

SC186 WG4 Meeting Notes

May 20 to 22, 2003 at FAA ACO in Seattle Area

Attendees:

Jonathan Hammer (MITRE CAASD)
Joel Wichgers (Rockwell Collins)
Steve Koczo (Rockwell Collins)
Jim Maynard (UPS-AT)
Michael Petri (FAA ACB-420)
Sheila Mariano (FAA AIR-130)
Mike Ulrey (Boeing ATM)
Tom Foster (TRIOS)
Larry Bachman (Johns Hopkins Applied Physics Lab)
Paul Lipski (FAA AIR-130)
Gene Wong (FAA AND-500)
Bob Hilb (UPS)
Jim Duke (ALPA) – via phone
David Oei (Honeywell)

Action items are highlighted in RED.

Tuesday 5-20-03

0. Introductions and Agenda Overview

The meeting commenced with round table introductions.

The Agenda was then reviewed. The meeting agenda is a detailed, line-by-line review of Chapters 2 and 3 of the current draft of the ASA MASPS.

1. Chapter 2 Review Notes

Jim M. to update Figures 2-1 through 2-7 to change “transmitting” to “transmit”

Jim M. to add a note to Figure 2-1, something to the effect: “TIS-B may also rebroadcast ADS-B data received on other ADS-B data links”

Stu action – add text to Figure 2-3 blocks so that it is readable in the pdf file (shows up as blanks in current document)

Jim M. to redraw Figure 2-5 per Joel W’s suggested redrawing (provides gap filler and multi-link).

Jim M. – Update the Bathroom figure (currently 3.0-1, but also used for Figure 2-6). Specifically, separate the navigation system from the FMS and Flight Control, autopilot systems that are viewed as ‘other aircraft systems’.

Michael P – If we delete section 2.2, how much (if anything) needs to move to Chapter 1.

Steve K – Write a transition paragraph for new Section 2.2.

Discussion on the purpose and utility of ASA Capability Level based on Chris Moody’s comments on ASA MASPS.

What is transmitted? Does ASA Capability Level need to be transmitted, or couldn't that be handled via ATC procedures / communications? Are procedures the way to go? Paul asked the following – what applications would need this (ACL info) where someone does not have traffic on his/her screen?

Detection of continuity failure can be conveyed this way (via ACL).

Tom – the ASA Capability Level grouping is important from an operational sense and implementation sense on developing requirements. Does it need to be broadcast? Not sure yet. But it is a way to organize a wide range of potential applications into a more understandable set of groups.

What does ATC need to see / know about the applications? May not need to know ASA Capability Level?

Chris's main question concerns whether ASA Capability Level should be transmitted or not.

ATC issue, pilot issue, automation issue on how ASA Capability Level (ACL) will be used by them.

It was suggested that we open an issue paper on ASA Capability Level, which allows a way to capture discussion points of view on the topic. **Tom F. took the action item to start an issue paper on ASA Capability Level (completed during meeting).**

It was noted that pilot training is part of ASA Capability Level. ASA Capability Level reflects the actual / current level of monitored performance of ASA by the aircraft systems (i.e., a continuity indication).

Jonathan took the action item to draft new text for the Operational Use of ASA Capability Level (ACL), Section 2.2.1 and its subsections.

Joel took the action to add some introductory material explaining the various ASA Capability Levels, from Basic ASA Capability on up (completed during meeting).

Tom F. noted that he is planning to write an ACM issue paper that indicates that ACM may in fact consist of a family of applications.

Steve K action to examine effects of potentially deleting Sections 1.7.1 and 1.7.2 (and subsections) on ACL; instead provide a forward reference to the ACL discussion in Section 2.2.2.

Discussion about what is viewed as minimum permissible data quality for the purpose of data transmission. One wants to send the highest quality of data that is available. Is there a minimum floor of data quality?

Also, discussion about 'should transmit the highest data quality that is available on the aircraft'. Concern over excessive specification. We need to identify the criteria for minimum quality and highest available data quality.

