



International Civil Aviation Organization

**The Second Meeting of the Regional Airspace Safety Monitoring Advisory Group
(RASMAG/2)**

Bangkok, Thailand, 4 – 8 October 2004

Agenda Item 5: Review regional and global airspace planning and implementation developments and provision of airspace safety monitoring services

**SUMMARY REPORT OF THE FIRST MEETING OF THE FANS IMPLEMENTATION
TEAM FOR THE SOUTH-EAST ASIA AREA (FIT-SEA/1)
BANGKOK, THAILAND, 24 – 28 MAY 2004**

(Presented by the Secretariat)

SUMMARY

This paper presents a summary of the report of the first meeting of the FANS Implementation Team for the South-East Asia area (FIT-SEA/1). The meeting established an implementation plan for data link services in the area and agreed to commence an operation trial when the States concerned had equipped with data link systems.

1 INTRODUCTION

1.1 The Asia/Pacific Region Air Navigation Plan (Doc 9673) and the Regional Plan for New CNS/ATM Systems were required to implement CNS/ATM systems including data link systems./ The provision of ADS and CPDLC services would provide significant improvements for the oceanic procedural non-radar airspace in the region, and where HF communication was the primary means of controller/pilot communications.

1.2 It should be noted that APANPIRG's List of Key Priorities for CNS Implementation in the Asia/Pacific Region includes Key Priority 6: *The implementation of ADS in oceanic or remote areas in accordance with the Regional CNS/ATM Plan is required for the enhancement of safety and ATM.*

2 DISCUSSION

Establishment of FIT-SEA

2.1 The FIT-SEA/1 meeting recognized that under Annex 11, States were required to implement systematic and appropriate ATS safety management programmes to ensure safety was maintained in the provision of ATS within airspaces. In the case of providing ADS and CPDLC services in the South-East Asia area, the meeting noted that States were obligated to establish safety arrangements to ensure that the appropriate TLS was met and maintained.

2.2 At the APANPIRG/14 meeting, it was noted (paragraph 2.1.104 of the report) that in recognition of the effectiveness of the FANS Interoperability Teams (FIT) operating in the Pacific Region under ISPACG and IPACG (PAC-FIT) and the FANS Implementation Team operating in the

Bay of Bengal area (FIT-BOB), a similar mechanism should be established to progress FANS issues in the South-East Asia area.

2.3 FIT-SEA/1 agreed that in order to establish integrated ADS and CPDLC services for the provision of ATS services in the South-East Asia area, it would be necessary to establish a FIT-SEA. Membership of FIT-SEA would be open to all interested parties, including:

- a) South-East Asia States with CNS/ATM work stations;
- b) Data link Service Providers (DSPs) (ARINC, SITA & INMARSAT);
- c) Aircraft manufactures (Boeing & Airbus);
- d) ICAO;
- e) International Organisations, and
- f) Representatives of participating airlines.

Implementation of data link services

2.4 FIT-SEA agreed to establish the implementation plan, identify the airspace where data link services would be implemented and establish an operational trial. The meeting further agreed that in setting up the FIT-SEA, consideration should be given to following the FIT-BOB model and adopting the FIT-BOB documentation as appropriate.

2.5 States responsible for the non-radar airspace over the South China Sea (SCS) provided information on their preparedness to implement ADS and CPDLC. Only Singapore had implemented data link services and was operating ADS and CPDLC since 1997 for ATC in the Singapore FIR. The meeting recognized that as a result of the low level of equipage amongst SCS States, there would be some delay in commencing an integrated operational trial of ADS/CPDLC in the SCS area, probably not until 2006/2007. In light of the delays expected, the meeting agreed that the development of the main work programme would be deferred until the next meeting of FIT-SEA, at which time further information was expected to be available on the status of the facility upgrades of a number of States which were currently at an early stage, and the consequent preparedness of States to commence a trial.

2.6 IATA commented that the users expected States to provide surveillance capability for the non-radar airspace, as improving situational awareness for ATC had a positive impact on safety, as well providing significant benefits for operational efficiency and regularity of flights. On the SCS routes, there was a major area in the middle portion of the airspace outside radar and VHF coverage. Providing data link capability to fill the gap would derive benefits that the airline industry fully supported.

