✓ **WG-98 Meeting 1: Paris** **27 & 28 November 2013**
- ✓ **WG-98/SC-229 Joint Meeting# 1: Washington** **10 to 12 March 2014**
- ✓ ...
- ✓ **WG-98/SC-229 JM# 9: Fort Lauderdale** **13 to 16 December 2016**
- ✓ **WG-98/SC-229 JM# 10: Cologne** **14 to 17 March 2017**
- ✓ **WG-98/SC-229 JM# 11: Washington** **6 to 8 June 2017**
- ✓ **WG-98/SC-229 JM# 12: Paris Draft for OC/FRAC** **5 to 7 September 2017**
 - Document distributed for FRAC / Open Consultation – 45 days
- ✓ **WG-98/SC-229 JM# 13: Washington Last meeting** **12 to 14 December 2017**
 - review of comments received, FRAC resolution and consensus on the final documents
- ✓ **PMC and Council on March 2018: Final document submitted for approval**
- ✓ **Early April 2018: Publication of the document on RTCA/EUROCAE Websites of ED-62B and DO-204B**



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Thank you
for your attention