

ASAS MOPS Meeting (RTCA SC-186 WG4B)
RTCA Headquarters, Washington DC
March 11-13, 2008

Attendees:

Sethu Rathinam – Rockwell Collins (chairman)
Michael Petri – FAA Research and Technology Development (secretary)
Taji Shafaat – Boeing
Bill Kaliardos – FAA – Aircraft Certification AIR-120
John Helleberg – MITRE
John Morgan – Honeywell
Raymond “Joel” Phillips – Astronautics Corporation of America
Bill Riley – ALPA
Mark Reed – ALPA
John Morgan – Honeywell
Ed DeMello - Boeing
Rick Shay – NASA LARC
Tom Eich – ACSS
Jonathan Hammer – MITRE
Larry Bachman – JHAPL
Chip Bulger – FAA AIR-130
Robert Eftekari – MITRE
Steve Ramdeen – FAA AIR-130
Charisse Green – FAA AIR-130
Jeff Meyers - FAA (TAD) ANM-111
James Maynard – Garmin
Chris Moody – MITRE
Dean Miller – Boeing
Don Walker – Honeywell
Bob Burns – Engility, Inc (FAA Technical Center contractor)
Dick Temple – FAA Flight Standards
Jim Duke - ALPA

Not present:

Sebastian Scopellite – ACSS
George Lyddane
Dave Matterson – SBS program office
Tim Waldron - Sensis

Agenda:

1. Welcome and Logistics
2. Introductions

3. Document Review [starting with walk through, review, discussions and issue capture; we will also edit the document during the discussions to get specific sections in final form; longer sections will be taken as homework.]
4. Complete action items outstanding (working sessions) review output and integrate into document.
5. Plan for future action, including completion of test and other remaining sections.
6. Coordinate with ASSAP subgroup (issues and document integration) (tentatively planned for Thursday afternoon)

Tuesday – 3/11/08

Welcome and introductions

Editorial Group to implement changes from meeting:

Michael, Taji, Chris and Tom are the editorial group to make changes to the MOPS

Review of Comment Matrix (refer to Master ASAS Comment Matrix

“Critical” comments

Comment #2: Breakout of requirements for systems with and without TCAS. FAA certification suggested it would be far easier to prepare a TSO if the MOPS defines two separate equipment classes. It was suggested that a table be included in an appendix that indicates which requirements apply to systems with and without TCAS. Manufacturers responded that there is no use in this, as they are currently used to following the MOPS without such tables.

It was agreed to require that in this initial version of the MOPS (until further studies are conducted), CD shall not be installed in systems integrated with TCAS. Chip Bulger will prepare some text.

Comment 7: Don Walker noted that the bench test requirements require 100% success. Chip is concerned that in flight testing, the results will not be 100% correlation success. What would be a testable requirement for flight testing? It is difficult to set a standard for flight tests due the uncontrolled environment. There is also concern about the unknowns of the upcoming TIS-B environment. It was agreed to add “goals” for real-world performance was suggested for each of the situations. The group will not add requirements. It was suggested to add objective goals for each case in Section 3. Chip liked the idea, but will talk with Rich Jennings to confirm that this proposed resolution is OK. Dan Kirk and Robert Eftekari took an action to draft text by tomorrow. The current TCAS requirements for demonstrated track performance seem to be sufficient, and Chip suggested using them.

Comment 15: Agreed to, but should be integrated with text disallowing TCAS and CD.
Comment 26: Same as C15.

Comment 33: Agreed to change to suggestion 3 – receive ground speed all the time.

C34: Agreed, but only the baro correction part.

C38: The comment seems to be out of the scope of the document. If there are problems with other documents, such as the STP MOPS, those documents should be corrected. Most of the comment seems to be related to bad wording. Tom Eich will reword the section.

C41: Agreed to add global comment about status flags that include valid/invalid for each data item (in 2.2.2.5.1)

C42: Resolution: Replace with two priority lists (TCAS and no TCAS) in subsections. Keep proximate traffic in both. Add proximate traffic calculation for all airborne traffic. Testing section will need to be modified.

C58: ASSAP insists there is no definition of degraded for EVApp, so the bulk of the suggestion was not approved. As such, the CDTI text with regards to degraded data for EVApp needs to be removed.

C71: Goes with other comment agreed to.

C74: Don felt that adding explanatory text would be excessive, but the group felt that future generations may need to understand the standard. It was agreed to add Don's white paper as an appendix, and reference the appendix in the requirement.

