International Civil Aviation Organization

SATELLITE DATA-LINK COMMUNICATION SEMINAR AND SECOND SATELLITE DATA-LINK OPERATIONAL CONTINUITY MEETING (SOCM/2)

(Bangkok, Thailand, 08 -10 February 2012)

Agenda Item 1: Review planning and implementation programmes involving satellite communications (SATCOM) data link services (Update since SOCM/1)

BRIEF REVIEW OF SOCM/1 OUTCOME AND SUBSEQUENT REGIONAL DEVELOPMENTS

(Presented by the Secretariat)

SUMMARY

APANPIRG, in its Nineteenth meeting invited ICAO to organize a meeting of the stakeholders to review issues related to the performance and provision of satellite data-link communication. The meeting, Satellite Data-link Operational Continuity Meeting (SOCM) was organized from 26 to 28 August 2009. This paper reviews the significant outcomes of that meeting and the developments that have taken place since then.

This paper relates to -

Strategic Objectives:
A. Safety – Enhance global civil aviation safety
C. Environmental Protection – Minimize the adverse effect of global civil aviation on the environment

Global Plan Initiatives:-
GPI 17 – Data-link applications
GPI 22 – Communication Infrastructure

1. Introduction

1.1 Concerns on the satellite data-link communication performance and related funding and technical issues were raised in the APANPIRG Sub-groups' meetings in 2008. APANPIRG/19 (September 2008) adopted Conclusion 19/24 inviting ICAO to organize a meeting for the stakeholders to review the performance and provision of satellite data-link communication in the Asia/Pacific Region and develop a solution to mitigate the problems, both technical and operational, being faced by the civil aviation community. In accordance with this Conclusion, the first meeting of Satellite Data-link Operational Continuity Meeting (SOCM/1) was organized from 26 to 28 August, 2009. Fifty Six (56) participants from thirteen (13) States, IATA, IFALPA, ARINC, SITA, Boeing, INMARSAT, MTSAT and Thrane & Thrane participated the meeting.

1.2 The meeting considered five (5) Working and sixteen (16) Information Papers in addition to several presentations. After taking into account the developmental efforts that were in progress at that time, it was recommended that a second meeting of SOCM be organized in 2010 after FANS System Improvement Team (SIT) had reviewed the status and had provided updates on the consolidated improvement plan. Recommendation for Second SOCM meeting was adopted by APANPIRG (September 2009) through Conclusion 20/32. The meeting however could not be organized in 2010 as FSIT had not reconvened its meeting as planned.

1.3 APANPIRG/21 (September 2010), while reviewing the status of satellite data-link communication, expressed that SOCM/2 should be organized in 2011, even if FSIT meeting is not conducted in a reasonable period of time. Second Satellite Operational Continuity Meeting (SOCM/2) was scheduled from 15 to 18 November 2011. The Meeting and the Seminar, however could not be conducted due to the floods in Bangkok.

2. Discussion

2.1 Significant outcomes of the First Satellite data-link Operational Continuity Meeting (SOCM/1) were as follows:

a) under Agenda Item 1 on ATC Operations and Service Provision Background, organizations providing and supporting infrastructure (INMARSAT etc.) and Communication Service Providers (SITA etc.) provided information on the developments that had been carried out to improve performance and reliability of the system;

b) the Communication and Surveillance performance specifications to support operations were reviewed, including RCP 240/D and RCP 400/D, and it was noted that relevant RCP and surveillance specifications had been included in the GOLD as Appendices B and C;

c) a draft Conclusion was formulated, urging the States to provide relevant Regional and State information and urged IATA to coordinate with member airlines in order to provide operator and aircraft information for inclusion in GOLD Appendices E and F;

d) States provided information on the status of implementation of Satellite Data-link in their Administrations and highlighted the trials being conducted;

e) IATA provided airlines' perspective on the subject and was of the view that unless Satellite Data-links were developed, the plans to implement RNP 4 could not be completed;

f) SITA, MTSAT, ARINC, INMARSAT, Thrane and Thrane and other agencies engaged in the provision of infrastructure informed about the developments their organizations were carrying out to improve access, performance and reliability of their systems; and

g) ICAO was of the view that multiple redundant connectivity (either accessing the same satellite through multiple ground stations and/or achieving connectivity through multiple redundant satellites) had the potential of significantly improving overall network availability. ICAO was also of the view that RNP4 based separation service was the way forward in the oceanic airspace in the region.

