



REPORT OF SECOND MEETING
SATELLITE DATA-LINK OPERATIONAL CONTINUITY MEETING
(BANGKOK, 8 - 10 FEBRUARY 2012)

1. Introduction

1.1 The Second Satellite Data-link Operational Continuity Meeting (SOCM/2) was held from 9 to 10 February 2012 at ICAO APAC Regional Office, Bangkok, Thailand. A Satellite Data link Communication Seminar was organized in conjunction with the meeting on 8 February 2012.

1.2 The meeting was attended by 42 participants from 11 States, IATA, ARINC Aeroconnex (Representing Inmarsat) and Boeing. The list of participants is provided in the **Attachment 1** to this Report.

1.3 On behalf of Mr. Mokhtar A. Awan, ICAO Regional Director, Asia and Pacific Office, Mr. Li Peng, Regional Officer CNS welcomed the participants and highlighted the objective of the meeting.

1.4 The Seminar was facilitated by Mr. Tom Kraft, Chief Scientist and Technical Advisor, Aviation Safety, Aircraft Certification from Federal Aviation Administration (FAA) and Chairman of IR-SVTF and Mr. Paul Radford, Manager Oceanic Systems, Airways New Zealand and Chairman of OPLINK Panel. Mr. Tom Kraft and Mr. Paul Radford also acted as Co-chair of the meeting. Messrs. Li Peng and Sujana Saraswati, Regional Officers CNS were Secretaries for the meeting and they were assisted by Messrs. Len Wicks and Shane Sumner, Regional Officers ATM of ICAO Asia and Pacific Office.

1.5 The Co-chair emphasized the importance of the meeting and highlighted the working arrangements.

1.6 Working language for the meeting was English including all papers, presentations and this report.

2. Summary of Discussions

2.0 The meeting considered 11 Working Papers (WP), 7 Information Papers (IP) and several Presentations (SP). List of papers reviewed and discussed at the meeting and list of presentations at the Seminar are provided in **Attachment 2** to this Report.

Agenda Item 1: Adoption of Agenda

1.0 The additional agenda item 'future work programme and any other business' proposed by Australia was agreed by the meeting and was included in the Meeting Agenda. The agenda items adopted are provided in **Attachment 3** to this Report.

Agenda Item 2: Review planning and implementation programs involving satellite communications (SATCOM) data-link services (Update since SOCM/1)

Review of SOCM/1 Outcome and Regional Developments (WP/2)

2.1 The meeting was reminded of the objectives assigned by APANPIRG to it. Through a working paper, the Secretariat provided the background information about the meeting and reviewed the significant outcomes of the First Satellite data-link Operational Continuity Meeting (SOCM/1). The meeting reviewed the developments on the Satellite Data-link Communication including updates on planning and implementation programs involving satellite communications data-link services. The meeting recalled APANPIRG conclusion 20/32 inviting ICAO to organize the second meeting of SOCM. The meeting discussed questions raised during the first meeting and items requiring further follow-up by the second meeting as follows:

2.1.1 It was noted that the safety targets for RNP4 (navigation) were being met, but no measures were in place to determine if safety targets for communication and surveillance components of the separation standard, e.g., 30 NM longitudinal, were being met. Based on discussions, the meeting concluded that though the safety targets prescribed for the RNP 4 (navigation) operations were being met, considerable work needed to be done to address the safety targets for communication and surveillance elements required by the operational improvement.

2.1.2 It was recalled that ICAO Regional Office had issued a state letter recommending States to use two or more satellite data link communications services provided by different autonomous systems to enhance availability of the system. Regarding requirement for efficiency, the meeting also concluded that States/ANSPs and operators should investigate means to:

- a) increase the size of the fleet that is eligible for operation of reduced separations; and
- b) to expand operational improvements such as the application of reduced separations to other airspace, such as the South China Sea and Bay of Bengal.

Expansion of operational improvements will create incentives for operators to equip earlier thereby increasing their size of the fleet. In view of the foregoing, the meeting formulated following Draft Conclusion for consideration by CNS/MET Sub-group:

Draft Conclusion 2/1 - Increase equipage of data-link

That, States be urged to implement CPDLC and ADS-C both on ground and on board the aircraft to enhance airspace capacity and safety of operations.

Concerning continuity of service with end of life approaching for some Inmarsat and MTSAT satellites, APANPIRG was invited to recommend that States/ANSPs prescribe performance specifications for RCP and RSP in the area of applicability (airspace) requirements and establish means of compliance for the data link systems on the ground and on board the aircraft. Means should include operational and design approvals by State of the Operator, State of Registry, or Safety Oversight of ATS provision and service agreements with CSPs to ensure their planning and implementation meets the allocations provided by the performance specifications.

Service Level Agreement and GOLD

2.1.3 The Meeting discussed the status and improvement plan of the stakeholders to develop a common outage/maintenance reporting template and process by CSPs which will be useful for States/ANSPs/CRA and developing a common service level agreement between CSPs and the States/ANSPs based on the recommendations of the GOLD. The SOCM/2 meeting clarified that guidelines on service level notifications and communication service agreements are provided in the GOLD and agreed that these items should be progressed further by improving the GOLD material. Such requirements can be referred in the agreement/contracts between ANSP/Operators and CSP. Regarding adoption of a common outage/maintenance report template, the detailed items will require input from States/ANSPs/Operators to determine the requirements for the content of notifications on service outages, maintenance, degradation, and restoration and CSPs would then collaborate with other stakeholders to determine additional guidance material for GOLD 2nd Edition which is scheduled for completion in 1st quarter 2013.