C80: Largely editorial. Change accepted, with TCAS adding an additional 30 tracks.

C96: Tom Eich reviewed a performance evaluation paper of ASSA/FAROA. UPS experience indicates that NAC 8 data is performing far better than the conservative assumption. AIR feels showing degraded traffic down to (and including) NAC 7 is acceptable.

Don Walker suggested that the GPS and FMS communities should be asked to provide more meaningful performance information.

It was agreed to modify the "valid" requirement to NAC 9 and above, and "degraded" at NAC 8. Below 8 is invalid. Degraded is still optional.

Dean says all Jeppesen map databases meet "medium" data quality in DO-272A, which is 5m accuracy. For ownship, there may be a requirement for medium quality map data.

C135: It was agreed that ground vehicles must be shown on the ground. Edit text to eliminate anything making it optional. Add general text, if necessary, noting that aircraft and ground vehicles are tracked by ASAS. Make differentiation of ground vehicles and aircraft a SHALL.

C166: It was agreed that some negative tests should be included. Robert will modify one of the existing scenarios add outliers, and mandate that this information be discarded. A small group including Don, Tom, and Robert will work on other tests.

C184: Tom Pagano's comments are unclear, and weren't submitted as part of the comment sheet. It was agreed to defer this comment until more discussion with Tom. Robert is writing a position reasonableness test.

There was concern that the suggested tests would be testing for things that are in violation of broadcast specifications. Dean suggested adding a disclaimer in the beginning of the documents (assumptions) that the MOPS does not handle systems that do not conform with standards (DO-260, DO-260A, etc. and associated TSOs.) Manufacturers may add additional tests to verify that non-compliant inputs do not cause problems with their systems. Dean was asked to write this up for the Assumptions section.

For duplicate address Mode S that have different velocities. Add to assumptions: The expected behavior under the circumstances would be a "ratty track". This was agreed.

"Substantive" comments

C17: Agreed to add text as in beginning of CDTI section. Michael will do this.

C19: Change section number referenced to 2.3.9.2 (ASSA/FAROA req), and add reference as suggested. Jeff will provide a requirement for the section. Jeff will also check out the rest of 2.3.9.2 to see if other changes are needed as a result of this change.

C20: The assumption can point to both documents. Add DO-236B to the assumption.

C21: Don meant that the own ship position should be projected to the time of applicability. NAC drops from 9 to 7 above 60 knots, which would cause the application to be declared invalid. This would be especially bad on approach. Action for Tom and Don to work on a solution.

C22: Covered with disclaimer

C22A: Current text needs to be clarified: The ASSAP example architecture will use mode S address from TCAS when available. Existing interface documents (...) do not support this assumption. ASSAP implementation that are external to TCAS LRUs may not have access to TCAS target mode S addresses. It is possible to meet ASSAP requirements without the Mode S address on TCAS targets.

C23: It can't be a minimum requirement because it can't be done with 1090. The MOPS is "link agnostic". Larry said that the 1090 TIS-B service volume is being sent up as a NOTAM, so it is available on the aircraft. It was agreed to defer the comment.

Also, Sethu had an action to add something to the TIS-B appendix that is ASSAP sends the service volume flag to CDTI, CDTI will display it. This action hasn't been completed. This may be deferred until a requirement for service volume is prepared.

C24: Comment deferred to later system. Ground traffic may be displayed, but is not correlated.

C30: Agreed this needs to be added to ASSAP (add section 2.2.2.3.3 – Own ship surface map availability input requirements) Don will modify figure and write this requirement.

Wednesday

– continue review of “substantive” comment matrix

W6: (Don Walker's comments are in a separate matrix) What is the TCAS report time? The time stamp is used in the correlation function. It can be received from TCAS in integrated systems, or time-stamped by ASSAP when received. It was decided to delete the requirement.

C40: After some discussion, the comment was withdrawn. Interoperability formats would be defined elsewhere (not in MOPS).

C46: This was agreed to in the telecon.

C47: Modify list for airborne proximate traffic (for systems integrated with TCAS only)

Add Note that TCAS and ASAS prox sorts as range.

ASSAP will calculate non-TCAS prox traffic for airborne traffic (for TCAS integrated systems only)

Modify definition section to take “TCAS” out of proximate traffic definition (for TCAS integrated systems, only)

***Hal needs final document by March 20 or 21st.

C48-50, 42, 53: Editorial group will work on this.