2.2 Following questions were raised during the meeting:

a) Is maintaining I3 network the best option considering the business model and planned initiatives from the users' perspective, or other alternatives should be considered?

b) Given the lead time required for implementing upgrades for the SDU, will there be enough service life remaining on the I3 network (through 2017) to recover the investment?

c) Are there other viable solutions which can be considered? Subsequently it has been learnt that at the IPACG/29 FIT/16, FAA briefed the group on the work currently underway within the Performance Based Operations Aviation Rulemaking Committee's Communication Working Group which is investigating use of the Iridium Satellite Short Burst Data (SBD) for FANS 1/A data-link applications. May be usage of Swift Broad Band or SBB services on I4 can also be considered. Twenty Fifth FAA Performance-based Operations Aviation Rulemaking Committee Communication Working Group (PARC CWG/25) meeting was held in Seattle, USA along with the Second Meeting of ICAO Inter-Regional SATCOM Voice Ad Hoc Task Force (SATCOM TF/2) from 12 to 16 September, 2011.

d) Will aviation community need new performance specifications to support planned "longer term" operational implementation initiatives? However new standards may be required to reduce the separations further or for other operational capabilities that would require 'more stringent' RCP specification.

2.3 While reviewing the report of SOCM/1, The Fourteenth Meeting CNS/MET Sub Group of APANPIRG (CNS/MET SG/14) held in Jakarta, Indonesia from 19 to 22 July, 2010 noted that end-to-end serviceability performance had improved to some extent since the end of 2009. The meeting also noted that service providers had been putting efforts into incentivizing Release 15 upgrades to all four GESs. It was also noted that additional 60 aircraft from 4 airlines had started using MTSAT through SITA AIRCOM services. The requirements of RNP 4 based separation in the South Pacific could be achieved, though marginally. The meeting agreed with the recommendation that both Air Navigation Service Providers and the Airline Operators should consider to use two or more fully autonomous systems through service providers to achieve improved satellite data-link performance. The meeting also expressed concern about the availability of data link services after the life of some INMARSAT and MTSAT satellites expire in 2016. The meeting discussed objectives of the proposed SOCM/2 and identified following items that may be included in the agenda for the meeting:

- Review the status of Satellite data-link communication

- Implementation of improvement plan by the stake holders to develop a common outage/maintenance reporting template and process by CSPs which is useful for States/ANSPs/CRAs

- Develop common service level agreement between CSPs and the States/ANSPs based on the recommendations of the GOLD

- Satellite Communication Voice for routine ATS; and

- Mid and long term strategy for Satellite Communication i.e. beyond 2016 including requirements for the modification to SATCOM satellite data unit (SDU) to enhance the capability to access multi-satellite service providers and whole I3 and I4 network

2.4 CNS/MET SG/14 meeting reviewed encouraging results of data-link performance within Auckland Oceanic FIR as presented by New Zealand. The meeting also noted that the Central Reporting Agency (CRA) of Informal South Pacific ATS Coordination Group (ISPACG CRA) had for some time published a collection of data-link monitoring results on its website: http://ispacg-cra.com/performance.asp. Statistical data collected since 2008 indicated that while the safety target for network availability had been achieved, considerable improvement was necessary for the efficiency target to be met. It was predicted that the availability figures could show significant improvement when the data to 1 January 2010 was taken into account.

2.5 **Improvement in Auckland Oceanic FIR**

2.5.1 New Zealand, providing satellite data-link monitoring results from Auckland Oceanic FIR to the CNS/MET SG/15 (July 2011) advised that the performance had shown significant improvement since July 2010. Statistical data collected from December 2008 to June 2011 indicated that the safety targets for network availability were being achieved, however considerable work needed to be done to meet the efficiency targets.

3. Conclusion

3.1 Based on the information provided to various regional meetings, it can be concluded that:

a) though the safety targets prescribed for the RNP 4 operations were being met, considerable work needed to be done to meet the efficiency targets;

b) ICAO recommends usage of two or more autonomous satellite data link systems, both for the ground and on board the aircraft to enhance availability of the system; and

c) with the end of life approaching for some INMARSAT and MTSAT satellites, continuity of service beyond 2016 needs to be ensured.

4. Action by the meeting

4.1 The meeting is invited to:

a) note the information provided in the paper regarding the outcome of SOCM/1 meeting and the developments that have taken place since then in the region; and

b) consider discussing issues identified in 'Conclusion' at the end of Section 2.

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