Near Future Plan of MTSAT System (WP/3)

2.2 The meeting noted the supplementary information on near-term future plan of MTSAT System, which was presented to the Fifteen Meeting of CNS/MET Sub Group in July 2011. The SOCM/2 meeting was informed of the uninterrupted performance of MTSAT during period of Tsunami disaster in early 2011.

2.3 A comprehensive study on next generation satellite system was conducted by JCAB in 2010 by the analysis of technical, operational and regulatory aspects of existing and future aeronautical satellite systems in the APAC region including MTSAT System. The study resulted in a decision that MTSAT-1R is going to leave its orbit in 2015 and MTSAT-2 alone would continue to provide AMSS until 2020, which is additional four years after the estimated EOL of MTSAT-2 in 2016. The study, however, was unable to develop a conclusion on the next generation satellite system. New configuration and expected reliability of MTSAT after 2015 were noted by the meeting.

2.4 The initial study expressed concerns on the uncertainty of future aeronautical satellite communication services. Need was identified for timely development of relevant standards for future satellite communication systems in order to effectively implement terrestrial and aircraft components on a long-term basis. In this connection, it was advised that technical road map for next generation of aeronautical communication is expected to be discussed and developed at the upcoming AN Conf/12 in November 2012.

2.5 It was advised that further study for the need to support future AMSS services beyond 2020 had be identified. Considering the lead-time required for manufacturing satellite and the time needed for budgetary planning, the further study is required to be completed by 2014. It was additionally noted that Inmarsat would move to SBB based safety service and that Classic Aero safety service will be supported at least until the end of life of I-4 constellation, circa 2023.

2.6 The meeting discussed the related issues and noted ICAO recommendation on usage of two or more redundant satellite data link communication systems for AMSS services to enhance availability of the system. Accordingly, the meeting developed following draft Conclusion recommending considerations in the study.

Draft Conclusion 2/2 - Support of AMSS after the Current MTSAT System

That, Japan be invited to consider the following in the further study for next generation of MTSAT in support of AMSS:

- a) the system to be compatible with one of existing and/or future AMSS systems such as Inmarsat to support AMSS data link interoperability;
- b) to establish an operational environment which will enable seamless AMSS operation for AESSs, and architecting AMSS Systems with appropriate reliability both in space and ground segments; and
- c) to include function of SATCOM Voice for safety service.

Operational Use of FANS 1/A over Iridium (WP/4)

2.7 USA provided to the meeting, FAA's response on 27 June 2011 Performance-Based Operations Aviation Rulemaking Committee (PARC) meeting, regarding FANS 1/A over Iridium (FOI) and Performance-Based Concept Recommendations. It was stated in the response that significant operational and safety benefits will be lost unless actions are taken to sustain current communications and surveillance capabilities. Furthermore, NextGen operational improvements will depend on appropriate and operationally acceptable communications and surveillance capabilities together with performance based navigation (PBN). FOI is a significantly lower cost solution compared to other aeronautical mobile satellite (route) service (AMS(R)S) alternatives. Iridium-based equipment is easier to retrofit on aircraft, draws less power, is lighter in weight, and provides global coverage, including over the Polar Region.

2.8 The global air transportation system will benefit from FOI as it provides a practical alternative for air navigation service providers (ANSPs) to expand data link service, and for commercial and business aviation markets to equip their fleets more quickly.

2.9 The PARC has found that Iridium is viable for CPDLC/RCP 240 and ADS-C/type 180 operations. Therefore, the PARC requests the FAA to expedite the steps necessary to remove restrictions on current FOI operations to realize immediate gains in operational and safety benefits.

2.10 It was further informed that the FAA certifies FANS 1/A aircraft in accordance with Advisory Circular (AC) 20-140A, Guidelines for Design Approval of Aircraft Data Link Communication Systems Supporting Air Traffic Services (ATS), and authorizes operational use of data link in accordance with AC 120-70B, Operational Authorization Process for Use of Data Link Communication System, and FAA Order 8900.1, Flight Standards Information Management System (FSIMS). For FANS 1/A aircraft, these FAA documents recognize DO-258A/ED-100A or previous version, as acceptable means of compliance, which is consistent with the GOLD definition.

2.11 FAA has certified FANS 1/A aircraft that use Iridium SBD sub-network, i.e., FOI aircraft, in accordance with AC 20-140A, and have authorized operators to use these aircraft, in accordance with AC 120-70B. Other appropriate authorities have also issued design approvals and authorized operational use of FOI aircraft. FOI equipage rate is expected to increase dramatically. The FAA is aware of a number of operators that already have programs to install FOI equipment on over 100 aircraft and plans to use CPDLC and ADS-C services with these aircraft by 2013.

2.12 According to ICAO SARPs, FOI is a viable means for conducting ATS communications and FOI aircraft are eligible for CPDLC and ADS-C operations in the Pacific Region. In view of foregoing, the meeting endorsed following draft Conclusion.

