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

SC-229/ WG-98 Update

2014 Beacon Manufacturer’s Workshop

Annapolis, MD, USA
May 1, 2014
Outline

✓ SC-229 Formation
✓ SC-229 Scope and Terms of Reference
✓ Work Structure
✓ Work Plan
SCOPE and COORDINATION:
- The committee should update DO-204A Standard to address the latest design, performance, installation and operational issues for 406 MHz emergency beacons. These standards should be useful to users, designers, manufacturers, and installers concerning the design and approval of these emergency beacons and their installations on aircraft and will help ensure a more standardized approach in these systems and installations approval.

ENVISIONED USE OF DELIVERABLE(S)
- The updated MOPS will become the foundation for a new revision to TSO-C126x.

U.S. Department of Transportation
Federal Aviation Administration

NOV 18 2013

Ms. Margaret Jenny
President
RTCA, Inc.
1150 18th St, NW, Suite 910
Washington, DC 20036

Dear Ms. Jenny:

Emergency Locator Transmitters (ELTs) are a critical tool for search and rescue first responders and are credited with saving numerous lives over the past four decades. RTCA’s DO-204A, “Minimum Operational Performance Standards for 406 MHz Emergency Locator Transmitters” is the current ELT standard. However, developments in emergency locator technology, as well as lessons learned with recent aviation accidents, provide an opportunity to update the existing standards.

The Federal Aviation Administration requests RTCA form a committee to update DO-204A to align with upcoming second generation Cospar-Sarsat ELT enhancements, to address air safety investigation recommendations, to add GPS requirements for ELT equipment, and to address installation issues with flexible mounting designs. Details for each of these initiatives are attached in a proposed terms of reference. This special committee should harmonize with planned complimentary European Organization for Civil Aviation Equipment efforts. I request your prompt consideration of this request and look forward to your favorable response. Thank you for your consideration in this matter.

Sincerely,

[Signature]
Margaret Grogan
Associate Administrator for Aviation Safety

Enclosure

BMW Annapolis May 2014
SC-229 / WG-98

- May 2013: WG-98 ToR Approved by EUROCAE TAC/Council
- Nov 2013: WG-98 1st meeting in Paris
- Nov 2013: FAA requests RTCA to form a committee
- Dec 2013: RTCA PMC Approved SC-229 and the ToR
- Jan 2014: RTCA Announces SC-229 Formation
- Feb 2014: SC-229 Meeting announced in Federal Register
- Mar 2014: 1st Joint Meeting of SC-229 / WG-98
SC-229 Contact Information

✓ Group Chair (SC-229)
Thomas Pack
ACR Electronics
thomas.pack@acrartex.com

✓ Manager
Ms. Sophie Bousquet
RTCA Program Director
sbousquet@rtca.org

✓ Group Chair (WG-98)
Philippe Plantin de Hugues
Bureau d'Enquêtes et d'Analyses (BEA)
philippe.plantindehugues@bea-fr.org

✓ Designated Federal Official
Charisse Green
Federal Aviation Administration
Charisse.Green@faa.gov

✓ Secretary
Stuart Taylor
HR Smith Group of Companies
stuart@hrsmith.biz
ToR Scope and Coordination

RTCA SC-229

✓ Update DO-204 standards to address the latest design, performance, installation and operational issues for 406 MHz emergency beacons.

✓ The updated MOPS will become the foundation for a new revision to TSO- C126x

✓ RTCA SC-229 plans to work jointly with EUROCAE WG-98, to ensure harmonization, as practical, is maintained between the RTCA and EUROCAE ELT documents.

EUROCAE WG-98

✓ Draft amendment to ED-62A MOPS Specification for Aircraft ELTs

✓ Technical Report on the practicability on the use of the amendments with respect to their effectiveness.

✓ A MASPS covering the function that would trigger the ELT transmission, defining some high level concepts and the typical functional interface requirements between the ELT and the emergency triggering element.

