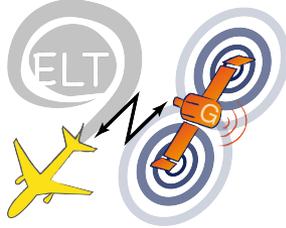


WG-98 SC-229
“Aircraft Emergency
Locator Transmitters
(ELTs)”

SC-229/ WG-98 Update
2018 Beacon Manufacturer’s
Workshop

Palm Beach Gardens, FL, USA
September 28, 2018



EUROCAE WG-98 RTCA SC-229

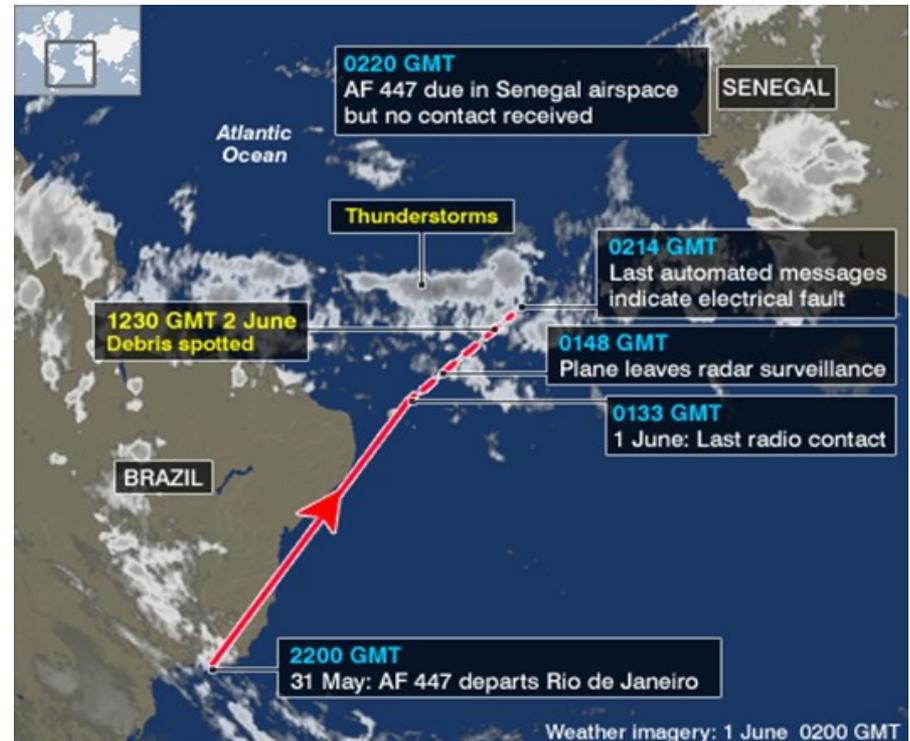


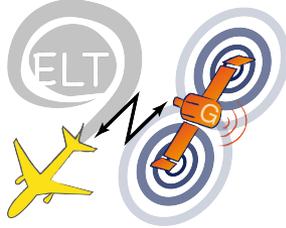
- ✓ **Largely in Response to AF447**
 - Crashed June 1, 2009
 - FDR Recovered April 29, 2011
 - BEA Recommendations
 - ULB Duration and Frequency
 - Transmission of Position
 - Trigger ELT prior to crash

- ✓ **EUROCAE Terms of Reference**
 - Revised ED-62A MOPS
 - Crash Worthiness
 - Trigger in Flight – MASPS
 - SGB Requirements
 - 1st Meeting: Nov 27-28 2013

- ✓ **Joint Committee with RTCA**
 - FAA Signed off on ToR - Nov 2013
 - RTCA SC-229 PMC Approved - Dec 2013

