

**PLENARY MEETING #11 MINUTES
MEETING OF SPECIAL COMMITTEE 231**

TAWS

RTCA Paper Number: 334-16/SC231-026

Date: 8 December 2016

Time: 1000 EST to 1145 EST

Place: Telecon

Co-Chairmen: Yasuo Ishihara Rick Ridenour

Designated Federal Official: Charisse Green

Attendees:

Name	Company/Agency
Bulger, Chip	FAA
Fleury, Stephane	Thales
Green, Charisse	FAA
Ishihara, Yasuo	Honeywell
Kirtz, John	Rockwell Collins
Licata, Bill	Universal Avionics
Morrison, Rebecca	RTCA
Reynolds, Zach	ACSS
Ridenour, Rick	ACSS
Rossi, Angelo	MITRE
Stevens, Aubrey	Delta Airlines
Vafiades, Monica	U.S. Air Force
Zapoluch, Steve	Garmin

December 8:

To start the meeting, Charisse described the open policy of this subcommittee. Rebecca described the non-proprietary notice.

Today, the goal was to decide on any further updates. RTCA's Rebecca Morrison can take responsibility for editing. She will then send the MOPS back to committee leadership for review.

A list of 58 comments were walked through at the meeting, where the first 7 were substantive, changing the technical content rather than formatting changes. The full set are shown below:

- 1) **Note 2 from Section A.2.3 needs to be removed. It is not permissible to reduce the alert heights by 100ft in the Terminal environment. This appears to be a copy-paste error as TSO C151c did not have this note for the Terminal test conditions. (The one note remaining after the deletion will need to be reformatted since there are no longer multiple notes in the section.)**
- 2) **Note 2 from Section A.2.5 needs to be removed. It is not permissible to reduce the alert heights by 100ft in the Final Approach environment. This appears to be a copy-paste error as TSO C151c did not have this note for the Final Approach test conditions. (The one note remaining after the deletion will need to be reformatted since there are no longer multiple notes in the section.)**
- 3) **Section 2.2.2.1.7.2.1: Class B PDA does not have a requirement to NOT alert if inhibited or not armed. No verification as well – 2.4.11.1.7.2.1.**
- 4) **Section 2.2.3.1.7.2.1: Class C PDA does not have a requirement to NOT alert if inhibited or not armed. No verification as well – 2.4.12.1.7.2.1.**
- 5) **Section 2.2.1.1.12 We did not remove the explanatory text which said GLS and LPV optional**
- 6) **Section 2.2.1.1.12.2.1 We didn't remove GLS/LPV "Optional" explanatory text (following Fig 2-30)**
- 7) **Figure 2-29 says "optional" for LPV/GLS and will need to be updated**
- 8) Header 2.4.10.1.6.4 and 2.4.10.1.6.4.1 are orphans at the bottom of page 182.
- 9) Header 2.4.10.1.7.4 is an orphan at the bottom of page 183.
- 10) Header 2.4.10.1.11.2.2 is an orphan at the bottom of page 192.
- 11) Header 2.4.12.1.7.1 is an orphan at the bottom of page 223.
- 12) Header 2.4.12.1.8.2 is an orphan at the bottom of page 224.
- 13) The abbreviation "L/O" is used several times and never defined. This is a carryover from TSO C151c. Suggest replacing it with "level off" in all occurrences. (In other words, don't bother defining the abbreviation L/O, just get rid of it.)
- 14) The acronym MAP is used but never defined. Suggest spelling it out the first time it is used (Section 2.4.10.2.2) – Missed Approach Point.

- 15) Section 1.9 is not justified.
- 16) Bulleted items in 2.2.1.1.6.2.2.1 are not justified.
- 17) Bulleted items in 2.2.1.1.6.2.2.2 are not justified.
- 18) Section 2.2.1.1.10.2.2.1 is not justified.
- 19) The last paragraph in 2.2.2.1.6.2.1.2 is not justified.
- 20) Bulleted items in 2.2.2.1.6.2.2.1 are not justified.
- 21) Bulleted items in 2.2.2.1.6.2.2.2 are not justified.
- 22) Section 2.2.2.1.10.2.2.1 is not justified.
- 23) Footnote 15 on page 122 appears to be in blue font. It should be black font.
- 24) Bulleted items in 2.2.2.1.13.1 are not justified.
- 25) Bulleted items in 2.2.3.1.6.2.2.1 are not justified.
- 26) Bulleted items in 2.2.3.1.6.2.2.2 are not justified.
- 27) Section 2.2.3.1.10.2.2.1 is not justified.
- 28) Bulleted items in 2.2.3.1.13.1 are not justified.
- 29) Sections 2.3.1.1.1 through 2.3.1.1.10 are not justified.
- 30) Section 2.4.1 is not justified.
- 31) Section 2.4.10.1.6.2.2.2 is not justified.
- 32) On page 196 in Section 2.4.10.2.2 there is value “-50” that is broken across a line break.
A nonbreaking hyphen is needed to keep the hyphen with the digits on the same line.
- 33) The last several paragraphs of Section 2.4.10.2.2 are not justified.
- 34) Section 2.4.11.1.6.2.2.2 is not justified.
- 35) On page 214 in Section 2.4.11.2.2 there is value “-50” that is broken across a line break.
A nonbreaking hyphen is needed to keep the hyphen with the digits on the same line.
- 36) The last several paragraphs of Section 2.4.11.2.2 are not justified.
- 37) Section 2.4.12.1.6.2 is not justified and may have extraneous paragraph marks (carriage return characters).
- 38) Section 2.4.12.1.6.2.2.2 is not justified.
- 39) On page 230 in Section 2.4.12.2.2 there is value “-50” that is broken across a line break.
A nonbreaking hyphen is needed to keep the hyphen with the digits on the same line.
- 40) The last several paragraphs of Section 2.4.12.2.2 are not justified.
- 41) Section 3.1.11 is not justified.
- 42) Notes in Section A.2.1 are not justified.
- 43) Notes in Section A.2.3 are not justified.
- 44) Notes in Section A.2.5 are not justified.
- 45) Notes in Section A.2.6 are not justified.
- 46) Section A.5 is not justified.
- 47) The “This Page Intentionally Left Blank” on page 28 is at the top of the page rather than the middle.
- 48) There appears to be extra white space on page 30 approximately five lines from the bottom of the page.
- 49) There appears to be extra white space on page 142 approximately 10 lines from the top of the page.
- 50) There appears to be extra white space on page 59 after Figure 2-16.