Draft Conclusion 2/3 - FANS 1/A over Iridium (FOI) for ATS Communication

That, considering that FOI is expected to be continued for CPDLC and ADS-C operations using Iridium Next beginning in 2015, FOI be accepted as one of viable means for conducting ATS communications in the ASIA/PAC Region.

IATA's Perspective on IRIDIUM and/or FANS over Iridium (FOI)

2.13 IATA noted the reports on recent developments related to Iridium and cautioned against any airspace/regional mandates related to this technology in view of the potential cost impact on airlines and global seamless interoperability. IATA is of the view that operational mandates should address regional performance requirements in accordance with established ICAO procedures. In any case an appropriate cost benefit exercise should be conducted to support any such initiative.

INMARSAT Updates (WP/11)

2.14 Inmarsat presented an update on the development and implementation of its satellite system and responded to the items described in WP/2 that were an outcome of SOCM/1. Inmarsat is fully committed to the use of the Classic Aero-H+ technology through to the end of life of the I-4 constellation circa 2023. It was noted that the end of life of the I-3 constellation is expected in circa 2018 however Inmarsat requests users of Classic Aero-H systems in ICAO ACP WG-W/4 (IP-10) to note the sunset date of this service to be earlier, by the end of 2016. There is no decision on Classic Aero-I technology post end of life of the I-3 constellation. Clarification was also provided that longer term L-band plans will consist of rolling procurements such as Alphasat I-XL or I-6 satellites (yet to be defined) and that the I-5 constellation is not for safety services.

2.15 For the performance concerns raised in SOCM/1, Inmarsat stated that most of the recommendations from FSIT were now implemented in both the latest versions of I-3 and I-4 GES upgrades. Inmarsat and the partnership have invested heavily into these upgrades and recent performance analyses on message latency and stability of network outages show that improvement has been realized from SOCM/1 to acceptable levels and no further upgrades are foreseen. This should provide stability for the next 4-6 years until the end of life of the I-3 constellation, when the remaining eligible aircraft are migrated to the I-4 network.

2.16 For safety services, Inmarsat is introducing a new SwiftBroadband Oceanic Safety Services architecture in ICAO ACP WG-W/4 (WP21), whereby availability and growth can be better met. Inmarsat is targeting 99.99% availability for systems that use SwiftBroadband safety with fallback to Classic Aero technology. 99.9% availability is targeted for systems that are only capable of SwiftBroadband Safety. Inmarsat is moving towards the use of this technology to accommodate safety uses and applications of the L-band spectrum that are expected to exceed today's status quo of 220 character byte messaging. Safety application such as event triggered telemetry from the aircraft is expected to require a much higher throughput, without having to sacrifice performance and spectral efficiency. Inmarsat is looking for interested parties to conduct trials on SwiftBroadband safety as an air transport operator in the 2012/2013 timeframe.

2.17 Regarding the 22nd October 2011 POR satellite outage, multiple presenters highlighted this event and some wanted this to be used as Test cases as to assess what would happen to 30/30nm separation should this occur again. Inmarsat stated that throughout the 15+ years, a satellite based outage is extremely rare and that in hindsight the restoration of services should have been speedier. Inmarsat is undertaking a major effort to ensure steps are taken to recover from such rare events in a more timely fashion.

2.18 For Classic Aero-H sunset, British Airways illustrated in detail that the costs of hardware upgrades to its Classic Aero-H aircraft are prohibitive, no matter which method is chosen. The costs for just a simple "box swap" was financially a show stopper and costs for wiring and other installation aspects for SwiftBroadband 200 were a non-trivial cost/benefit exercise.

2.19 In following up a question raised at SOCM/1 regarding maintaining the I-3 network related issues, planned initiatives from the users' perspective and/or other alternatives should be considered. It was informed by Inmarsat that ARINC, SITA, Inmarsat and its partners have shared the cost to upgrade components of the Inmarsat I-3 system to Release 15 and this should satisfy the maintenance period for the remainder of the life of the I-3 system.

2.20 Regarding the lead time required for implementing upgrades for the SDU as identified at previous meeting, concerns were expressed whether there will be enough service life remaining for the I3 network (through 2017) to recover the investment. The group discussed and mentioned that the upgrade to the SDU to address items such as fast logon is no longer necessary. The more important issue is to ensure a more stable network, which seems to have been reflected with the upgrades to R15 as well as other improvements to the Inmarsat I-3 system.

2.21 Regarding the end of the life issue raised at SOCM/1 approaching for some Inmarsat and MTSAT satellites, continuity of service beyond 2016 (2018) needs to be ensured. Inmarsat indicated that Classic Aero at least for H+ would be ensured through EOL of the I4 satellites.

Updates by ARINC on Long Rang Satellite Communication (IP/7)

2.22 ARINC made a presentation on the development of Long Range Satellite Communications. It highlighted the enhancement of its communication service in connection with developments of both Inmarsat satellite and Iridium satellite system, as part of ARINC's long range satellite communication offerings. From 2010 - 2011, there were several enhancement areas which were carried out by Inmarsat, ARINC & Vizada. ARINC provided various updated performance charts on CPDLC and ADS-C, based on data set collected from January 15, 2011 to January 15, 2012. In addition, ARINC has included its maintenance reporting procedure which may serve as a reference for the meeting.

