

### ASSAP MOPS Group Meeting Minutes #17

The attendees included the following:

Last Name	First Name	Organization
Bachman	Larry	APL
Bulger	Chip	FAA
Demello	Edward	Boeing
Eich	Tom	ACSS
Eftekari	Robert	MITRE/CAASD
Falkov	Edward	GosNIIAS
Hammer	Jonathan	MITRE/CAASD
Levitt	Ian	Engility Corp.
Miller	Dean	Boeing
Moody	Chris	MITRE
Petruzzel	Bill	FAA
Ramdeen	Steve	FAA
Shay	Rick	NASA
Silbermann	Josh	APL
Riley	Bill	ALPA
Teetor	Tom	Defense Concept Associates, Inc.
Thomas	Dave	FAA/L-3 TITAN
Walker	Don	Honeywell

The ASSAP MOPS group meeting started at 9 am (Eastern Time) on 31 July 2007. Jonathan, co-chair, started the meeting with reviewing the proposed agenda.

1. Reviewed flight test status/data analysis (led by Robert Eftekari):
  - a. Chris Moody and Robert Eftekari created scenarios to test various ASSAP functions. Robert summarized their purposes.
    1. High Turn Dynamics: Verifies that ASSAP will maintain aircraft tracking during high rate turns.
    2. Head On Encounter: Intended to compare TCAS data with ADS-B data during head-on situations.
    3. Approach Environment: Verifies that ASSAP will not mistakenly correlate tracks when aircraft converged.
    4. Variable Turn Dynamics: Verifies that ASSAP will maintain aircraft tracking with various turn rates.
    5. Surface/Approach Environment: Verifies that TCAS and ADS-B tracks maintain correlation during high turn rates when turning onto the runway from a taxiway.
  - b. MITRE is still in the process of analyzing the recorded data. Some drop-outs of data have been observed and a preliminary analysis of one aircraft had poor transmitted ADS-B data.
  - c. Robert Eftekari presented a simulation of a parallel approach. But the NACp had to be dropped by 2 to be tracked smoothly.
  - d. The GPS units on the Convairs may have had some installation issues. The GPS on the ACSS' equipped aircraft was reporting a NACp of 3 and 4 on-ground and in-air. If a second flight test is required, Don Walker

proposed using the manufacturer's aircraft since their installations may be more stable/predicable.

2. Reviewed Section 2.2.1 ASSAP Subsystem Requirements Introduction (APL's section):
  - a. Remove the first note in Section 2.2.1; notes relating to future ASSAP MOPS is not needed.
  - b. **Action Item #85 (Chris Moody; MITRE):** In the Intro/Scope section, state that the advanced applications will not be considered for this release; only the first 5 applications are within the scope of this release of this MOPS.
3. Reviewed I/O requirements (led by Tom Eich). Updates were made real-time. Only the I/O requirements between ASSAP and the CDTI have been completed.
  - a. **Action Item #86 (Jonathan; MITRE):** Based on the reported NACv, create velocity thresholds for invalidating track angle. The quality of track angle determined by velocity coordinates may be in question below some velocity.
4. Reviewed Test Section Assignments:
  - a. Bob Burns was assigned Section 2.6.2 Verification of ASSAP Input/Output Requirements.
  - b. Currently there are no known common application requirements needed for the general application requirements section.
  - c. Dean was assigned Section 2.6.4.3 Verification of Monitoring.
5. Reviewed the following Test Sections:
  - a. Track Estimation: Should be able to go forward and create scenarios to test the estimations. Create scenarios for both ADS-B and TIS-B tracks.
  - b. Best Source Selection.
  - c. EV Acq.
  - d. ASSA/FAROA.
6. **Action Item #87 (Application section assignees):** Add a brief application description to each application section in the MOPS document.
7. **Action Item #88 (Don Walker; Honeywell):** Add a table to the MOPS document that summarizes NIC, NAC, SIL requirements for all applications.
8. **Action Item #89 (Jonathan; MITRE):** Follow up with MITRE's legal department regarding releasing the MITRE algorithms to the public and into the MOPS appendix.
9. Reviewed CD Section:
  - a. CD Appendix. Figure 2 CAZ needs to be clarified; the variables in the figure also needs to be defined. The alerting thresholds in the ASA MASP

- were also reviewed. Everyone expressed concern that the alerting thresholds may require much more analysis and flight test evaluations.
- b. Jonathan proposed reducing the scope of the CD MOPS requirements since the alerting thresholds are not mature. He suggested giving the manufacturers the flexibility in defining the alerting thresholds and algorithm. Test will be created to meet the minimum performance requirements. Changing the alerting thresholds may also change the quality thresholds; this reflects the amount of false alerts.
  - c. **Action Item #90 (Jonathan, Ganghuai, MITRE):** MITRE will re-write the CD MOPS requirements based on reducing the scope of the requirements due to the alerting thresholds not being mature.