June 2009

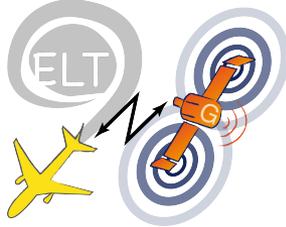




WG-98 / SC-229 Joint Meetings



- ✓ **WG-98 1: Paris** **27 & 28 November 2013**
- ✓ **1: Washington** **10 to 12 March 2014**
- ✓ **2: Toulouse** **3 to 5 September 2014**
- ✓ **3: Washington** **13 to 15 January 2015**
- ✓ **4: Hamburg** **21 to 23 April 2015**
- ✓ **5: Washington** **1 to 3 September 2015**
- ✓ **6: Paris** **15 to 17 December 2015**
- ✓ **7: Washington** **16 to 18 March 2016**
- ✓ **8: Lorient** **6 to 9 September 2016**
- ✓ **9: Fort Lauderdale** **13 to 16 December 2016**
- ✓ **10: Cologne** **14 to 17 March 2017**
- ✓ **11: Washington** **6 to 9 June 2017**
- ✓ **12: Paris** **5 to 8 September 2017**
- ✓ **13: Washington** **12 to 15 December 2017**
- ✓ **14: Toulouse** **13 to 16 March 2018**
- ✓ **15: Washington** **18 to 22 June 2018**
- ✓ **16: Paris** **28 to 31 August 2018**



WG-1 Triggered Flight

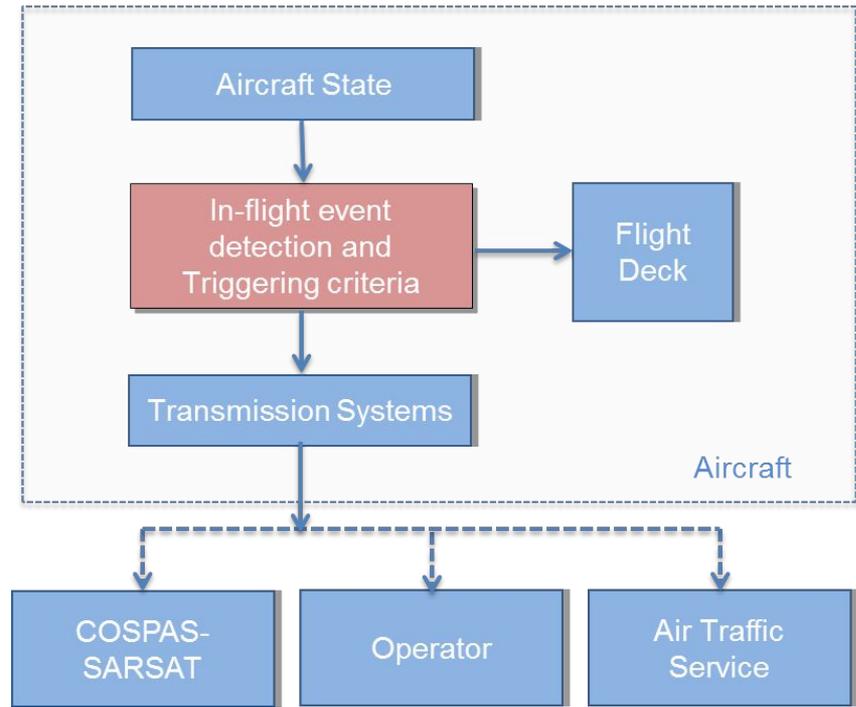
MASPS - Minimum Aviation System Performance Specification

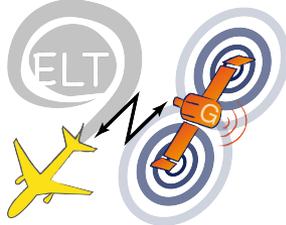
✓ Criteria

- Unusual Altitude
- Unusual Speed: low, high, vert.
- Excessive Accelerations
- Control Command Inputs
- Ground Proximity
- Excessive Pitch , Roll
- Stall

✓ Guidance

- Basic Limits
- Persistence Time
- Cancellation
- Test Procedures





WG-2 Crash Safety



Test article 1



Test article 2



Test article 3

NASA/TM-2015-218987

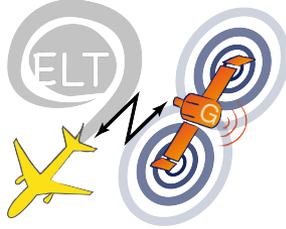


Crash Tests of Three Cessna 172 Aircraft
at NASA Langley Research Center's
Landing and Impact Research Facility

<http://www.nasa.gov/langley/retired-aviator-on-hand-to-witness-drop-test-of-his-old-airplane>

<http://www.nasa.gov/langley/second-crash-test-harvests-valuable-data-to-improve-emergency-response>

<http://www.nasa.gov/langley/crash-test-assesses-plane-emergency-locator-transmitters>

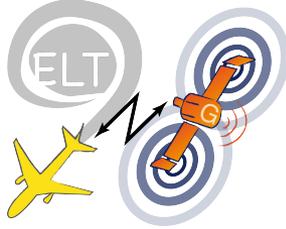


WG-etc.

