

AERONAUTICAL MOBILE COMMUNICATIONS PANEL (AMCP)

Working Group C Meeting No. 2
Noordwijk, Netherlands
7-11 May 2001

Status of UAT MOPS Development

Presented by the U.S. Member

Prepared by
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SUMMARY

<p>This working paper presents the status and schedule for the development of the RTCA MOPS for the Universal Access Transceiver (UAT).</p>

1. Introduction

- 1.1 This working paper presents the status and schedule for the development of RTCA Minimum Operational Performance Standards (MOPS) for the Universal Access Transceiver (UAT).

2. Establishment of the MOPS Working Group

- 2.1 Efforts toward establishment of an RTCA MOPS for UAT began with a letter written by Steven Zaidman, (FAA Associate Administrator for Research and Acquisitions) dated June 2, 2000. This letter is provided as an attachment. In this letter, it was requested that “RTCA begin immediate work on the development of a UAT Performance Standard,” and further, upon the completion of those performance standards that “RTCA continue working toward the completion of a full UAT MOPS.” On August 21, 2000, RTCA distributed a letter to RTCA members, RTCA International and Academic Associates, and the membership of RTCA Special Committee (SC) 186 (ADS-B) requesting their response to whether they supported and/or would participate in the development of a UAT MOPS. At the September 13, 2000 meeting of the RTCA Program Management Committee (PMC), the response to this inquiry was presented to the PMC as evidencing sufficient government and industry participation and interest, particularly from avionics suppliers, to proceed. The chairman of RTCA SC186 (Captain Rocky Stone of United Airlines) confirmed that a UAT MOPS might be produced by February, 2002. Subsequently, RTCA SC-186 Working Group 5 (WG-5) was established, with the task of developing a MOPS for UAT. The working group consists of between 40 and 50 experts from the United States and Europe.

3. Guidance and Major Objectives for the WG

- 3.1 The following agreements have been reached by WG5 regarding guidelines and objectives for the work of the group:
- a) The group would target January or February 2002 for submitting the UAT MOPS document to the RTCA PMC for its review and approval.
 - b) In order to meet this date for submission to the PMC, it was agreed that the schedule does not permit reflection, in the initial UAT MOPS, of a planned revision to RTCA/DO-242 (the ADS-B Minimum Aviation Performance Standard) or reflection of the in-progress TIS-B MASPS.
 - c) The initial UAT MOPS will be responsive to requirements—additional to those in the ADS-B MASPS—emanating from Eurocontrol, should those requirements be firm by May 2001
 - d) The WG further agreed to incorporate the FIS-B MASPS (approved in March 2001) into its considerations.
 - e) The WG agreed to the goals of UAT compatibility with DME operations with no more than 1 DME frequency to be vacated and compatibility with JTIDS/MIDS (Link 16) operations under agreed operational scenarios.
 - f) Finally, the WG agreed that a UAT frequency assignment (initially for the U.S., with as much international pre-coordination as possible) decision needed to be made five (5) months before the submission of the UAT MOPS to the PMC. This schedule dependency has been reported to RTCA and FAA management.

4. Meeting Schedule of the WG

4.1 The Table below lists the past and planned meetings of the WG

Dates/Time	Meeting Place
Dec 18-19 2000	RTCA HQ (kickoff meeting)
February 20- 23	Melbourne Florida Hosted by Rockwell Collins
April 2- 5	Eurocontrol, Brussels
May 1- 3	Salem, Oregon - Hosted by UPS-AT
June 19-22	Hanscom AFB, Lexington, MA
July 31- August 3	William J Hughes Technical Center, Atlantic City NJ
Sept 25-27	European venue to be determined

5. Current Activities and Accomplishments

5.1 Most activities to date have been in support of the selection of a globally viable UAT frequency assignment. Toward this objective the work has focused on assessing and optimizing the compatibility between UAT with that of other pertinent systems, specifically DME and JTIDS/MIDS (also known as Link 16). Below are listed some of the major related activities:

- a) Bench Tests to characterize UAT receiver response to transmissions from DME beacons and Link16.
- b) Bench tests to characterize DME interrogator receiver response to UAT transmissions. Bench test results are being used to “calibrate” simulation tools being developed.
- c) Determination of the worst case DME environments from both US and European assignment data bases for the “least impact” candidate DME channels.
- d) Link 16 interference scenarios are being defined and agreed.
- e) Bench tests are being performed to determine the minimum practical UAT receiver bandwidth in order to minimize impact of adjacent channel DME assignments.
- f) Simulation tools are being developed for the following uses:
 - ⇒ Determining optimum Forward Error Correction (FEC) coding to maintain receiver performance in expected interference environment (self interference as well as interference from other systems).
 - ⇒ Assuring the selected UAT transmit power levels and receiver sensitivity can support the required ADS-B applications in the projected future high-aircraft-density environments.

5.2 Additionally, initial drafts of most sections of the MOPS have been developed for review within the group. Information on any of the work described here is available (see <http://adsb.tc.faa.gov> under ADS-B and WG5 for draft text).

6. Recommendation

6.1 It is recommended that the AMCP WG-C consider this information in planning its future work programme.

[Recreation of the letter from Steven Zaidman to the RTCA, dated June 2, 2000]

Mr. David Watrous
President, RTCA, Inc.
1140 Connecticut Avenue, NW
Washington, DC 20036

Dear Mr. Watrous:

In my letter, dated July 23, 1999, I asked for RTCA's help in refocusing the activities ongoing in Special Committees (SC) 186, 193, and 195, to more closely align their work with the automatic dependent surveillance-broadcast (ADS-B) application priorities established by the Safe Flight 21 Steering Committee. I also asked for SC-186's assistance in providing additional ADS-B minimum operating performance standards (MOPS), such as for universal access transceiver (UAT) or very high frequency datalink Mode-4, once a link decision had been made.

I am pleased with the progress that has been made in refocusing the work of the Special Committees. As for my request to delay additional MOPS work, it appears that recent events such as the Alaska Capstone contract award and increased interest from the manufacturing sector, will require the development of UAT MOPS much sooner than anticipated.

In September 1999, the Alaska Capstone Program awarded a production contract that provides both ADS-B avionics and air traffic control infrastructure, using the UAT datalink. The contract also contains options, which allow for statewide deployment of an operational ADS-B system. In light of these facts, Aircraft Certification is now in immediate need of performance standards for use as guidance material by field personnel granting certification approvals.

I am requesting that RTCA begin immediate work on the development of a UAT performance standard, and require delivery of this document by the middle of 2001 to coincide with the planned "ADS-B Link Decision." Prior and planned testing will provide much information on UAT performance characteristics, and therefore I am reasonably confident that the UAT performance standards can be completed in the time frame specified. I am also requesting that once UAT performance standards are completed, RTCA continue working toward the completion of a full UAT MOPS. Completion of the UAT performance standards and subsequent full UAT MOPS will assist us tremendously in the Alaska Capstone effort and Safe Flight 21 in general, helping ensure success for these "Flagship" programs.

I have asked Paul Fontaine, the FAA's co-chair to SC-186, to begin the process of identifying a nucleus of personnel to take on this task. We would appreciate RTCA's help in canvassing industry, to identify other manufacturers who would be interested in participating in the development of these MOPS. We stand ready with offer of resources, to help "kick start" this important task. If you have any additional questions on this matter, please do not hesitate to contact me.

Sincerely,

[signed originally by]

Steven Zaidman
Associate Administrator for
Research and Acquisitions

cc: Mr. Hal Moses