International Civil Aviation Organization

FOURTEENTH MEETING OF THE COMMUNICATIONS/NAVIGATION/SURVEILLANCE AND METEOROLOGY SUB-GROUP OF APANPIRG (CNS/MET SG/14)

Jakarta, Indonesia, 19 – 22 July 2010

Agenda Item 4: Aeronautical Mobile Service (AMS)

1) Discuss satellite data-link communication continuity issues

OUTCOME OF FIRST SATELLITE OPERATIONAL CONTINUITY MEETING

(Presented by the Secretariat)

SUMMARY

Issues related to the performance of satellite communication datalink were raised in the CNS/MET SG/12 and were subsequently discussed in APANPIRG 19 meeting and APANPIRG decided that ICAO should organize a meeting of the stakeholders to workout a solution. First Satellite Operational Continuity Meeting (SOCM/1) was organized to meet the requirements of APANPIRG Conclusion 19/24 on this subject. This paper presents in brief the outcome of the SOCM/1 meeting and also reports on some of the developments that have taken place since then.

This paper relates to:

Strategic Objective:
A – Safety
D – Efficiency

Global Plan Initiative:
GPI – 17 Data link applications
GPI – 22 Communication infrastructures

1. Introduction

1.1 Usage of data link communication has been recommended in the ICAO CNS/ATM Systems. Satellite Data-link Communication has been found particularly useful over oceanic and remote airspace. In a paper presented to CNS/MET SG/12 meeting, USA brought out issues related to the performance of Satellite Communication data-link and the work carried out by '*INMARSAT instigated FANS Satcom Improvement Team (FSIT)*'. The issue was subsequently raised in APANPIRG/19 meeting. APANPIRG/19 noted with concern, the technical and funding issues associated with the satellite data-link service provision and consequential operational impact due to the rapid growth of civil aviation. The meeting agreed that the operational problems need to be solved and the satellite communication issue should be urgently addressed. Based on above, following Conclusion was adopted by APANPIRG.

Conclusion 19/24 – Satellite Communications Service Performance

That,

a) States and International Organizations be requested to liaise with satellite service providers to establish a mechanism to maintain and modernize the satellite communication infrastructure; and

b) ICAO be invited to organize a meeting by end of 2008 for stakeholders to review the performance and provision of satellite data ink communications in the Asia/Pacific Region and find a solution.

2. Discussion

2.1 Issues related to the performance of satellite data-link communication were raised in the CNS/MET SG/12 and APANPIRG/19 meetings and based on general consensus on this issue, APANPIRG adopted conclusion 19/24 requiring the States and International Organizations to liaise with satellite service provider to establish a mechanism to maintain and modernize the satellite communication infrastructure and ICAO be invited to organize a meeting by the end of 2008 for the stakeholders to review the performance and provision of satellite data link communications in the Asia/Pacific Region and find a solution, where required.

2.2 First requirement of APANPIRG Conclusion 19/24 (i) was met through ICAO APAC Office State Letter dated 16 February 2009. State were requested to take up with their Satcom data-link service provider, establishment of the mentioned mechanism to maintain and modernize the satellite communication infrastructure so that the specifications prescribed in various ICAO documents in this regard could be met.

2.3 Satellite Data-link Operational Continuity Meeting, to meet the requirement of APANPIRG Conclusion 19/24 (ii) was held from 26 to 28 August 2009 in conjunction with the Eleventh Meeting of FANS Implementation Team for Bay of Bengal and a Seminar on FANS Data Link Application. The meeting was attended by 56 participants from 12 States, IATA, IFALPA, ARINC, SITA, Boeing, INMARSAT and Thrane & Thrane.

2.4 Meeting appreciated the work done by the FSIT participants, which included additional log-on channels, enhancement to GES protocol timers/counters, ground network diversity routing and Network Operations Center co-ordination for outage notifications.

2.5 IATA, in its presentation stressed on the importance of satellite data link as a key component of future ATM development and was of the view that the plans to implement RNP 4 can not be completed unless satellite date communication links are developed to meet the specified requirements. Boeing informed that they, along with FAA were working on two SATCOM related initiatives, qualifying Iridium based SATCOM systems for use as ATC datalink/voice communication and approval of INMARSAT/Iridium based SATCOM voice communication as long range communication system. SITA informed the meeting about their reason to reduce the number of GES and the developmental works that had been carried out on their end. Meeting was informed that ARINC is aggressively pushing ahead to launch Classic Aero over I4 and to improve redundancy of the systems through the use of both I3 and I4. INMARSAT updated the meeting about their developmental efforts and informed about the implementation of Classic Aero over I4. The also informed about their decision to own and operate their own GESs in support of aircraft operators whishing to have both Classic Aeronautical and SwiftBroadband (SBB) services provided through the same antenna on the airframe. Thrane & Thrane briefed the meeting about the works done by them without any monetary support from any external agency. Their improvements included the release of amendments CP96, CP95, better log-on performance without having to upgrade AES etc.

2.6 Japan presented significant features of MTSAT and it was expressed that though the infrastructure was in place with proven performance records but the number of user aircraft was still limited. It was informed that MTSAT services were being used only by 209 aircraft and the Air Traffic Control Centers at Fukuoka, Oakland, Anchorage, Singapore etc. 100% availability (not including the terrestrial link) was claimed in the presentation. The system has been upgraded to enhance the capacity and provide inter-operability with I4 satellites. Noting that MTSAT is able to cover most of the airspace in Pacific region and over Indian ocean and its high performance record which satisfies RCP 240 requirements, the meeting encouraged States, operators and data link service providers to consider conducting trials for using MTSAT as a near term solution to overcome the current limitations of satellite data link service being provided by Classic Aeronautical Services over INMARSAT 3.