✓ ...it is proposed the work of the working group be undertaken as a joint activity with RTCA.
Specific Guidance

RTCA SC-229

✓ Invite Participation
✓ Review ToR
✓ Review C/S SGB for Aviation
  ▪ GNSS
  ▪ Antenna Cabling
  ▪ In Flight Activation
✓ Develop C/S Proposals Papers
✓ Crash Safety
  ▪ Mounting Requirement and Test
✓ 121.5 Homing
  ▪ Evaluate Operational Requirement

EUROCAE WG-98

✓ In Flight Activation
  ▪ Create a new class of automatically activated next generation ELTs prior to impact,
  ▪ Definition of ELT technical requirements
  ▪ Define the criteria for in-flight activation,
  ▪ Define the criteria for termination of an ELT triggered in flight
  ▪ Define the frequency of transmission of data and applicable parameters.

BMW Annapolis May 2014
Initially....

- SC-229 ToR had work items that were not in the WG-98 ToR
- The FAA had not requested the creation of a MASPS
- The evolution of the C/S Second Generation Beacon standards will gate certain SC-229/WG-98 activities
- The evolution and deployment MEOSAR system will affect the adoption of DO-204b into TSO-c126x
- Some activities already exist with other organizations including C/S and NASA. Lack of clarity of 1st vs 2nd Generation Beacon applicability

SC-229 and WG-48 ToR have been aligned during the first meeting in Washington DC and should be submitted at the next EUROCAE TAC in May and RTCA PMC in June for Approval
### Joint Terms of Reference

<table>
<thead>
<tr>
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<th>1st Generation Beacons</th>
<th>2nd Generation Beacons</th>
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<tr>
<td></td>
<td>AF</td>
<td>AP</td>
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<tr>
<td>Crash Safety</td>
<td>M</td>
<td>M</td>
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<tr>
<td>Antenna and Cable</td>
<td>M</td>
<td>M</td>
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<tr>
<td>Integral GNSS</td>
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<td>O</td>
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<tr>
<td>GNSS Interface</td>
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<td>O</td>
</tr>
<tr>
<td>406 Homing (other than std homing)</td>
<td>N</td>
<td>N</td>
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<tr>
<td>121.5 homing</td>
<td>M</td>
<td>M</td>
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<tr>
<td>243 homing</td>
<td>O</td>
<td>O</td>
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<tr>
<td>Triggered in flight</td>
<td>T</td>
<td>T</td>
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<tr>
<td>Return Link Service</td>
<td>O</td>
<td>O</td>
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<tr>
<td>Rechargeable Battery</td>
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<td>N</td>
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<tr>
<td>Antenna and Cable In Flight Activation</td>
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<td>T</td>
</tr>
<tr>
<td>Non rechargeable Battery</td>
<td>M</td>
<td>M</td>
</tr>
</tbody>
</table>

**Legend:**
- **M** = Mandatory
- **O** = Optional
- **N** = Not Permitted
- **N/A** = Not Applicable
- **T** = TBD by working Group
It is proposed to create working groups to address the committee deliverables.

- Standards Documentation
- Flight Activation
- GNSS / RLS / Power Sources
- Crash Survivability
- 2nd Generation Homing

It is proposed that the working groups meet as often as necessary to meet plan commitments.

Some WG will have significant coordination with C/S WG’s

SC-229/WG-98 coordination meetings should occur monthly to share and consolidate input, and track progress.
Objective: Harmonize the DO-204a ED-62a
Leader: Thomas J. Pack and Philippe Plantin de Hugues
Activities
- Background: Review and understand current document and structure.
- Create project plan for work group coordination and timeline deliverables.
- Coordinate and agree upon on document structure and flow
- Work with RTCA and EUROCAE on draft structure
- Edit existing specification to update, correct, clarify, and possible change requirements.
- Coordinate with other work groups to align the deliverables.
- Coordinate with C/S to incorporate applicable SGB standards not specifically addressed in WG's
- Maintain Drafts DO-204b and ED-62b and revision control
- Review Activity at meetings and conference calls.

Deliverables
- Draft DO-204b and ED-62b
- Consolidate Input to C/S SGB Specifications
Objective: Define Flight Activation/deactivation specifications
Leader: Philippe Plantin de Hugues

Activities
- Background: Review existing body of knowledge
- Coordinate with SGB in Specifications Progress (C/S, RTCM, etc)
- Define the criteria for in-flight activation,
- Define the criteria for termination of an ELT triggered in flight
- Antenna and Cables
- Define the frequency of transmission of data and applicable parameters.
- Create proposals and paper for JC-28
- Create the MASPS
- Draft DO-204b ED-62b Input Section
- Review Activity at meetings and conference calls.