2.7 The meeting recognized that it was important to maintain momentum towards implementation and establishment of the FIT-SEA would facilitate this process. Preparatory work could be usefully undertaken to minimize delay in implementation once States were in position to commence an operational trial. Accordingly, the meeting agreed to form the FANS Implementation Team for the South-East Asia area (FIT-SEA).

2.8 Japan suggested to the meeting that when new ATM equipment was purchased that it should include data analysis tools to facilitate data being available for safety analysis, thereby avoiding the need to upgrade equipment after purchase. The meeting agreed that States should take this into account when planning for ATM system upgrades.

FANS-1/A Operations Manual (FOM)

2.9 The Secretariat briefed FIT-SEA/1 on the outcome of the APANPIRG Review of the *Guidance Material on CNS/ATM Operations in the Asia and Pacific Region* Task Force meeting in October 2003. The Task Force was set up by APANPIRG/14 (August 2002) under Conclusion 14/2 to review the regional *Guidance Material on CNS/ATM Operations in the Asia and Pacific Region* (referred to hereafter as the *Guidance Material*). APANPIRG/14 had taken action on the request of the Air Navigation Commission to ensure that the regional *Guidance Material* was in accordance with the SARPs and PANS, and in particular with Amendment 1 to the PANS-ATM, Doc 4444.

2.10 FIT-SEA/1 noted that ICAO had carried out a detailed technical review of the *Guidance Material* in light of Amendment 1 to PANS-ATM, which included ADS operating procedures, and had recommended to the Commission that there was a need to harmonize the *Guidance Material* with ICAO provisions. The Commission also wished to see other ADS/CPDLC operating procedures being used by States brought in line with ICAO provisions to the extent possible. In this regard, APANPIRG/14 requested the Task Force to coordinate its work with States responsible for the Pacific Operations Manual (POM) with the intent of harmonizing both documents.

2.11 The Task Force carried out a detailed review of the *Guidance Material*, and a revision to the document was under preparation, which had been harmonized with the POM. The meeting was reminded that Part IV of the *Guidance Material* was based on the POM and was substantially the same with minor editorial differences. Therefore, States when using the POM would be following operating procedures supported by the ICAO Asia/Pacific Region *Guidance Material*.

2.12 At the request of the ICAO Regional Office subsequently ISPAG and IPACG agreed to change the title of the POM to the FANS-1/A Operations Manual (FOM). This would more accurately facilitate global application of the operating procedures.

2.13 FIT-SEA/1 emphasized the importance for States to review their operational procedures and revise them in line with the FOM. States were reminded that there were significant operational and safety issues related to not using common operating procedures, and this matter should be given high priority. Also, training of controllers and technical staff on the FANS-1/A operating procedures was crucial. The meeting was advised that support and assistance with any matter related to the FOM was readily available.

Establishment of a Central Reporting Agency (CRA)

2.14 The Fit-SEA/1 meeting noted the importance of establishing a CRA to enable States to implement operational ADS and CPDLC systems. In this regard, the CRA performs the essential technical analysis of the performance of these systems and undertakes the investigation of system failures and other technical malfunctions. This was essential to trace the cause of problems whether in the aircraft or ground systems, and to initiate remedial action by the responsible parties.

2.15 FIT-SEA/1 recognized that operation of ADS and CPDLC in an operational air traffic control environment was safety critical, and the performance of aircraft and ground ADS and CPDLC systems, and their potential contribution to operational risk, must be thoroughly evaluated and effective monitoring carried out prior to implementation and for ongoing operations.

2.16 The Secretariat reminded FIT-SEA/1 that ICAO had not developed SARPs for FANS-

1/A applications – including airborne and ground systems. Consequently, the appropriate collision risk models (CRMs) used to derive separation minima effectively formed the ICAO “SARPs”, and the onus was on States to demonstrate that their ADS/CPDLC systems and operations met the performance parameters in the CRMs for application of reduction in separation minima using data link services. These models are in the *Manual on Airspace Planning Methodology for the Determination of Separation Minima* (Doc 9689). The analysis and investigation activities of the CRAs were essential in determining whether a State was meeting the CRM requirements. FIT-SEA/1 agreed that the appointment of a CRA for the South-East Asia area was essential.