Sample Template of Maintenance Report from CSP

2.23 The Template from ARINC was considered as a response to the action item developed by the first meeting of SOCM/1 – regarding Implementation of improvement plan by the stake holders to develop a common outage/maintenance reporting template and process by CSPs. Such template would be useful for States/ANSPs/CRA. The sample template used by ARINC is provided in the **Appendix A** to this Report. States and ATSPs were urged to provide ARINC distribution list for such Advisory Messages. It was observed that SITA has a similar template in use for the purpose. The meeting considered that this template should be provided for consideration by the steering group for GOLD amendment. It was recommended that once the contents and format are considered appropriate, such sample template should be appended to the GOLD.

GOLD Data Analysis (IP/3 & SP/7)

2.24 USA provided a tutorial on GOLD Data Analysis and took up the analysis of observed data link performance of Controller Pilot Data-link Communication (CPDLC) and Automatic Dependent – Contract (ADS-C) used in Oakland, Anchorage and New York FIRs. The tutorial provided the criteria of measurement and the information paper described how that criteria was used. GOLD provides the calculation process for the prescribed performance measures – the actual communication performance (ACP), the actual communication technical performance (ACTP), the pilot operational response time (PORT), and the surveillance latency – and specifies the requirements for each performance measure at the 95% and 99.9% levels. Information included the requirements for these performance measures at the 95% and 99.9% levels.

Performance Measure	Percent of Messages Required to Meet Criteria	RSP180 Criteria (sec)	RSP400 Criteria (sec)	RCP240 Criteria (sec)	RCP400 Criteria (sec)
ADS-C	95.0%	90	300	--	--
Downlink Latency	99.9%	180	400	--	--
ACTP	95.0%	--	--	120	260
	99.9%	--	--	150	310
ACP	95.0%	--	--	180	320
	99.9%	--	--	210	370
PORT	95.0%	--	--	60	60

Paper concluded that a notable improvement in performance had been observed in New York FIR from 2010 to 2011 but in the other two, the Oakland and Anchorage FIRs the performance had remained consistent.

FANS 1/A Performance Update NZZO (WP/8)

2.25 The current performance of FANS 1/A operations in the Auckland (NZZO) oceanic FIR presented by New Zealand was noted by the meeting. The presentation compared the observed performance against RSP 180 and RCP 240 requirements and noted that the performance was continuing to improve. It was observed that nearly all the fleets were meeting the 95% normal operations requirements. Fleets were monitored for compliance and when necessary corrective action to improve performance was initiated through the regional problem reporting process. With regard to availability, it was noted that a significant outage on the Inmarsat Pacific satellite had occurred in October 2011, but before that outage the availability of the Inmarsat satellite and networks had been meeting the 99.99% efficiency requirement. Iridium traffic in the region was low, but the performance was affected because of single GES which is affected by weather.

Agenda Item 3: Review Global Operational Data-Link Document (GOLD) and compliance

Updates on GOLD development

3.1 The meeting noted the status of updates on the amendment to the Global Operational Data Link Document (GOLD). The 2nd Edition of GOLD is scheduled for completion in the 1st quarter of 2013. The current version 1.1 dated 31 October 2011 can be accessed through ICAO portal at the following page: <https://portal.icao.int/GOLD/default.aspx> States/ANSPs and operators were encouraged to provide comments and input to GOLD Ad-Hoc Working Group for contribution to the amendment.

RCP and RSP Planning and Implementation (WP/5)

3.2 USA proposed that APANPIRG begin the planning and implementation of a performance-based framework for communications and surveillance within the Asia-Pacific Regions. The framework will complement the existing performance-based navigation framework. The performance-based communications and surveillance framework will initially apply performance specifications and monitoring as per the GOLD to FANS1/A controller-pilot data link communications (CPDLC) and automatic dependent surveillance contract (ADS-C).

3.3 The FAA advocated global implementation of the performance-based framework within ICAO and regional ATS coordinating groups. The ICAO Regions will need to prescribe RCP/RSP specifications in airspace requirements documents, such as ICAO Doc 7030, Regional Supplementary Procedures, to ensure operator eligibility and flight plan filing requirements for seamless operations, performance, interoperability and standardization to implement a performance-based framework for Required Communication Performance (RCP) and Required Surveillance Performance (RSP) specifications for oceanic and remote operations.

3.4 A number of States in the ASIA/PAC Region have been providing reduced separations in air traffic services that are predicated on certain communication, surveillance, and navigation requirements. With an increasing proliferation of different aircraft FANS 1/A systems, and given current ground system implementations, it is possible that separations may be misapplied because the qualification criteria for communication and surveillance are not formally applied within the Asia/Pacific Region.

3.5 The GOLD provides guidance for its implementation. The GOLD provides required communication performance (RCP) and surveillance performance specifications (RSP), and guidelines on prescribing specifications to apply to communications and surveillance capabilities in airspace where reduced separations are predicated on certain communication, navigation and surveillance performance requirements. The GOLD also provides guidelines to States to help in qualifying components of the operational system to the criteria prescribed by the performance specifications, including ANSP post-implementation monitoring.

3.6 It was noted that in June 2011, the North Atlantic Region System Planning Group endorsed its RCP and ADS-C Surveillance Performance Based Operations Implementation Plan, which is consistent with GOLD guidelines. The plan provided in the **Appendix B** to this Report is being executed within the NAT Region with an effective implementation date of February 2015. In March 2011, the ISPACG agreed to develop a performance-based framework for communications and surveillance within the South Pacific sub-region and encouraged all ISPACG ANSP members to implement system performance monitoring as outlined in the GOLD as an element of their respective SMS programs.