C55: It was agreed to delete the note, as more information is provided elsewhere.

C64: It was agreed to delete the feedback from ASSAP about coupled application status. However, CDTI will need to make sure we are monitoring for dropped application capability. Check text. Action for Michael and Sethu.

C65-68: Alter to modify section 2.2.3.1

W?: Suggest update to 2.2.3.1 to add numbers based on work done in modeling. This could be done as performance requirements. Robert, Dan and Don. May just need to be copied from the test sections into the body text.

C82: Chip offered a softened stance of making use of TIS-B with TCAS optional.

C83: Add into assumptions that any NUC translation into NIC in receiver. Clean up document to remove other NUC references. Chris will do this.

C86: Clarify the text to make clear the incoming data is not always meeting the requirements. Chip will do this.

C90: Comment accepted, but part about removing coupled status deleted due to prior removal of requirement for coupled and selected status. Also, deleted next note in document regarding coupled and selected status.

W?: Updates made to table 2-1. Need to remember to change ASSAP/FAROA requirements in the table to NAC 9 and NAC 8 (degraded).

W?: Change table 2-2 from A3-F to A3 to B3. Time for latency increased to 1 sec.

C131: Make sure any other text about panning the display are deleted, including any control requirement. Action for Michael.

C139: Chip notes that this is a current TCAS requirement. SC-147 didn't seem that concerned about this requirement. It was agreed to add the requirement as a "should", and add a note that if it is not distinguished, a waiver will be required.

Editorial group will figure out where best to add this text:

Add:

The traffic symbol should indicate proximate status.

Chip will take an action to consider a note to go with this requirement.

C146: Change requirement to MAY from SHALL.

W??: Change to "closure rates of at least +/-199" in section 2.3.5.4 (closure rate)

C147: Check to see if this is really a duplicate or not. If it is, delete it. We think this is dictating placement on the display.

W??: Don commented that in section 2.3.5.5.3, there is no requirement to specifically distinguish relative GEO altitude on the display. This is OK, but we may want to see if there is some other requirement in the document.

Also: Remove one of the two shall's from the sentence about displaying as relative and not as actual.

W??: Don doesn't believe CD issues warning level alerts. After along discussion, it was agreed to leave the text as is with the caveats about the application needing more development.

W75: 2.3.9.3 includes requirement for velocity vector. This requirement is in the MASPS. The committee agreed to keep it in the document.

Thursday

W76: Agreed – deleted

Section 3.1.8 and 3.1.9 is incomplete. Sethu and Don will work on this.

Take out figure 2-2, and make all references point to figure 2-5 (the same drawing).

Tom Pagano's comments on testing:

Tom will work with Bob Burns to suggest improvements in testing section.

There is a concern that incomplete reports may continue to be used because there is no check on the completeness of the reports. (for instance, if the accuracy reports are missed, there is no requirement to switch to a different source based on unknown accuracy.) It was suggested that new time-out tests (and associated requirements) be added. This is probably not possible within the next week, but can be added at the FRAC review. Tom and Bob were asked to make specific recommendations in time for the FRAC.

While exceeding capacity is included in Atlanta scenario, it was agreed that it would make sense to have a capacity test included. Bob will add tests.

Check consistency of tracker when transitioning from airborne to ground (and other). Atlanta data does not include air/ground transition. Bob Burns was tasked to write high-level tests to determine that they don't drop, etc. during transition.

Document logistics:
Get stuff to Chris by Tuesday.

Thursday

Requirement numbers will be numbered after FRAC.

Actions to complete all comments were added.

Jonathan suggested that document name be Aircraft Surveillance Applications System. This was agreed.

An action was assigned to discuss with Randy Bone and others from WG1 whether the velocity vector is actually required for EVApp. Taji, Don and Sethu will work on that.

Bill Riley suggested adding a requirement for a different symbol for unmanned vehicles. The MOPS does allow display of emitter category. It was suggested that Bill prepare a FRAC comment suggesting such a requirement.

Upcoming meeting/teleconference schedule

Meetings:

April 21-23 at RTCA. Full ASAS group.

SC-186 Plenary on April 24-25 for ASAS MOPS document approval

April/May: Dates TBD, tentative, 2-4 days, for resolving comments from Plenary.

Plenary meetings:

Aug 11-15 – Melbourne, Australia includes tours, etc. Working group may be added.

RFG Sep 22-24 Plenary 25-26 Review RAD document.

Teleconferences:

None planned.