2.17 In considering the issue of a suitable service provider for the CRA for FIT-SEA States, the meeting was advised that Boeing (who was operating the CRA for the Pacific Region) had confirmed at the FIT-BOB/2 meeting (8-12 September 2003) that they would be willing to provide CRA services to the States of FIT-BOB to support the operational trial and implementation of ADS and CPDLC services. Accordingly, IATA and Boeing were requested by FIT-BOB/2 to pursue the establishment of a contract on behalf of the FIT-BOB States participating in the operational trial for Boeing to set up and operate the CRA.

2.18 IATA agreed to the arrangements and would work with Boeing to evaluate the costs of operating the CRA, arrange for a contract with Boeing, and collect the funds from the airspace users concerned. IATA advised the FIT-SEA/1 meeting that, with regard to the FIT-BOB operational trial, the contract negotiations with Boeing were continuing with a view to finalizing appropriate contract arrangements. As Boeing was not represented at the FIT-SEA meeting, no discussion has been undertaken with Boeing regarding the FIT-SEA CRA issues.

2.19 Japan presented information on the roles and activities presently being undertaken by the CRA Japan in support of operations in the North Pacific. The Japan CRA commenced activities in May 2001 and has CRA responsibilities for the Tokyo FIR. The CRA of Japan offered to undertake the role of CRA for the South China Sea States, as an extension to its existing activities.

2.20 In the following discussions FIT-SEA/1 sought clarification of the respective roles of the CRA of Japan and its relationship with Boeing, with a view to fully understanding whether the South China Sea CRA activities would be undertaken exclusively by the CRA of Japan or whether Boeing would have a role and if so, the extent of that role. As this information was not immediately available, the Japan representative was asked to clarify the proposed arrangements with Boeing and provide an update to the RASMAG/2 meeting in October 2004).

2.21 Because there would be some delay in commencing an operational trial in the SCS (2006/2007), IATA and a number of States suggested that the selection of a CRA could be delayed until closer to the commencement of the trial. It was agreed this would be deferred until the FIT-SEA/2 meeting, at which time further information was expected to be available about the CRA Japan proposal and experience would have been gained with the FIT-BOB CRA.

Establishment of operational trial

2.21 The FIT-Sea/1 was updated by States of their progress to provide data link services. In regard to the South China Sea airspace, the Philippine, Singapore and Viet Nam were responsible for the FIRs (where ADS and CPDLC could be implemented for the non-radar oceanic airspace).

Philippines

2.22 The Philippines informed FIT-SEA/1 that they introduced an ADS/CPDLC operational trial in March 2002 using a standalone system, however, the trial had been stopped after one year due to low utilization. The equipment used had been returned to the manufacturer as it was being replaced in their CNS/ATM project. The Philippines had developed a master plan for implementation of CNS/ATM systems in line with the Asia/Pacific Regional plan and it was expected that the project would be completed in 2007. At that time, the Manila ACC would have an integrated automated ATM system with ADS, CPDLC and new SSR radars, and they would be in a position to participate in the operational trial for the SCS.

Singapore

2.23 Singapore advised that they introduced ADS/CPDLC services in 1997 on a limited basis over the oceanic part of the Singapore FIR in the South China Sea area using a standalone workstation. In February 1999, the ADS/CPDLC system was integrated into their ATC system, LORADS II and the services extended to 24 hours from October 1999. The logon rate with FANS-1/A capable aircraft was above 90 percent. The meeting noted that without other States' participation it had not been possible to gain the full benefits of ADS/CPDLC services across the SCS airspace. The meeting appreciated the service provided by Singapore and the valuable experience gained.

