Summary of Meeting #12, of RTCA SC-186, Working Group 5
For the Development of a MOPS for UAT
http://adsb.tc.faa.gov/ADS-B/186-subf.htm

The meeting was held 8 – 12 April 2002, in the McIntosh Room at RTCA Headquarters in Washington DC. The meeting was called to order at 9 a.m. on 8 April 2002 by Co-Chairman George Ligler. George welcomed all attendees and asked that each one introduce themselves and their organization. The attendees included:

Larry Bachman – JHU – APL	Stan Jones – Mitre CAASD	Bob Saffell – Rockwell Collins
John Barrows – Supporting FAA	George Ligler – PMEI	LCDR John Segerson – USN - JCS
Bob Burns – Titan - FAATC - ACB-410	Chris Moody – Mitre CAASD	Bernald Smith – SSA and FAI
Mike Castle – JHU – APL	Tom Mosher – UPS Aviation Technologies	Tom Teetor - DCA
Gary Furr – Titan - FAATC - ACB-410	Vincent Nguyen – FAA (AND-510)	Bill Thedford – Titan (USAF Hanscom AFB)
Carl Gleason – Advancia – FAA/NISC	Tom Pagano – FAA Tech Ctr - ACB-410	David Thomas – Titan - FAATC - ACB-410
James Higbie – JHU – APL	Brent Phillips – FAA – ASD	Ed Valovage – Sensis Corp.
Richard Jennings FAA (AIR-130)	Ei Mon Phyu – Titan - FAATC ACB-410	

The following known regrets to attendance to this meeting were received prior to, or during the meeting:

- John Doughty – Garmin International
- Nikos Fistas – Eurocontrol

1. George Ligler briefly commented on the fact that WG-5 members were encouraged to be at the RTCA SC-186 Plenary on Wednesday and Thursday, and he asked again if there were any WG-5 members that had non-concur issues to bring before WG-6 as that WG discussed comments related to the proposed DO-242A.

2. The Working Group was asked to review and approve the Minutes to Meeting #11. Hearing no comment or request for change, the Minutes to Meeting #11 were accepted as published.

3. The Working Group discussed future meeting dates and locations. The following table indicates the currently agreed upon meeting dates and places for meetings of RTCA SC-186 Working Group #5.

Dates/Time	**Meeting Place**
9am Monday, 29 April to 4pm Friday, 3 May	Hosted at the offices of Titan Systems in Mays Landing NJ, near the William J Hughes FAA Technical Center in Atlantic City NJ Travel info and lodging details are available on the ADS-B/UAT web site
9am Monday, 17 June to 4pm Friday, 21 June	To be held in conjunction with the SC-186 Plenary at RTCA facilities: **WG-5 to meet Mon, Tues & Wed, with Plenary on Thurs & Fri** Travel info and lodging details are available on the ADS-B/UAT web site
Fall 2002 Joint RTCA & Eurocae Plenary: 23 – 24 Sept.	Fall 2002 RTCA SC-186 Plenary scheduled for Monday & Tuesday, 23-24 September. This is not a WG-5 meeting, but many members will want to attend the Joint Plenary to discuss DO-242B consolidated requirements.

4. The Working Group continued with the presentation of Working Paper WP-12-01R1 by Larry Bachman and Mike Castle, partially in response to Action Items 11-1 and 11-2. This Working Paper provided Multi-Aircraft UAT Simulation Results for Ground Receivers

Using the Sectorized Antenna in the Core Europe 2015 scenario. During review and discussion of WP-12-01R1, Larry Bachman and Mike Castle accepted **Action Item 12-01** to run further simulations for co-located 980 MHz TACAN in LA2020 to achieve performance estimates similar to those done for Core Europe 2015, in order to show isolation levels that need to be achieved. Larry and Mike also accepted **Action Item 12-02** to take the low-density aircraft scenario and put an aircraft in the middle of that scenario near a 979 MHz TACAN Ground Station operating at 10-Kw to determine necessary isolation.

5. Continuing in response to Action Items 9-9 and 11-4, Larry Bachman presented Working Paper WP-12-11, the Multi-Aircraft UAT Simulation Results for Current European scenario. The results detailed in WP-12-11 assess the level of UAT equipage that could be accommodated in Europe now, without re-assigning any TACAN or DME frequencies. In this simulation, the UAT system was evaluated in the current European environment, assuming the worst-case position (over western Germany) with respect to DME interference (3 on-channel and 2 off-channel TACAN transmitters). In almost all air-to-air cases, UAT meets MASPS requirements. A3 at high altitudes receives A3 transmissions at 95% level to 130 NM (84% level at 150 NM). A2 at 15,000 feet receives A2 TCR+0 transmissions to 35 NM.

6. Mike Castle continued by presenting Working Paper WP-12-14 in partial response to Action Item 11-03. WP-12-14 summarizes the analysis of reception of Ground vehicles for LA2020 and Core Europe 2015 scenarios.

7. Mike Castle then presented Working Paper WP-12-13 in response to Action Item 11-05. WP-12-13 presents the results of the Multi-Aircraft UAT Simulation in the Core Europe 2015 scenario, re-running the Aircraft Track Acquisition for a 99% probability of acquisition, originally presented in UAT-WP-11-17 in response to Action Item 10-6.

8. Mike Castle continued by presenting Working Paper WP-12-15 in partial response to Action Item 11-03, showing the results from the Multi-Aircraft UAT Simulator on the surface in the LA Basin in the LA2020 scenario. The results from WP-12-15 showed that almost all of the performance curves were above the required 1.5 seconds over 5 NM. After Working Group discussion, UPS-AT suggested modifying the transmission MSO if an A/V is determined to be in the "ON-GROUND" condition. The Working Group ***agreed*** to modify the transmission MSO when "on-ground" by limiting transmissions to 0 – 800 MSO (4 bins), except for A0 and A1L equipment, which typically will not have a mechanical means for determining "ON-GROUND" status.