- 51) There appears to be an unnecessary line break in the last line of page 235. It appears that “Figure 3-1” could fit on the same line as “The operating manual must contain the statements shown in”.
- 52) The title page has “TBD, 2017” as the date but the footer in the body of the document has “© 2016”.
- 53) Section 1.10, page 27 (31/256), add 'a' in the 5th line - 'consider how vulnerability' should be 'consider how a vulnerability'
- 54) Section 2.1.5, page 30 (34/256), bold the words "(TAWS_MOPS_008)" and "(TAWS_MOPS_009)"
- 55) Figures 2-2 and 2-32, pages 34 and 93 (38 and 97/256) are difficult to read. Can they be improved? Maybe a better font?
- 56) FAO 8260.3B has been cancelled as of March 14, 2016 due to FAO 8260.3C. Should this be updated? There are 8 occurrences.
- 57) Figure 2-28, page 79 (83/256) - change "Too Low Flap" to "Too Low Flaps" for consistency - instead of having both words in the figure.
- 58) Remove leading zero from requirement TAWS_0100 and TAWS_0101, where three digits are sufficient.

For the first 2 comments, the committee had in previous Strawman versions incorrectly brought over the allowance for Mode 1 alerting in the Enroute area. This Mode 1 allowance does not apply to the Terminal and Final approach phases.

For comments 3 and 4, we see the appropriate “shall not alert” for Class A and this same allowance was not copied into Class B and C. The Class A statement which was present in the original Strawman is shown below:

2.2.1.1.7.2.1 Alert Criteria - Caution

Class A Equipment **shall (TAWS_MOPS_059)** provide a caution alert when the PDA function is armed and the PDA function is not inhibited and the combination of PDA Alert Height and Distance to Runway Threshold is within the Must Alert envelope prescribed in [Figure 2-9](#), for a period of 1.3 seconds or more.

The value of 1.3 seconds is the maximum delay between the time the Must Alert region is entered and the initiation of the alert. Smaller delays are acceptable.

PDA Alert Height may be height above terrain or height above runway.

Class A Equipment **shall (TAWS_MOPS_060)** not provide a PDA caution alert when one or more of the following conditions are met:

- PDA is not armed or
- PDA is inhibited.

These 2 changes were made real-time within the meeting.

For comments 5-7, we have performed the GLS and LPV update also real-time within the meeting.

2.2.1.1.12.2.1 Alert Criteria - Caution

Class A Equipment **shall (TAWS_MOPS_120)** provide a caution alert when Mode 5 is armed, Mode 5 is not inhibited, and the combination of downward deviation from the approach profile and height above terrain is within the Must Alert region prescribed in [Figure 2-30](#) for 1.3 seconds or more.

The term "approach profile" in the above requirement refers to ILS Glideslopes, GLS vertical profiles, and LPV vertical profiles.

The value of 1.3 seconds is the maximum delay between the time the Must Alert region is entered and the initiation of the alert. Smaller delays are acceptable.

Class A Equipment **shall (TAWS_MOPS_121)** not provide a Mode 5 caution alert when one or more of the following conditions are met:

- Mode 5 is not armed or
- Mode 5 is inhibited or
- the combination of downward deviation from the approach profile and height above terrain is within the Must Not Alert region prescribed in [Figure 2-30](#).



The hotlinks for requirement tags will be updated after the meeting. The additional requirements added as a result of comments 3 and 4 will add requirements to the MOPS. All requirements will be renumbered so that requirements are numbered sequentially from 001 to 345 in the document.

Comments 8 through 58 were then reviewed, where Rebecca had performed changes prior to the meeting and will continue to work through some of these where a further WORD investigation of the left justification is needed.

One more substantive change of comments 8-57 is updating the TERPS reference 8260.3B. This has been updated to 8260.3C.

There is an action for Rick to provide the Visio for action 55.

There is a motion to accept all changes in the Strawman, with further edits upcoming to be reviewed by the chairperson leadership. This has been accepted by all committee members with no opposition

NEXT STEPS

The last set of document updates will be made by Rebecca and e-mailed to the SC-231 leaders by 15 December. By 3-4 January, Rick and Yasuo will indicate approval.

From here, the document will go to the PMC for review in January with approval cycle occurring in the meeting to be held 21 March 2017. We will then propose to the PMC that the SC-231 committee will be sunset as of March 2017.