2.7 Meeting was of the view that a lot of developments like downturn of economic climate, emerging alternate solutions like Classic over I4 network, FANS trial over Iridium etc. had taken place since the last meeting of FSIT in 2008 and urged FSIT to reconvene to consider these developments. It was generally expressed that expecting avionics upgrade was un-realistic in view of the economic conditions.

2.8 Meeting was informed about Required Communication Performance (RCP) specifications to meet operational objectives and the development in the Global Operational Data Link Document (GOLD). Meeting formulated following draft Conclusion urging the States/IATA to provide information for Appendices of the GOLD.

Draft Conclusion 20/xx – State and Operator aircraft information for GOLD

That,

a) States be urged to provide Region & State Information for inclusion in the GOLD Appendix E, by sending the completed form(s) for their flight information regions (FIRs) or control areas (CTAs) by 30 October 2009; and

b) IATA be urged to coordinate with member airlines for providing operator & aircraft information for GOLD Appendix F by sending completed form(s) for each variance, clarification, or addition to applicable aircraft type by 30 October 2009.

2.9 This draft Conclusion was subsequently adopted by APANPIRG as Conclusion 20/31. Through a State Letter dated 25 September 2009, States and IATA were requested to provide information as required in the Conclusion.

2.10 It was expressed that implementing RNP4 based separation services is the way forward in the vast oceanic airspace in the region and satellite data-link is the only option available to support associated communication and surveillance needs and hence an early resolution of all the operational issues is very important. Appreciating the good work done by FSIT, the meeting encouraged FSIT to convene its meeting to review the current status and provide update to the next SOCM Meeting. It was suggested that the next FSIT meeting should be chaired by IATA and should include other issues like INMARSAT I4 Network, Iridium Network etc. The meeting agreed that second SOCM should be organized by ICAO after FANS SIT reviews the status and provides updates on consolidated improvement plans and develops recommendations. On the basis of this discussion, meeting formulated following draft Conclusion for the consideration of APANPIRG.

Draft Conclusion 20/xx – 2nd SOCM meeting

That, ICAO be invited to organize 2nd meeting in 2010 for stakeholders to review the developments on the performance and provision of satellite data link communication in the APAC Region and develop a solution.

2.11 SOCM/1's recommendation to hold SOCM/2 in 2010 was adopted by APANPIRG as Conclusion 20/32 and the meeting has been tentatively scheduled in October 2010. No information however is available on the FSIT meeting.

2.12 It has been informed that not much has happened since the last SOCM meeting except for a recent announcement by Iridium to build their NextGen system. It has also been report that there have been some I3 ground earth station (GES) upgrades in last one year to provide some improvements. It has been informed that SITA has planned an upgrade to the Satellite AIRCOM GES with the new software (called R15 upgrade). The first installation is reported to be in Aussaguel GES, which covers both the Atlantic East and West ocean regions. The installation was reported to be scheduled from 31 May to 3 June. It has been learnt that Santa Paula GES is also getting upgraded to R15.

2.13 INMARSAT in their policy have permitted aircraft equipped with SwiftBroadband (SBB) to use Classic Aero in their I4 network. But this facility is being used mostly by the General Aviation (GA) aircraft as most of the commercial airliners are not equipped with SwiftBroadband (SBB). Hence this provision has a very limited use, though it provides some redundancy.

2,14 One of the major problems, satcom datalink is facing is the lack of adequate log-on capacity in the system during a log-on storm. Thrane & Thrane had proposed a solution to this problem through modification CP96, wherein more channel capacity in the GES can be used for log-on purposes, but this solution requires upgrade to GES and to AES also and is expected to be very costly. Keeping in view, airline operators' reluctance to invest, Thrane & Thrane has now proposed another solution called GES Hosting. In this it will be possible to configure multiple pairs of log-on channels (one P_{600} channel paired with tow or more R_{600} channels). New GES IDs will be assigned to those new log-on pairs and by adding these new GES IDs in the ORT table in the AES, more log-on capacity will be available. But then, this also will require update for the ORT table.

2.15 Considering the multiplication of efforts in different regions to address satellite datalink problems, meeting agreed that the issued should be addressed at a global level and formulated following draft Conclusion for the consideration of APANPIRG:

Draft Conclusion 20/xx – Technical Limitations in Satellite Data Link Communication Capability

That, recognizing current technical limitations in satellite data communications capability that impacts PBN based separation applications particularly for RNP 10 and RNP 4 in the remote and oceanic area, ICAO is invited to address this issue at global level.

2.16 The proposed draft Conclusion was adopted by APANPIRG as Conclusion 20/34 and the issue has been taken up with ICAO following the prescribed procedure. Air Navigation Commission, while noting that ICAO will undertake case study on the ownership and control of the air navigation services infrastructure, including the development of a draft service level agreement for use by air navigation service providers, urged usage of two or more autonomous networks by States and international organizations to get much better availability. ICAO Secretariat was asked to monitor further development in this matter. Based on the ANC recommendation, States have been urged to use two or more autonomous networks for their satcom datalink requirements through State Letter T 4/8.13:AP114/10 (CNS) – Technical Limitations – Satellite Data-link dated12 July 2010.

2.17 Meeting also discussed issues related to the usage of satcom voice for Air Traffic Services purposes. Outcome of trials conducted in Europe and in USA were briefed to the meeting.

3. Action required by the Meeting

3.1 The meeting is invited to note:

i) the outcome of SOCM/1 meeting

ii) the developments that have taken place; and

iii) recommend objective for the SOCM/2 meeting and suggest items to be included in the agenda for the meeting.

– – – – – – – – – – – – –