Viet Nam

2.24 Viet Nam provided information on its CNS/ATM implementation plans. Radar cover includes all of the Ha Noi FIR and a significant part of the Ho Chi Minh FIR. In the latter case, there was an area over the South China Sea beyond radar coverage and CAAV would provide ADS/CDLC systems under their new CNS/ATM Systems Transition and Implementation Plan, which was in accordance with the ICAO Regional Plan for CNS/ATM Systems. The radar and data link systems would be integrated and was expected to be completed in 2006, at which time Viet Nam would be able to participate in the ADS/CPDLC operational trial for the SCS area.

2.25 FIT-SEA/1 recognized that only Singapore was presently able to provide ADS/CPDLC services for the oceanic non-radar airspace of the Singapore FIR. The other airspaces involved were within the Ho Chi Minh and Manila FIRs. In this regard, the South China Sea area ADS/CPDLC operational trial would be carried out by the Philippines, Singapore and Viet Nam. Indonesia would also participate in this trial for the eastern part of the Jakarta FIR (they were also participating in the Bay of Bengal trial). Accordingly, a full operational trial should be possible by 2007.

ADS-B developments

2.26 The meeting noted that States were considering ADS-B as a means to provide surveillance in non-radar areas using ground-based systems. This would be a significant enhancement and would provide radar-like operations. The meeting was updated by the Regional Officer CNS on the work of the ICAO ADS-B Study and Implementation Task Force which held its second meeting in March 2004. The Task Force had not completed its work to develop an implementation plan for the region and there was no time table established. They were monitoring progress by a number of States to implement ADS-B systems, notably Australia who was presently implementing approximately 25 ADS-B ground stations to provide surveillance of the whole of Australian airspace not under radar cover and was expected to be operational in late 2005 or 2006. Indonesia advised that they were preparing an implementation plan for ADS-B to provide surveillance of non-radar areas using ground-based systems and implementation was expected in 2005.

ATS Interfacility Data Exchange (AIDC)

2.27 FIT-SEA/1 was updated on ATN developments and noted that with ATM automation, many coordination functions would be accomplished through data exchange between ATM systems using ATN applications such as AIDC or ATS message handling service (AMHS).. APANPIRG had established the ATN Task Force to assist States to implement the ATN in the Asia/Pacific Region. However, requirements for AIDC have not yet been established and the ATN/TF held in April agreed to provide a table to specify requirements to be included in the ASIA/PAC FASID. FIT-SEA/1 noted that AIDC operational trials would need to be carried and some States were conducting such trials, e.g. Hong Kong/Guangzhou, Hong Kong/Bangkok and Japan/United States.

Data Link monitoring requirements

2.28 FIT-SEA/1 reviewed the data link monitoring requirements that would need to be established for the commencement of an ADS and CPDLC operational trial and ongoing operations. In this regard, airspace safety monitoring programmes require monitoring for implementation and application of reduced separation minima such as reduced vertical separation, reduced horizontal separation using RNP, and separation based on ADS and CPDLC. The ATS data link applications supports the reduction in longitudinal separation, e.g. 30 and 50 NM using ADS and CPDLC, whereby distance-based separation replaces time-based separation.

2.29 In modern ATM automated systems, ATS data link functions as part of an integrated system including physical systems, human elements and procedures for use by pilots and controllers. Because of the integrated nature of the system and the degree of interaction among the components, end-to-end system monitoring was required. In this regard the FOM details the FANS-1/A requirements and procedures for the operation of aircraft and ground systems in a data link environment.

2.30 Data link systems monitoring involves routine collection of data necessary to ensure that the systems continue to meet performance, safety and interoperability requirements, and that operations and procedures were working as planned. The monitoring program was a two-fold process:

- a) periodic status reports that consist of the statistical data of system performance; and
- b) problem reports analysis and resolution.

2.28 The meeting noted that RASMAG/1 provided draft guidance material being developed for end-to end safety and performance monitoring of ATS data link systems in the Asia/Pacific Region. The meeting agreed that the guidance material would be used to set up and operate the data link monitoring services under the CRA for the South-East Asia area.

3. ACTION BY THE MEETING

3.1 The meeting is invited to:

- a) review the report of FIT-SEA/1; and
- b) consider areas of interest to RASMAG and any appropriate follow up action.

— END —