Jonathan action – to work on definitions on Section 2.3.2 on 'Requirements for Data Transmission'.

Tom action – draft a sentence for the treatment of data latency in section 2.3.3.2.

Sheila action – provide definition of 'primary field of view' for section 2.3.3.5 (CDTI Requirements)

Larry Bachman brought up the issue of 95% nominal update interval for message reception. Is this for 95% of the aircraft or for 100% of the aircraft? This has ramifications on data link evaluations / validations done by TLAT, and may potentially impact the data link MOPS.

Larry Bachman to draft a note on 2.3.5.1.3.1 concerning 95% nominal update rate (Comment on nominal versus maximum. Larry suggests that we consider a 99% percentile and change the name. There will be a lot of arguments about this).

Jim action to craft a definition of the accuracy of a parameter (two different views with same outcome – based on Tom F comment).

Wednesday 5-21-03

We continued our review of Chapter 2.

Jonathan and Tom took the action to further develop and refine the table that provides selection criteria for transmitting the highest Navigation Data Quality table (new table in section 2.3.2).

Discussion about TIS-B latency compensation issue and transmission of ‘age of data’ for excessive latencies. Larry Bachman raised some concerns about the position WG4 has taken to date on not allowing TIS-B to perform the latency compensation. Jonathan will draft a note indicating that TIS-B shall not perform latency compensation (section 2.3.3.2). This will require further discussion.

Larry B. – discussion on update period at 95% confidence (section 2.3.5.1.3.1). Action - We (application authors) also need to capture the altitude aspect for the coverage range / volume for their respective application.

We discussed the issue of 95%, 99% or 100% of aircraft that must meet the update rate. Larry took the action to draft a section on Update Interval confidence. Also an action for each ASA appendix analyst to consider the impact of this for their respective application.

Larry also asked if ‘nominal update interval’ was the right terminology. Larry will offer a recommendation.

The question was asked what is meant by ‘maximum coast time’?

Joel action to draft a new paragraph for ‘Degraded Operation Coast Time’.

Review of our definitions (starting with report time error, etc):

Concerning ‘maximum delay to integrity alert’, typically GPS on its own has a 10 sec time to alert from the onset of a failure condition. Row 10 in Table 2-4 (interface A1 to G) allocates 6 seconds for most applications, which is inconsistent with the 10 sec GPS time to alert. Action - all ASA Application analysts / writers to revisit the numbers in row 10 of Table 2-4. (Did they allocate from B1 to G, or have they included the A1 to B1 sensor allocation also). The relationship between Rows 10 and Rows 16 in Table 2-4 needs to be clarified. Joel action to clarify and offer a strawman proposal for numbers to rows 10 and 16 of Table 2-4 and send an action item email to the application authors to provide updates to these numbers.

Tim Rand / Martin Eby action to review the equation $\{(1-(R/90)^3)\}$ in row 11 of Table 2-4 for ACM.

Larry B action to draft a second note for TIS-B coverage volume.

Discussion about latency definition and rows 14 and 15 in Table 2-4.

Action for application authors to revisit their latency requirements numbers in rows 14 and 15 in Table 2-4.

Add Latency Compensation in the Definition Section of Appendix (A?) and also in the ASSAP subsystem section in Chapter 3.

Wednesday PM - Joint Meeting with WG1

2. Sheila's presented: "FAA Review of RTCA 186 MASPS Application WG-4 Analysis"

7 of 8 applications have been reviewed (ACM not yet reviewed). Each application was reviewed and a summary of positions and issues were provided.

EVAcq: Agree with Criticality Assessment of being 'minor'. Ensure consistency with AC20-138 (Airworthiness of GPS installations for use as supplemental navigation system). Limited to VFR. Any time you can see out the window its okay to use.

Peter Skaves – EVAcq is more closely related to TCAS I.

Deleted the reference to this AC, since it is for GPS navigation, i.e., not closely related to the EVAcq concept. Only used to maneuver based on visual contact with target aircraft.