#### 10. CDTI Coordination Meeting Issues:

- a. Review Section 2.1 General Requirements with the CDTI group. General requirements may be generalized for both ASSAP and CDTI. This review will take place at the next coordination meeting.
- b. CDTI MOPS schedule; is it in-line with our schedule?
  - i. 1<sup>st</sup> Draft of the ASSAP MOPS is scheduled to be completed at the October meeting.
  - ii. December 4<sup>th</sup>-7<sup>th</sup> may be a good time for another meeting to support a 3<sup>rd</sup> draft of the ASSAP MOPS. Another March 4<sup>th</sup>-7<sup>th</sup> meeting is being proposed.
  - iii. 1<sup>st</sup> Draft of the CDTI MOPS is scheduled to be completed in November.
- c. Degraded traffic will be defined as an optional function in the ASSAP MOPS. Good performance thresholds were chosen based on the ASA MASPS degraded thresholds in most cases.
- d. Application on/off interfaces (application on); when to send EV App Closure Rate? The ASSAP minimum will be to send the closure rate only for the coupled traffic.
- e. Selected, coupled, engaged, etc. status? These have not been finalized in the CDTI MOPS.
- f. Own-ship position and velocity from ASSAP as a requirement.
  - i. **Action Item #91 (Dean, Taji; Boeing):** Verify that using the own-ship position and velocity from the surveillance source based on DO-302 STP MOPS for the CDTI will not cause any installation issues. Specifically when the CDTI is integrated with cockpit MFDs.
- g. CD
  - i. CD alerting on CDTI; this will be accomplished aurally and with symbology indications.
  - ii. Inhibit input (On/Off). CDTI will send a CD inhibit indication.
  - iii. Pilot input change of default values. Discuss the alerting thresholds. The CDTI group has not address these crew inputs.

- iv. How do we know that you're in the GA Traffic Pattern, Terminal Area, or High Altitude Enroute. The CDTI group has not addressed these crew inputs.
  - h. GEO Alt as a backup. ASSAP will send GEO altitude as an option. CDTI may choose to use it when pressure alt is unavailable.
  - i. Review I/O Requirements (ASSAP to CDTI; CDTI to ASSAP). The CDTI group will review the ASSAP to CDTI requirements at the next CDTI telecon. The CDTI to ASSAP requirements have not been drafted.
- 11. Extrapolation of NACp and NACv discussion:
  - a. **Action Item #92 (Larry Bachman; APL):** Evaluate the application and tracking affects of extrapolating NACp and NACv. Specifically during coasting times (e.g. 24.2s for EV Acq.). The application coast times may be changed based on this evaluation.
  - b. Jonathan proposes only using the coasting time values and not the extrapolated NACp and NACv for application qualifications. The raw NACp and NACv thresholds should be used. Larry's evaluation will validate the coast times.
  - c. **Action Item #93 (Larry Bachman, APL):** Best track selection currently is based on SIL, NIC, NACp, and NACv (in this order of priority) per Joel's white paper. This will only be used in corner cases. But TIS-B will always have a SIL and NIC of 0 therefore this implementation does not make since. APL will change the requirement to always choose the ADS-B track unless it has coasted past the value for EV Acq.
- 12. Future Telecons and Meetings
  - a. Next Telecon: 11 Sep 07 at 2-4PM Eastern Time
  - b. Next Group Meetings:
    - i. 2-4 Oct 07 at RTCA; DC
    - ii. 4-7 Dec 07 at Honeywell tentatively; Phoenix, AZ
    - iii. 15-17 Jan 08 at Collins; Melbourne, FL
    - iv. 21-23 Apr 08 at RTCA; DC
    - v. 4-7 Mar 08 at RTCA; DC
- 13. Meeting ended at 4PM on 02 Aug 07.