Deliverables
- Specific Input to draft DO-204b and ED-62b
- Creation of the MASPS
- Specific Input to C/S SGB Specifications
Objective: GNSS, power source and return link services specifications

Leader: Plenary session

Activities
- Background: Existing RTCA, EUROCAE, C/S Requirements
- Coordinate with SGB in Specifications Progress (C/S, RTCM, etc)
- Identify and create technical and testing standards for GNSS receivers/nav input
- Identify and create technical and testing standards for return link services
- Identify and create technical and testing standards for power source
- Create proposals and paper for JC-28
- Draft DO-204b ED-62b Input Section
- Review Activity at meetings and conference calls.

Deliverables
- Specific Input to draft DO-204b and ED-62b
- Specific Input to C/S SGB Specifications
Objective: Develop crash safety specifications
Leader: NASA and Allan C. Knox
Activities
- Background: DO-204a References, NTSB reports, CAA report, ICAO reports
- Review and amend the current crash safety requirements and tests to ensure the ELT remains secured and operable in its mounting tray after a crash.
- Review and amend cable antenna and cable crash survivability
- Gather information from NTSB and international counterparts
- Identify and create/modify technical and testing standards
- Draft DO-204b ED-62b Input Section
- Review Activity at meetings and conference calls.

Deliverables
- Specific Input to draft DO-204b and ED-62b
- Specific Input to C/S SGB Specifications
Objective: Second generation homing specifications
Leader: Allan C. Knox
Activities
- Background: DO-204a References, FCC Rulemaking, CAP reports
- Evaluate the operational requirement of 121.5 MHz homing beacons on 406MHz ELTs to determine if the 121.5 MHz homing device is needed to support search and rescue authorities.
- Evaluate the use and need of 243MHz Homing
- Coordinate with SGB in Specifications Progress (C/S, RTCM, etc)
- Identify and create/modify technical and testing standards for 121.5MHz Homing
- Draft DO-204b ED-62b Input Section
- Review Activity at meetings and conference calls.

Deliverables
- Specific Input to draft DO-204b and ED-62b
- Specific Input to C/S SGB Specifications
SC-229 Work Space

RTCA Collaboration Tools

- Meeting/Attendance information
- Agendas/Summaries
- Calendars
- Committee Papers
- Documents
- Final Review and Comment FRAC
COSPAS-SARSAT Coordination

✓ COSPAS-SARSAT Task Group on SGB Specifications (Feb 2014)
  ▪ Presentation of an Information Paper to inform COSPAS-SARSAT members of the work of WG-98 and SC-229.

✓ COSPAS-SARSAT Joint Committee Meeting (June 2014)
  ▪ Short Paper on In Flight Triggering of 1st Generation ELT’s on the MEOSAR System. Call for investigation and performance analysis.
Summary of various activities in progress

EASA

ICAO

WG-98 SC-229

FLIRECP proposal

Global Tracking

Paris

Washington

Toulouse

Completion of work

18/03/2011

27-28/11/2013

10-12/03/2014

10-12/05/2014

3-5/09/2014

End 2015

2016 / 2017

01/01/2019

6 NM option

New Annex 6

10-12/05/2014

Washington

2014

Global Tracking

Completion of work

End 2015

2016 / 2017

01/01/2019

6 NM option

New Annex 6
WG-98 / SC-229 Meetings

- **WG-98 Meeting 1: Paris**
  - 27 & 28 November 2013

- **Joint meeting 1: Washington**
  - May Conference Call
  - July Conference Call
  - 10 to 12 March 2014
    - TBD – after ICAO Tracking meeting

- **Joint meeting 2: Toulouse**
  - 3 to 5 September 2014

- **Joint meeting 3: US**
  - xx to xx January 2015

- **Joint meeting 4: Europe**
  - xx to xx May 2015

- **Joint meeting 5: US**
  - xx to xx September 2015
WG-98 SC-229
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Thank you for your attention