To implement a performance-based communications and surveillance framework, changes will be needed to:

- a) Type design approval of aircraft, as necessary;
- b) Master Minimum Equipment List (MMEL) policies;
- c) Related operational authorizations;
- d) Regional SUPPs (ICAO Doc 7030 Amendments) and AIPs (or equivalent);
- e) Flight plan requirements; and
- f) ATC automation to act appropriately based on communication and surveillance equipment and capability indicators provided in the flight plan.

3.7 It is expected that the performance-based framework would eventually apply to satellite communications (SATCOM) voice for air traffic control as per the SATCOM Voice Guidance Material, currently under development by the Inter-Regional SATCOM Voice Task Force. The meeting recommended APANPIRG sub-groups to include RCP & RSP in their work programme and to organize necessary workshops to raise awareness by States and Operators on the subject. Accordingly, the meeting formulated following draft Decisions:

Draft Decision 2/4 - Inclusion of RCP & RSP Framework in Work program

That, APANPIRG Sub-groups include in their work program and implementation initiatives, an effective implementation of a performance based framework for RCP and RSP in the Asia/Pacific Region.

Draft Decision 2/5 – Workshop on RCP and RSP

That, ICAO be invited to organize a workshop on RCP and RSP.

Work of PARC (IP/5)

3.8 The meeting noted the work program and status of work underway in the FAA sponsored Performance based operations Aviation Rulemaking Committee, Communications Working Group (PARC CWG).

Agenda Item 4: Global strategy for use of SATCOM data-link Services

Review of Performance Framework Form for SATCOM

4.1 The meeting reviewed and updated the performance Framework Form for enhanced Communications and Surveillance Capability and improve provision of satellite based communications and surveillance capabilities to enable FANS 1/A data link (ADS-C, CPDLC) to support RCP 240 and RSP 180 specifications in the oceanic and remote areas. The updated PFF will be included in PFF package for reviewed by APANPIRG.

FIT-ASIA (WP/9)

4.2 The meeting noted that APANPIRG/22 had made a decision (Decision 22/13) to combine the FANS Implementation Team - Bay of Bengal (FIT-BOB) and Southeast Asia (FIT-SEA) into a new body (FIT-Asia), reporting to RASMAG. The meeting noted the revised TOR for the FIT –ASIA presented by the Secretariat.

4.3 The FANS Implementation Teams for the Bay of Bengal (FIT-BOB) and for Southeast Asia (FIT-SEA) had been responsible for monitoring the performance of data link in the respective geographical areas.

4.4 It was noted that there had been a lack of Problem Reports (PRs) provided to the FITs. PRs should be encouraged as these are a vital part of the safety oversight of data link operations.

4.5 The first meeting of the FIT-Asia will be held before RASMAG/17 in the same week from 27 to 31 August 2012. This is intended to facilitate the effective monitoring of data link performance for reporting to the Regional Airspace Safety Monitoring body in a more efficient manner. The meeting was invited to discuss the reporting, expert support and deliverables necessary for an effective FIT-Asia.

4.6 The meeting strongly encouraged Administrations and Organizations to make arrangements for the subject experts to actively participate activities of FIT-Asia and provided required data in order to provide deliverables necessary for an effective FIT-Asia. (Action Item).

FANS 1/A HF data-link in the Auckland FIR (WP/10)

4.7 New Zealand informed the meeting about the use of FANS1/A HF data-link in the Auckland (NZZO) FIR. Aircraft using HF DL in a tertiary mode for communicating downlinks when the SATCOM channel is busy or when the link show slight performance degradation against pure SATCOM performance. This is observed to be between 0.2% and 0.4% at the RSP180 99.9% 180 second requirements. Aircraft using HF DL in this tertiary VHF, SATCOM and HF mode meet the 95% normal operations requirement for RSP180. When SATCOM is lost outside VHF coverage, the aircraft stop to meet RSP180, meeting the 95% 300 second RSP400 requirement are below 90% at the 99.9% 400 second RSP400 requirement.

4.8 No aircraft are using HF DL as a primary means for FANS1/A communications in NZZO. All uplinks are sent via either VHF or SATCOM.

Activities of OPLINK Panel (IP/6)

4.9 Background information, outcome of 1st, 2nd and 3rd meeting of OPLINKP' Working Group of Whole and current work programme of the panel was noted by the meeting.

Agenda Item 5: Future work programme and Any Other Business

5.1 The meeting considered that there are some action items that need to be further carried out and these include implementation of RCP and RSP for the defined airspace in Asia/Pacific Region in particular in oceanic and remote area using satellite communication; the issue needs to be addressed to accept FOI aircraft; application of GOLD for SATCOM, etc. It was concluded these outstanding issues should be merged into existing contributory bodies of APANPIRG and no further SOCM meetings would be required.

5.2 Chairmen reviewed the major issues discussed at the meeting and thanked participants for their active participation and discussion.

5.3 The Secretariat expressed appreciation to co-chair for their leadership and all contributors for the presentations at the Seminar as well as the meeting. The meeting closed at 1430 hours.