9. The Working Group continued by beginning the review of Working Paper WP-12-07, which represented the 12th draft of the UAT MOPS Section 2.2. Review of Section 2.2 (WP-12-07) continued throughout much of the remainder of the meeting. An updated version of WP-12-07 will be posted on the ADS-B/UAT web site after the end of Meeting 12 to reflect changes made during the meeting and in response to agreements made during the RTCA SC-186 Plenary to approve DO-242A.

10. The Working Group also reviewed Working Paper WP-12-06, which represented the 4th draft of UAT MOPS Section 2.4, and WP-12-05R1, which is the updated Test Procedures Status Matrix. Review of Section 2.4 (WP-12-06) continued throughout most of the remainder of the meeting. An updated version of WP-12-06 will be posted on the ADS-B/UAT web site

after the end of Meeting 12 to reflect changes made during the meeting and in response to agreements made during the RTCA SC-186 Plenary to approve DO-242A.

11. The following **Action Items** were identified during the course of this and previous meetings. The asterisk (*) beside a name or organization indicates that they are the lead for the resolution of that Action Item. Actions shown here are those **Action Items** that remain OPEN, in total or in part, after the end of the Meeting being report on in these Minutes.

Action Number	Action Description	Assigned to	Status
6-6	Draft Appendix B.2 on FIS-B MASPS compliance.	George Ligler Mike Castle	Assess at Meeting 12
10-4	Simulate the reception of different aircraft on approach (2000 feet) by A0 on the ground.	Mike Castle Larry Bachman	Mtg 12
10-5	Insert a short paragraph into Section 1 concerning Appendix M and the potential importance of its conclusions.	George Ligler	Mtg 12
11-07	Include in Appendix D more stringent signal rejection requirements than those in 2.2.8.2.3	Ed Valovage Larry Bachman	
12-01	Run MAUS for co-located 980 MHz, 5-Kw TACAN in LA2020 to achieve performance estimates similar to those done for Core Europe 2015, to show isolation levels that need to be achieved, for example a cavity filter.	Larry Bachman Mike Castle	
12-02	Take the low-density aircraft scenario, and put an aircraft in the middle, co-located with 979 MHz TACAN at 10-Kw, to determine necessary isolation. Run non-sectorized. Run the sectorized ONLY if necessary.	Larry Bachman Mike Castle	

12. The **Working Papers** shown in the following table are specifically for the Meeting being reported in these Meeting Minutes. Working Papers for all WG-5 Meetings, as well as the Meeting Agendas, Meeting Minutes, Meeting Schedules and files leading to the production of a UAT MOPS are posted on the ADS-B UAT web site at:
http://adsb.tc.faa.gov/ADS-B/186-subf.htm

Working Paper	Size	Description	Introduced At:
UAT-WP-12-01R1	78KB	Multi-Aircraft UAT Simulation Results for Ground Receivers Using Sectorized Antennae in the Core Europe Scenario, presented by Larry Bachman and Mike Castle	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-02	49KB	Draft #2, Proposed Section 1, presented by Bill Flathers	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-03	24KB	Draft #1, Proposed Appendix L, presented by Chris Moody	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-04	125KB	Draft #2, Proposed Section 3, presented by Tom Mosher	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-05R1	70KB	Revision 1 of the Test Procedure Matrix corresponding to Section 2.2L and Section 2.4D, presented by Gary Furr	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-06	611KB	Draft #4 of Section 2.4 of the UAT MOPS, presented by the Test Procedure Team	Meeting #12, 4/8/02 RTCA, Washington

Working Paper	Size	Description	Introduced At:
UAT-WP-12-06A	3,788KB	Draft #4 of the UAT MOPS Test Procedures in Section 2.4, presented by the Test Procedure Team **with Table of Contents, Table of Figures and Table of Tables with hyperlinks to the respective sections**	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-07	325KB	Draft #12 of the UAT MOPS Section 2.2, presented by Chris Moody and Gary Furr	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-07A	2,208	Draft #12 of the UAT MOPS Section 2.2, presented by Chris Moody and Gary Furr **with Table of Contents, Table of Figures and Table of Tables with hyperlinks to the respective sections**	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-08	13KB	Draft #1 of Proposed Appendix N: Setup Files for Test Procedures, presented by Tom Pagano and Gary Furr	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-09	396KB	Draft #1 of Proposed Appendix K: UAT System Performance Simulation Results, presented by Larry Bachman	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-10	61KB	Draft #2 of Proposed Appendix D: UAT Ground Infrastructure, presented by Ed Valovage	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-11	89KB	Multi-Aircraft UAT Simulation Results for Current Core Europe Scenario, presented by Larry Bachman and Mike Castle in response to Action Items 9-9 and 11-04	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-12	24KB	Draft #4 of Proposed Section 4: Equipment Operational Performance Characteristics, presented by Greg Kuehl	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-13	21KB	Multi-Aircraft UAT Simulation Results for Aircraft Track Acquisition, presented by Larry Bachman and Mike Castle in response to Action Item 11-05	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-14	25KB	Multi-Aircraft UAT Simulation Results for Ground Vehicle Reception and Receiver Performance, presented by Larry Bachman and Mike Castle in response to a portion of Action Item 11-03	Meeting #12, 4/8/02 RTCA, Washington
UAT-WP-12-15	32KB	Multi-Aircraft UAT Simulation Results for Surface to Surface Performance, presented by Larry Bachman and Mike Castle in response to a portion of Action Item 11-03	Meeting #12, 4/8/02 RTCA, Washington