- ✓ **WG-3: SGB Homing**
 - Homing Trials
 - Intelligent Transmit Scheduling

- ✓ **WG-4: GNSS, Power, RLS, etc**
 - SC-159 GPS Presentation, Dr. Hegarty
 - SC-235 DO-2227Lithium Updates
 - WG-98 SC1 on RLS

- ✓ **WG-5 Standards (Plenary)**
 - Combine DO-204a and ED-62a
 - Draft new requirements
 - Address Installation
 - Pair Requirements with Methods of Compliance
 - Edit to new drafting standards

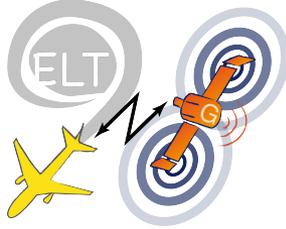


Cospas Sarsat SGB

- ✓ **The Cospas-Sarsat Program Dependencies**
 - MEOSAR deployment
 - MEOLUT deployment
 - Second Generation Beacon (SGB) specifications

- ✓ **EUROCAE JC-29 Paper**
 - Explore Triggered in Flight ELT Transmission Requirements
 - ELT(DT) CWG on Triggered Flight (Initiated Oct 2015)

- ✓ **Creation of a new type ELT(DT) to meet the ICAO ADT requirements,**
 - 1st Generation Beacon – Encoded location, TX schedule, Msg Content
 - 2nd Generation Beacon – Encoded location, ””

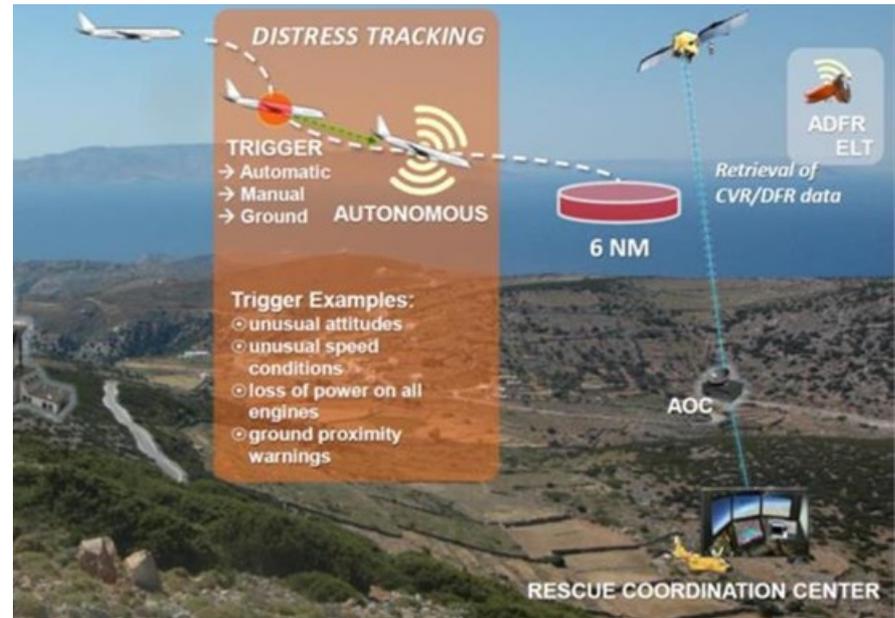


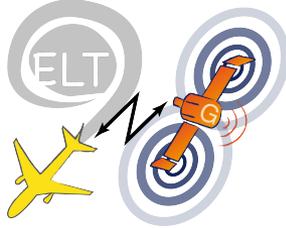
ICAO GADSS

Global Aircraft Distress Safety System

✓ ICAO Annex 6 SARPs on Autonomous Distress Tracking (ADT)