**Satellite Data-Link Communication Seminar and
Second Satellite Data-Link Operational Continuity Meeting (SOCM/2)**

**Bangkok, Thailand
08 – 10 February 2012**

Attachment 1 to the Report

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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)

LIST OF WORKING, INFORMATION PAPERS AND PRESENTATIONS

WP/IP/SP No.	Agenda Item	Title	Presented by
WORKING PAPERS			
WP/1	-	Provisional Agenda	Secretariat
WP/2	2	Brief Review of SOCM/1 Outcome and Subsequent Regional Developments	Secretariat
WP/3	2	Near Future Plan of MTSAT System	Japan
WP/4	2.1	Operational Use of FANS 1/A over Iridium	FAA/USA
WP/5	3	RCP and RSP Planning and Implementation	FAA/USA
WP/6	3.1	GOLD Performance Analysis Tool (G-PAT) Status	FAA/USA
WP/7	4.1	Review of Performance Framework Form SATCOM	Secretariat
WP/8	2	FANS 1/A Performance Update NZZO	New Zealand
WP/9	4.2	FIT-Asia	Secretariat
WP/10	4.3	The Use of HF DL for FANS 1/A in NZZO Oceanic FIR	New Zealand
WP/11	2	Review Planning and Implementation Programmes Involving Satellite Communications (SATCOM) Data Link Services	Aeroconnex for Inmarsat
INFORMATION PAPERS			
IP/1	-	Meeting Bulletin	Secretariat
IP/2	2	Data Link Operational Experience	FAA/USA
IP/3	2.1	GOLD Data Link Analysis	FAA/USA

WP/IP/SP No.	Agenda Item	Title	Presented by
IP/4	2.2	Post-Implementation Analysis of Data Link Performance Following Release 15 (R15) Ground Earth Station Release 15	FAA/USA
IP/5	3.1	Performance Based Operations Aviation Rule Making Committee Communications Working Group (PARC CWG) Status	FAA/USA
IP/6	4.1	Relevant Outcome of OPLINKP	Chair of OPLINKP
IP/7	2	Long Rang Satellite Communications	ARINC

PRESENTATIONS

SP/1	1	Satellite Data Link Communication Requirements and Issues	Secretariat
SP/2	1	Satellite Data Link Benefits	FAA/USA
SP/3	1	Satellite Data Link Operations	FAA/USA
SP/4	2	An Airline Perspective	New Zealand
SP/5	2	Data Link Elements and Role of Stakeholders – Reflections of an ANSP	New Zealand
SP/6	3.1	GOLD – Introduction	FAA/USA
SP/7	3.1	GOLD – Data Analysis Tutorial	FAA/USA
SP/8	3.1	GOLD – Controller Procedures	FAA/USA
SP/9	3.1	Introduction to Required Communication Performance (RCP) and Required Surveillance Performance (RSP)	FAA/USA
SP/10	3.1	GOLD – Data Link Advanced Operations	FAA/USA
SP/11	3.2	GOLD – Amendment Programme	FAA/USA
SP/12	2	Data Link Elements & Role of Stakeholders	Aeroconnex for Inmarsat
SP/13	2	FANS (Future Air Navigation System)	Boeing



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

(Bangkok, Thailand, 08 – 10 February 2012)

SEMINAR ON SATELLITE DATA-LINK COMMUNICATION

AGENDA

(08 FEBRUARY 2012)

Agenda Item 1: Satellite data-link operational requirements and issues involved like continuity of service

Agenda Item 2: Data-link elements and role of stakeholders

Agenda Item 3: Global Operational data-link Document (GOLD)

3.1 GOLD overview

- i) Service provision
- ii) Operator preparation and aircraft equipage
- iii) Controller and flight crew procedures
- iv) RCP and surveillance performance specifications
- v) Post-implementation monitoring and compliance actions

3.2 GOLD amendments

- vi) GOLD candidate amendment program
- vii) Common outage/maintenance reporting template and process by CSPs which is useful for States/ANSPs/CRAs
- viii) Develop common format for service level agreement between CSPs and State/ANSPs/Operators

SOCM/2 PROVISIONAL AGENDA

AGENDA

(09 – 10 FEBRUARY 2012)

AGENDA ITEM 1: Adoption of Agenda

AGENDA ITEM 2: Review planning and implementation programs involving satellite communications (SATCOM) data-link services (Update since SOCM/1)

2.1 State/ANSP planning and implementation of data-link services

- i) Air traffic management (ATM) operational improvements;
- ii) SATCOM data link service provision, including communication service agreements/contracts and notification to users of service availability, outages, degradation and restoration;
- iii) Operational approvals, including aircraft equipage requirements, training, qualification and eligibility;
- iv) Safety management.

2.2 Communication infrastructure

- v) Communication service providers (CSPs) (e.g., ARINC, SITA);
- vi) Satellite and ground earth station operators (e.g., Inmarsat, MTSAT, Iridium).