EVApp – same assessment and text as EVAcq.

CD – TSO-C118 is for TCAS I (says it is SW Level 2 -> Major, yet we are saying it is Minor). Criticality is still open until we resolve this contradiction. Peter noted that CD is analogous to TCAS I, which he believes is Minor. Sheila noted that some material points to Major. After some discussion, CD will likely to be viewed as Minor criticality, pending some **further review by Sheila to resolve the contradiction of TSO-C118 SW criticality.**

Some discussion of the analysis being applicable to US airspace, not Australian airspace.

Separate human factors elements from fault tree.

WG4 needs to take a position on the quantitative use of fault trees.

ASSA – Minor; remove fault trees. OHA is sufficient.

FAROA – Similar text / criticality to EVAcq, except for plan-view mode when airborne, then this becomes major due to DO-257A, Rev 9.

Sheila - a lot of crew negligence in body text; should be removed from FMEA.

Peter on DO-257A: AC allows a range for minor to major; the TSO allows for major. This discrepancy is causing some confusion on how to handle FAROA, since FAROA builds on DO-257A.

Peter on partitioning of TCAS RAs (Level 2) from remainder of TCAS SW (Level 3).

Bob H. comment - 'traffic displayed on the airport map' is what we are trying to accomplish.

Paul suggested that we should wait until DO-257A is balloted.

ICSPA –further review pending.

ASIA – Agree with Major.

ACM – Sheila was not asked to review this. WG4 then also requested a review of ACM due to the initial oversight of making this request previously.

Other general issues:

- Integrity issues may require WAAS-GPS type integration. Will aircraft need to replace antennas?
- FAA ATC needs to be aware of roles and responsibilities in these type of applications.

Wednesday After PM Break – Mtg back with WG4 only

Continued with Table 2-4 review in Chapter 2.

Joel action to draft a note to accommodate ASSA/FAROA degraded performance in Table 2-4.

Editorial action to clean up the notes in Table 2-4; also use ‘note x’ to designate notes to avoid confusion with superscripts and subscripts.

Jonathan action to coordinate with Andy Zeitlin to review the TIS-B MASPS concerning TIS-B coverage volume and how it relates to the ‘ASA’ Coverage volume.

Appendix authors to review the new row in Table 2-4 on ‘time to alert’.

Chapter 3 Review

Thursday 5-22-03

Continued with Chapter 3 review

Action for Michael and Stu to collect the master copy of all ASA document figures.

Jim Action (Tom and Steve to coordinate with Jim on figure changes) - Figure 2-1 Relabel as ASA Transmit Subsystems, ASA Receive Subsystem for right and left hand side of the Figure

Tom action - Grey out TQLs 3-5 as ‘future’ in Table 3.1-1. (Tom and Jonathan to examine Table 2-4 for impact of greying out sections of Table 3.1-1).

Tom action – Check section numbers for topics contained in bulleted list in Section 3.1.1. For example TQL is section 3.1.1.1, ACL is section 3.1.1.2, etc. Check for consistency of numbering of bulleted sections. Add subsection numbers to bulleted lists in Section 3.1.1 and 3.1.1.3.

Tom action – Plan for 8 TQL levels (3 bit encoding)

Tom action - Competing / repeating definitions in Section 3.1 – check for these, provide references for definitions where appropriate.

Tom – Section 3.1.1.3.1.3: Discussion about ‘6 second time to report NIC change’. TQL needs to capture the entire A to D allocation. We added a ‘Time to Alert’ row to represent the composite of A to B and B to D allocations (an A-D composite allocation) interfaces in Table 3.1-1. How do we handle TIS-B time to alert (TQL level 0?)

Comment – TIS-B uplinks a unique TQL for each traffic target. Capture in text somewhere in Section 3.1 (?).

Tom – add a separate TIS-B section in Section 3.1 (perhaps a new Section 3.2?) that captures the TIS-B specific issues related to TQL. Also can address Gap Filer and Multi-link aspects in that section.