March 8, 2014

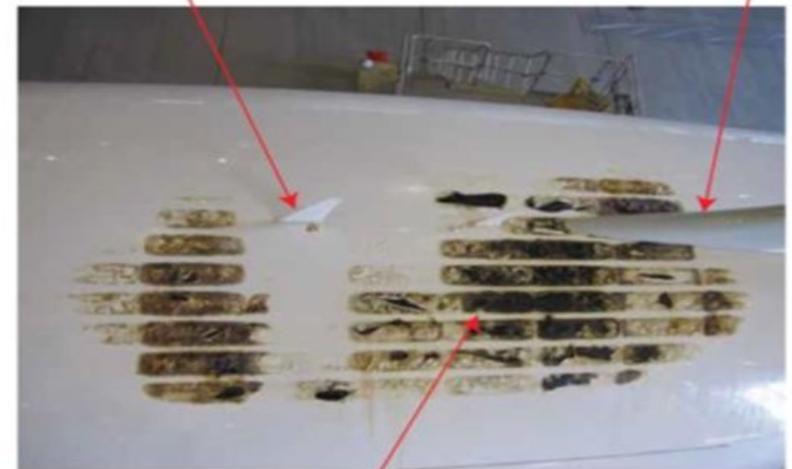




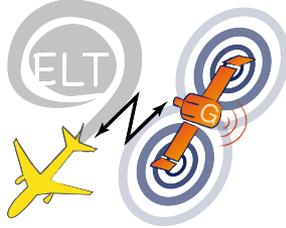
Lithium Batteries

July 12, 2013

- ✓ SC-229 Inter-Committee Request for Lithium Battery MOPS update.
- ✓ SC-235 Launched & completed the DO-227a MOPS
- ✓ FAA Special Conditions on lithium batteries issued

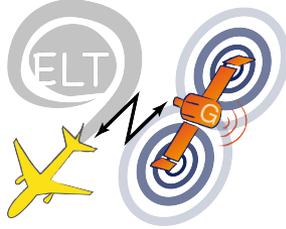


ELT Location



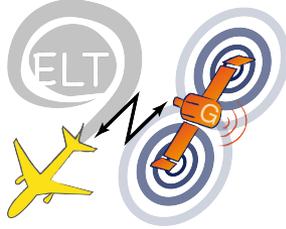
The Way We Were

- ✓ **BMW 2016 SC-229 MOPS Status – May 2016**
- ✓ ***“It is estimated that this work will take 9-12 months to complete and enter into FRAC. This would put the planned FRAC submission in the Summer of 2017 and publication towards end 2017. “***



The Way Forward

- ✓ 4 June: the draft robust version provided to the group
- ✓ 18-22 June: plenary session at RTCA Headquarters (5 days)
- ✓ 25 June: the draft for publication provided to Anna
- ✓ 1 July: FRAC/OC process started for 45 days (end on 15 August)
- ✓ 28 to 31 August: Plenary session at EUROCAE Headquarters (4 days)
- ✓ 5 September: File transmitted to Anna and Rebecca for publication
- ✓ 14 December: Review by RTCA PMC (document need to be provided no later than beginning of November to Rebecca)
- ✓ Review by EUROCAE Council aligned with RTCA dates
- ✓ Publication of both ED-62B and DO-204B before end of December 2018



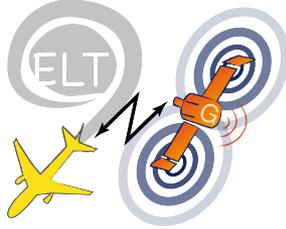
Accomplishments

- ✓ **Minimum Operating Performance Specifications for ELTs (MOPS DO-204B)**
 - Rewritten, re-organized, and harmonized with the European standards
 - Realistic crash safety and impact requirements
 - Incorporates of GNSS standards in the MOPS
 - Incorporates Robust installation guidance
 - Includes the requirements for Second Generation ELTs
 - The creation and specification of a new type of ELT, the ELT(DT)

- ✓ **Minimum Aviation System Performance Criteria (MASPS ED-237)**
 - Incorporated in the ICAO Annex 6 and
 - Integral to the GADSS Concept of Operations
 - Referenced by the ARINC AEEC Industry Group – Global Aircraft Tracking

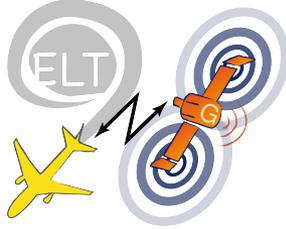
- ✓ **Adoption into US FARs and EU Rules**
 - TSO-c126C
 - ETSO-c126B

- ✓ **SC-229**
 - Will go into “hiatus” for at least a year.
 - In anticipation of future revisions (GADSS, RLS, ??)



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“...and just like that, 5 years of my life had passed!”