2.3 Airspace users and industry perspectives

- vii) Operators (e.g., IATA, IBAC);
- viii) Aircraft manufacturers (e.g., Airbus, Boeing);
- ix) Avionics suppliers (e.g., Honeywell, Rockwell Collins);

AGENDA ITEM 3: Review Global Operational Data-Link Document (GOLD) and compliance

3.1 Planning and implementation of performance-based communications and surveillance framework

- i) RCP and surveillance performance specifications;
- ii) Allocations of requirements to ANSP, CSP, operator and aircraft;
- iii) Qualification and eligibility;
- iv) Prescription of specifications to applicable airspace;
- v) Flight plan indicators;
- vi) ATC automation considerations;
- vii) ANSP post-implementation monitoring and compliance actions;
- viii) Regional Central Reporting Agencies (CRAs);
- ix) Global/Regional data link performance web site;
- x) Global Status of Implementation

AGENDA ITEM 4: Global strategy for use of SATCOM data-link Services

ATM operational improvements

4.1 Communication and surveillance capability and performance requirements:

- i) Operational Data Link Panel (OPLINKP);
- ii) RTCA SC 214/EUROCAE WG-78, Data Communication Standards.

4.2 Infrastructure requirements and changes:

- i) Flight plan 2012 provisions for performance specifications;
- ii) Use of communication and surveillance flight plan indicators;
- iii) Post-implementation monitoring.

4.3 Aircraft/operator requirements and changes:

- i) Modification to Inmarsat satellite data unit (SDU) to access multi satellite service provider and whole I3 and I4 network;
- ii) Iridium;
- iii) Role of HF data link.

AGENDA ITEM 5: Future Work Programme and any other business

SAMPLE REPORTING TEMPLATE FROM ARINC

AAM - ARINC Advisory Message

We would like to inform you that ARINC maintenance work needs to be carried out according to the following:

Service(s): ATC Gateway

Trouble Ticket 681614 /Change Order #:PCO 58632

Maintenance Location: Annapolis, MD

Maintenance Window: 02/09/2012, 1930z -2000z

Expected Outage Duration: None

Description of Maintenance: ATC Gateway switchover to be performed. The switchover is not expected to cause any disruption of service. This switchover is necessary in order for new ARINC configurations to take effect.

ARINC regrets any inconvenience that this may cause, but this activity is necessary to maintain the quality and reliability of our services.

Please ensure this message is forwarded to the appropriate technical support personnel within your organization.

If you have any further questions or concerns, please contact the ARINC:

Service Desk
ARINC SERVICE DESK
US & INT'L ACCESS (SPRINT) 1-800-633-6882, OPTION 1
NON TOLL FREE NUMBER - 703.637.6360
INTERNATIONAL ACCESS +05+1 800-633-6882
FAX 1-410-956-5465
HELPDESK@ARINC.COM
HDQHDXA

**NAT RCP and ADS-C Surveillance Performance Based
Operations Implementation Plan**

Associated with the NAT data link services in support of RLongSM and RLatSM.¹

#	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
	GENERAL PROJECT DEVELOPMENT & MANAGEMENT				
1	Prepare a draft <i>RCP and ADS-C Surveillance Performance-Based Operations Plan</i> outlining the way forward for consideration by the NAT IMG	NAT IMG/38 and NAT SPG/47	Approved by NAT SPG/47.	NAT CNSG	
2	Identify Key Target Dates on implementing RCP and ADS-C surveillance performance framework and prescribing specifications to support RLongSM, and RLatSM.	NAT IMG/38 and NAT SPG/47	Pending target dates for associated operations.	NAT IMG	NAT SPG Conclusion 44/11 targets 2015. Target dates for RCP/ADS-C performance specifications need to be in combination with the target dates for RLongSM and RLatSM operational implementation.

¹ Plans for prescribing RCP specifications associated with SATCOM voice will be addressed, as appropriate, pending completion of the SATCOM Voice Guidance Material by the Inter-Regional SATCOM Voice Task Force.

SOCM/2
Appendix B to the Report

#	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
3	<p>Confirm applicable performance specifications that will be used for operational implementation of data link services in support of RLatSM and RLongSM.</p> <p>Detail and validate CRM assumptions against actual performance measurements in accordance with GOLD.</p>	NAT SPG/46 for RLatSM and RLongSM.	Approved by NAT SPG/47	NAT SARSIG	<p>During trials of RLongSM and RLatSM, specifications are not prescribed, but will provide guidelines against which the actual performance is measured. RCP 240 and surveillance performance 180 are the candidate's specifications to be prescribed for RLatSM and RLongSM operations. Note: When performance falls below specified levels, operational judgment may be a consideration in determining appropriate actions.</p>
4	<p>Update operational concepts for implementation of RLatSM, RLongSM supported by associated RCP and surveillance performance specifications.</p> <p>Develop operational concept (of use), including procedures, for data link services using CPDLC and ADS-C to reduce the number and exposure of operational errors and pilot deviations, regardless of whether or not reduced ADS-C based separations are applied. For example, concept of use should detail conformance monitoring, intervention and route re-clearances.</p> <p>Review and comment on material for incorporation in GOLD, NAT Doc 006 and Doc 007.</p>	NAT IMG/40 and NAT SPG/48	Draft and review through end 2012.	NAT ATMG in coordination with CNSG	<p>ADS-C and CPDLC operational concepts are complete.</p> <p>Review and propose text to be candidate for GOLD amendment.</p>