Tom – some of the words in sections 3.1.1.3.3 may need to move to Section 3.4 for external source requirements. Section 3.1.1.3.3 needs to address the STP-based requirements (STP Language). Requirements on Navigation should be addressed in Section 3.4 (Navigation Language).

Tom - Make DME/VOR, Loran navigation consistent with RNAV references in Section 3.1.1.3.3.

Tom - Section 3.1.1.4: Air/Ground Assessment Processing – “airborne” (or not known to be on the surface) identified as one of the states – Tom to edit the text accordingly.

Tom – to include TIS-B transmit processing in Section 3.1.2.

Tom – how to handle TIS-B Information Elements in Table 3.1-6 (TIS-B multi-link / bent pipe is probably same as current table. New, subset table for TIS-B Gap Filler function?)

Tom - Reorganize Table 3.1-6 into State Vector, Data Quality, etc information elements to allow forward reference by Chapter 2 to these information element categories.

Tom - Need a new Term / Name for ASA Capability Identification to avoid confusion with ACL in Table 3.1-6.

Tom – incorporate Table 3.1-6A offered by Joel as potential future information elements for ASA (e.g., wind, wind direction, final approach speed, etc.). Note: Any info elements that are recommended need to flow down from the ASA application analyses (e.g., ASIA, ICSPA, ACM).

Jonathan - Table 2-4 needs to be updated to include the new information elements of future / probing applications as part of the ACL (or use a note instead)

Tom - Application specific information elements are part of ACL not TQL. We need to add an indication in Table 3.1-6 to account for this.

Jim M noted that WG1 provided feedback that they prefer ASIA and ICSPA to be treated separately rather than grouped within the same ACL (this is from a CDTI subsystem perspective, not from WG4’s higher level grouping in Table 2-4).

Tom - Concerning BAQ (Section 3.1.3.12) – consider non-RVSM, basic RVSM, and full RVSM as the categories for the Table 3.1-11 without including the numbers. Include notes that reference the appropriate ICAO documents. Paul offered to reexamine the RVSM numbers. Jonathan – we have considerable amount of data on TCAS use of baro altitude; suggested to use those distributions as the recommended values.

Action – crosscheck whether we have a requirement for transmitting ASA version number.

Chapter 3 – Section 3.2

Larry B to provide assistance to Stu for reviewing Section 3.2. Tom also to provide some feedback to Stu off-line.

Chapter 3 – Section 3.3

Discussion on Table 3-1 (Surveillance State Vector Report). We need to reconcile this with Table 3.1-6. We need to take the ASA MASPS view here that flows requirements to the ADS-B MASPS. We need to validate the ADS-B MASPS without imposing a structure on ADS-B.

Discussion of high-rate and low-rate data. We noted Surveillance State Vector data (critical data) and Status and other data (less time-critical) data as two general groupings of data.

Jonathan action on Section 3.3.2 – Discussion about ASSAP track files, ASSAP to CDTI reports, etc. Jonathan will either update the ASSAP figure or draw a new functional flow figure that captures the functions and location of track and report data structures. Provide sizing estimates on number of tracks and reports.

Meeting Wrap-Up

Summary of Action Items for May 20-22, 2003 WG4 Meeting

- 1) The above “red” text captures detailed editorial / drafting and document development action items and are not summarized again.

Future WG4 Meetings and Drafting Telecons

Drafting Subgroup Hellecon	June 5 full day, June 6 half day
Drafting Subgroup Hellecon	June 12 and June 13 (half day)
Next WG4 Meeting	June 23-27 at FAA WJHTC in Atlantic City, NJ

The following dates are still tentative at this time:

(tentative) WG4 Meeting	Week of July 29-31, probably in DC
(tentative) ~August 8	ASA MASPS document to Hal Moses
(tentative) ~September 8	FFRAC Comments are due
(tentative) September (15-17)	WG4 deals with FFRAC comments prior to plenary
(tentative) September 18-19	SC-186 Plenary for ASA MASPS

End of meeting notes