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 May 30, 2014

**MEETING MINUTES  
 THE FIRST MEETING OF SPECIAL COMMITTEE 231  
 TAWS - GPWS**

**Date:** May 28, 2014  
**Time:** Meeting called to order 09:00  
 and adjourned 15:15  
**Place:** RTCA Inc.  
 1150 18th Street NW Suite 910  
 Washington, D.C. 20036

**Co-Chairmen:** Yasuo Ishihara                      Rick Ridenour  
**Designated Federal Official:** Charisse Green  
**Secretary:** Zach Reynolds

**Welcome / Introduction / Administrative Remarks:**

- Meeting called to order with a brief self introduction of each of the 12 attendees.
- Ms. Sophie Bousquet provided a welcome to RTCA
- RTCA Proprietary References Policy is presented for all parties for consideration.
- A request was made by the co-chairmen for a volunteer to be the Secretary for this and following meetings. Mr. Reynolds and Mr. Mulkins volunteered as secretary for this meeting. Mr. Reynolds has been appointed the single contact, with Mr. Mulkins as backup.
- Attendees:

<b>Name</b>	<b>Company/Agency</b>
Benich, Chris	Honeywell International, Inc.
Bousquet, Sophie	RTCA, Inc.
Bulger, Chip	FAA
Fleury, Stephane	Thales
*Gravelie, Scott	FANS Group LLC
Green, Charisse	FAA
Ishihara, Yasuo	Honeywell International, Inc.
Mulkins, Jim	Honeywell International, Inc.
Reynolds, Zack	ACSS
Ridenour, Rick	ACSS
*Sadilov, Vsevikid	JSC IANS

Stephenson, Chris	National Air Traffic Control
Tubb, Nick	The Boeing Company
Zapoluch, Steve	Garmin
*Attended by Phone	

## Wednesday, 28 May

### Agenda Overview:

- Mr. Ishihara outlined each one of the current Agenda Items

### RTCA Overview:

- Presentation #1: Sophie Bousquet provided an introduction to RTCA, its history, scope, and guidelines.

### DFO Presentation:

- Presentation #2. Charisse Green indicated 92 TAWS/GPWS deviations were on record. Of these, 37 deviations exist for GPWS. Others have been primarily addressed through 151c.
- Ms. Green emphasized that changes made to the TSO should be relatively small in nature. Any new wording/changes to DO-3xx should not lead to forcing suppliers needing to change current designs.

### Current Committee Scope / Terms of Reference (TOR):

- Presentation #3: R. Ridenour raised the question of **whether a single MOPS could be created or whether we wish to continue to refer to a separate GPWS document.**
- Discussion around the creation of a single MOPS, being advantageous for being able to simultaneously consider FLTA operations in viewing the GPWS modes. For example, DO-161A could be viewed as a GPWS only system where the application of the Mode 1-5 curves would be different on a standalone system whereas an integrated system would change existing curves thanks to the additional coverage offered by FLTA. **Decision to have a single document DO-3XX document.**
- Concern raised over suppliers of a standalone GPWS system. There may be military applications with a GPWS only system, but they are not likely to comply anyway, where they use it more as a reference guide. As it is a reference that will remain unchanged for these operators, no change is being demanded by this community. **Thus, a decision was made to not update DO-161A.**
- Topic of how to handle potential **multiple supplier GPWS curves discussed.** While a minimum and maximum limit can be set, sometimes these limits are non-conservative (cutoff at ABC feet for Mode 1 as one example) where another system would provide alerting in a given region. We indicated that no nominal

- value would be presented. However, **there would likely be 2 GPWS curves: degraded or failed inputs and FLTA active curves.**
- Another topic of GPWS curve modification will be system integration specific – for example, a particular OEM may create alternate alerting that is present which can allow the above curve to have a modified lower limit of XYZ. Mr. Ishihara indicated that the language of “reduced protection mode” has been seen in the HTAWS MOPS. However, Mr. Bulger expressed concern with this allowance being too broad.
  - Discussion of item (E) Review 151c. Test cases may not be optimum. A 200 foot error and 100 foot error case seem redundant. Mr. Ishihara brought up an example of the nuisance alert locations provided in 151C containing one airport which is no longer open (Quito). Mr. Bulger discussed that these locations are more simulation based. If a simulation can be run with a past database, this could be appropriate as the terrain has not changed.
  - Discussion of TOR item (F) Adding Requirements to the TAWS MOPS.
    - We are envisioning conditional paragraphs to exist should an operator pursue specific Low RNP requirements. These would be requirements that would only apply if a given operator pursues operation in this environment. This issue intersects with NAV operation as well – Mr. Mulkins raises the questions of whether navigation companies are actually creating approaches with TAWS assumed to be on.
    - Addressing RNP AR procedures can be tricky given that the procedures are proprietary. Mr. Fleury indicates that we could use the SAAAR guidelines to create a hypothetical approach procedure based on our own limits. This could even create feedback back into the SAAAR guideline.
  - S. Bousquet mentioned that besides DO-200B likely to be incorporated, there are other current documents that may influence the TAWS DO-3XX document for SC-231. This listing includes DO-276 Rev. C, User requirements for terrain and obstacle. Do-291, Rev. C Interchange standards for Terrain and Obstacle considerations. DO-272 Rev. D is also mentioned here.
  - The two decisions made of (a) **decision to have a single document DO-3XX document** (rather than continuing with 2 documents) and (b) **a decision is made to not update DO-161A** caused the committee to develop a revised TOR.