SOCM/2
Appendix B to the Report

#	TASKS	COMPLET E BY	STATUS	LEAD	Remarks
	DOCUMENTATION				
5	Development of the GOLD material in support of reduced longitudinal: -the provisions for data link service (AIC, guidance for AIPs, eligibility requirements etc) -performance specifications -initial qualifications for operations of operators, aircraft and ATC -post implementation monitoring	NAT SPG/46	Complete	GOLD ad-hoc group	Amendments to GOLD are in work for tasks 3, 5, 6 and 7. Adoption planned at NAT SPG/49.
6	Develop flight crew and controller contingency procedures in the event of service outage, malfunction or failure that would cause performance to degrade below that required by specifications. Review and comment on material for incorporation in GOLD, NAT Doc 006 and Doc 007.	NAT IMG/40 and NAT SPG/48	Draft and review through end 2012.	NAT ATMG/ CNSG	Included in NAT Doc 006. Amendments needed to ensure that long duration outages/degradations are also considered. Similar provisions should be included in the GOLD and in NAT Doc 007.
7	Develop the criteria for resuming data link service, RLatSM, or RLongSM operations after service communication and/or surveillance capabilities are restored to acceptable level of performance. Review and comment on material for incorporation in GOLD, NAT Doc 006 and Doc 007.	NAT IMG/40 and NAT SPG/48	Draft and review through end 2012.	NAT ATMG/ CNSG	Included in NAT Doc 006. Amendments needed to ensure that long duration outages/degradations are also considered. Similar provisions should be included in the GOLD and NAT Doc 007.

SOCM/2
Appendix B to the Report

#	TASKS	COMPLET E BY	STATUS	LEAD	Remarks
8	Draft guidance material for the flight plan to define the descriptors for performance specifications, as appropriate, using the new format planned for 2012 implementation. Review and comment on material for incorporation in GOLD.	a) NAT IMG/40 and NAT SPG/48 (as part of the NAT SUPPs PfA) and GOLD b) 12 th Air Navigation Conference – amend Doc 4444	Work needs to be confirmed and assigned. Draft and review through end 2012.	NAT CNSG ICAO (Global)	Definition of P descriptors in Item 10a and expansion or redefinition of descriptors for ADS-C.
9	Draft or update PfA (or revise existing drafts) to the NAT Regional Supplementary Procedures (SUPPs) (Doc 7030) to prescribe the performance specifications for communication and surveillance to support RLatSM and RLongSM. PfA should include criteria for operator eligibility, aircraft equipage, requirements for flight planning, monitoring, alerting and reporting.	NAT IMG/42 and NAT SPG/49	Draft and review through end 2012.	NAT CNSG NAT ATMG	Dependent on timeline for RLatSM and RLongSM. PfA should be part of PfA for each operational improvement.
10	Amend AIPs and other State documents to support SUPPs amendment.	Consistent with Task 8	Consistent with Task 8	States	Consistent with Task 8
11	Implement operational communications performance monitoring capability in ATC automation.	Before the start of operational trials of RLongSM or RLatSM.	Gander – completed Shanwick – completed Reykjavik – 4Q/2011 Santa Maria – 2Q/2011 New York – Completed Bodo – TBD Shannon – 1Q/2013	NAT ANSPs	Should be in place prior to effective date of data link mandate and start of RLatSM or RLongSM trials.

SOCM/2
Appendix B to the Report

#	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
12	Measure actual performance against specifications for feasibility, i.e., ACP, ACTP, PORT, ADS-C latency for operators and aircraft types	Prior to operational implementation	Ongoing	ANSPs/ DLMA/ CNSG/ SARSIG	Collect and analyze data in accordance with GOLD, Apx D.
	AIRWORTHINESS AND OPERATIONAL ELIGIBILITY				
13	Provide guidance to State regulators related to aircraft equipage and operator eligibility requirements taking into account the GOLD and appropriate RCP and surveillance performance specifications. Review and amend GOLD, if required.	NAT IMG/40 and NAT SPG/48	Draft and review through end 2012.	OPSAIR SG	Refer to FAA AC 20-140A and AC 120-70B. Other State material may apply.
14	Develop or revise State guidance and/or regulations, as necessary. Establish State airworthiness requirements. Establish operational policy/procedures requirements for operational approval. Prepare State inspectors to perform tasks for operational approval. Develop plan to issue operational approval to national operators by [date], to extent possible. Train pilots and, if applicable, dispatchers on RCP and surveillance performance aspects of reduced separation. Develop and distribute operations manuals, pilot bulletins or other appropriate docs containing RCP and communication surveillance performance policy/procedures.	End of 2014 Prior to operational implementation of RLatSM or RLongSM	On-going Need status reports from States	SOG/ States/ ANSPs/ Users	Implementation tasks in this plan need to be completed by NAT SPG/49 (June 2013) to allow time for operational readiness to implement RCP/surveillance performance by 2015.

SOCM/2
Appendix B to the Report

#	TASKS	COMPLETE BY	STATUS	LEAD	Remarks
	POST IMPLEMENTATION TASKS				
15	Post-implementation monitoring, analysis and corrective action per GOLD, Apx D and any other necessary monitoring tasks.		On-going See related Task 11.	ANSP/ DLMA/ CNSG	When performance falls below specified levels, operational judgment may be a consideration in determining appropriate actions.
16	Develop a guidance material to clarify the interpretation of RCP and surveillance specification in terms of compliance/non-compliance.	NAT IMG/41 NAT SPG/49	In progress	CNSG	
17	Conduct workshops to raise awareness on RCP and surveillance performance.	NAT SPG/49		ICAO/ States	