International Civil Aviation Organization

SIXTEENTH MEETING OF THE COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND METEOROLOGY SUB-GROUP (CNS/MET SG/16) OF APANPIRG

Bangkok, Thailand, 23 – 27 July 2012

Agenda Item 4: Aeronautical Mobile Service (AMS)

3) other AMS related Issues

OUTOCOME OF THE FIRST MEETING OF AERONAUTICAL COMMUNICATION PANEL WORKING GROUP – S (SURFACE) REPORT

(Presented by the Secretariat)

SUMMARY

ACP WG-S was established by ACPWG-W in its third meeting. This paper provides a brief review of its First meeting held in Montreal on 19 and 20 March 2012.

This paper relates to –
Strategic Objectives:
*A: **Safety** – Enhance global civil aviation safety*
*C: **Environmental Protection and Sustainable Development of Air Transport** – Foster harmonized and economically viable development of international civil aviation that does not unduly harm the environment*

Global Plan Initiatives:
GPI-13 Aerodrome design and management
GPI-22 Communication infrastructure

1. Introduction

1.1 Third Meeting of Aeronautical Communication Panel (ACP) Working Group of the Whole (ACP WG-W/3) held from 18 to 22 January, 2010 established Working Group (S) – Surface to develop SARPs and Guidance Material for the Airport Surface Data-link. It was considered to be a high priority job as it forms an early requirement for NextGen and SESAR programmes. It was agreed that the lifetime of the Working Group should be brief, as it will deal only with the high-level aspects of the airport surface data-link and make extensive use of references to industry standards (IEEE 802.16e) as called for in Assembly Resolution A36-13.

1.2 First meeting of Aeronautical Communication Panel (ACP) Working Group – S for Surface Air-Ground Data-link Communication System (WG-S/1) was held in Montreal, Canada on 19 and 20 March, 2012. 20(Twenty) participants from ICAO Member States and industry participated in the meeting.

2. Discussion

Status of relevant work programme of States and Organizations

2.1 SESAR Work Package 15.2.7

With respect to the SESAR Aeronautical Mobile Airport Communications (AeroMACS) program EUROCONTROL reported all contributions made by AeroMACS standardization agencies notably EUROCAE, RTCA, ARINC and AEEC. All the work activities and deliverables of the relevant projects were described in detail and information on actual status of all the relevant activities was provided as general information to the meeting.

2.2 RTCA Special Committee 223

Information was provided on *Aeronautical Mobile Airport Communication System Profile* and status of the work by RTCA 233. The Profile document has been reviewed by the industry as part of the RTCA final review. It specifies special adaptations required to develop WiMAX (Worldwide interoperability for Microwave Access, a wireless communication standard designed to provide 30 to 40 megabit-per-second data rate) based wireless equipment designs for use of mobile wireless services on the airport surface. Some of the required changes include shifting the frequency of operation from the existing wireless bands to 5000 – 5150 MHz frequency spectrum, the specification of the emission mask required for adjacent channel and out of band compatibility, and the requirement to remain under the noise floor specified for compatibility with the Low Earth Orbit (LEO) satellite services. The final point that the profile document specifies is the equipment setting required to ensure international compatibility. This will also apply to equipment not covered by a TSO that is the equipment mounted on vehicles other than aircraft. One of the most significant outcomes of the meeting was the listing of the mobile and stationary applications which AeroMACS was expected to support:

- *ATC Communication*
  - ATC Communications with any aircraft (anywhere on the airport surface)
  - ATC communication with any vehicle in the airport movement area (runway and taxiways, but not ramp area)
  - Tower Data Link System (TDLS) for flight clearances
  - Loading FMS via CMU with 4D trajectories and modifications
- AOC,
  - Advisory and non-ATS Voice/Data between airlines and pilots
  - Collaborative decision making and 4D trajectory negotiations
  - EFB data, GPS and AIS updates; hazard advisories; NOTAMs
  - Surface management, gate and ramp control
  - Graphical weather corresponding to 4D trajectory
- SWIM
  - Mobile SWIM and airport surface users
  - Fire, safety, snow removal, de-icing (in movement areas)
  - Airport operations security; security video from cockpit and cabin
  - Gate link applications such as navigation database updates

- ❖ Stationary applications
- ❖ Navigation Aid monitoring and maintenance
- ❖ Voice remote radio
- ❖ Airport Surveillance

Discussing the radio spectrum requirement for AeroMACS, the meeting noted that the recent World Radio Conference (WRC) had not agreed to an additional allocation to the aeronautical mobile (route) service in the frequency rage 5000 – 5030 MHz. It was informed that at least in one State, the national frequency table permits use of 5000 – 5150 MHz band for such purposes and hence it was justified to develop the SARPs to cover the frequency range 5000 – 5150 MHz. Meeting also decided to seek clarification from Working Group F on this subject. Meeting developed an Action Item to inform FMG (Frequency Management Group) and ICAO Regional Offices regarding their role in supporting AeroMACS frequency management. Issues regarding AeroMACS's inability to support multi-cast or broadcast and request to WiMAX Forum to approve use of aviation spectrum for AeroMACS were also discussed.

2.3 AeroMACS Evaluation Status – ITT

Overview of the Aeronautical Mobile Airport Communications System (AeroMACS) prototype test bed deployed at the Cleveland Hopkins (CLE) airport was provided to the meeting. Test bed is being used to conduct fixed and mobile tests of AeroMACS network performance in an airport environment to provide inputs to standards development and guide design and deployment of future systems. The evaluation results support development of AeroMACS Profile specifications and Minimum Operational Performance Standards (MOPS) document.

2.4 ENRI Status and Work Plan for AeroMACS

ENRI Five Year plan to develop and validate base station and user terminal equipment for AeroMACS was presented to the meeting. The target date of completion of this task is 2016. The significant relevant issues, as reported to the meeting are as follows:

- It was reported that MIMO (Multiple Input Multiple Output) provides various benefits including improved performance and increased protection from masking and shadowing effects
- Careful consideration should be given to base station location to minimize masking and shadowing effects
- ENRI informed that the equipment they were using were sourced in Japan and hence the systems were found ideal candidate to be associated for interoperability testing.

2.5 Development of SARPs

It was agreed that most of the requirements requiring validation would reside in the guidance material/technical manual. Efforts would be dedicated to the SARPs in 2012 with the work on guidance material/technical manual taking place in 2013. Once all the validation work is completed, the SARPs and guidance material would then be submitted for approval together with a prospective publication date of 2014.

2.6 Date and Place for Next Meeting

It was decided that WG-S should meet twice in a year, but use of WEBEX or other similar services to have remote meetings in the interim was encouraged. Montreal was tentatively agreed as the venue for the next meeting, however option of holding the meeting in Europe was also agreed to be considered. The date of the next meeting however could not be finalized.

3. Action by the Meeting

3.1 The meeting is invited to note the outcome of the ACP WG-S/1 meeting.

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