## Discussion & Recommendations:

- Presentation #4 made by Mr. Ishihara of which documents will be used to funnel content into the upcoming DO-3XX document discussed here.
- Discussion over whether or not to have Working Group meetings. It would appear that given the small number of attendees today (12 people and 2 on phone), we may be best served not breaking into working groups but continuing

- with the current set. It would appear optimum to have monthly telecons, supplemented by quarterly working group meetings at a specific location.
- Goal for this committee is to assemble document by September 2015, as the last 3 months of the committee will be consumed by the Initial Plenary Review, the FRAC and Final Plenary Review.
  - As a next step, a strawman/outline could be created from the merging of the multiple documents which would be an outline of the working document. As an initial step, we are looking at a model of a past DO-document that would suffice as a model. The DO-309 HTAWS could be a good model, as it is related. There are comparable sections. Mr. Bulger suggested that the GPS MOPS, the DO-229 could be applicable. Mr. Bulger emphasized that the GPWS sectioning and the different classes of TAWS may drive differences from these other outlines.

### **Outline/ Strawman:**

- DO-309 and a generic RTCA and MOPS Drafting Guide have been pulled up as examples. One point of discussion was the inclusion of section 3 Installation requirements and section 4 Operational Performance requirements. The heritage use of AC requirements is that these would describe installation instructions. Mr. Ishihara pointed out that the DO-309 and GPS DO-229 do include installation item. Mr. Ridenour feels that the supplier will not make design decisions based on these items. Ms. Green indicates that the installer can use this for some general information that they may gain.

**Action:** DFO to investigate the need to include typical section 3 Installation requirements and section 4 Operational Performance requirements in our DO-3XX document or if these would be included in AC (airworthiness) requirements.

- Ms. Bousquet has checked from an RTCA standpoint to see if there is a rationale for the RTCA template including the section 3 and section 4. Mr. Hal Moses stopped by and pointed out that the section 3 and 4 numbering should probably be included for document organizational purposes, where the phrasing can indicate that there is no particular requirement for a TAWS system. But keeping the section number indicates the conscious choice to not conflict with the AC usage.
- The use of the Figure 1-1 DO-309 block diagram precludes the use of other means of projecting terrain such as Section 1.5 of TSO 151c.
- A review of section 1 suggested that equipment classes would be defined in this section. For the requirement section, the classes could also be combined. However, we will deal with test sections differently, where the consensus seems to be a separate section for each class. Thus, you may have a nearly identical Table A in each of the Class A, Class B and Class C equipment.



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**Action:** Question raised over Class C (turbine power, less than 6 seats). Is this necessary going ahead in DO-3XX? Honeywell to check with their internal group to determine if this is still needed.

- A question is raised by Mr. Mulkins regarding the handling of the TSO project. EUROCAE and EASA have been consulted with already. The RTCA MOPS will be referenced by these organizations and at this time, there is no plan for a joint working group.
- Next steps would include the creating of a 151c outline to then be mapped to the proposed outline of DO-3XX.
- TSO-151c has been written as a must/may. However, as a DO document, we will move to a shall/should style.

#### **Next Meeting:**

The proposed next plenary meeting will be Tuesday, 30 September through 2 October at RTCA, Washington DC. The following meeting is tentatively planned for Tuesday, 6 January through 8 January. The monthly telecon based working group meeting is nominally scheduled for the 3<sup>rd</sup> Thursday of every month from 10:00 AM to Noon Eastern Time, except where conflicts may arise. One such conflict is upcoming in June 2014, where Thursday, June 26<sup>th</sup> (4<sup>th</sup> Thursday) at 10:00 AM Eastern Time is planned.