INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

REPORT OF THE COMBINED

EIGHTH MEETING OF THE FANS IMPLEMENTATION TEAM, BAY OF BENGAL

(FIT-BOB/8),

NINTH MEETING OF THE AIR TRAFFIC FLOW MANAGEMENT TASK FORCE

(ATFM/TF/9), AND

THE EIGHTEENTH MEETING OF THE BAY OF BENGAL ATS COORDINATION GROUP

(BBACG/18)

Bangkok, Thailand, 22 to 26 January 2007

The views expressed in this Report should be taken as those of the Meeting and not of the Organization

Approved by the Meeting
and Published by the ICAO Asia and Pacific Regional Office

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PART I – HISTORY OF THE MEETING

1. Introduction

1.1 The Combined Eighth Meeting of the FANS Implementation Team, Bay of Bengal (FIT-BOB/8), Ninth Meeting of the Air Traffic Flow Management Task Force (ATFM/TF/9) and the Eighteenth Meeting of the Bay of Bengal ATS Coordination Group (BBACG/18) were held consecutively at the Kotaite Wing, ICAO Asia and Pacific Regional Office, Bangkok, Thailand. The FIT-BOB/8 meeting was held between 22 and 23 January 2007, the ATFM/TF/9 meeting was held between 23 and 24 January 2007 and the BBACG/18 meeting was held from 24 to 26 January 2007.

2. Attendance

2.1 The respective meetings were attended by participants from Australia, Bangladesh, India, Indonesia, Malaysia, Nepal, Pakistan, Singapore, Thailand, United States, IATA, IFALPA, SITA and ARINC. A list of participants is at **Attachment 1**.

3. Officers and Secretariat

3.1 Mr. Andrew H. Tiede, Regional Officer Air Traffic Management from the ICAO Asia and Pacific Regional Office, acted as the Moderator and Secretary for the FIT-BOB/8, ATFM/TF/9 and BBACG/18 meetings. He was assisted by Mr Polawat Chootai, Regional Officer Air Traffic Management

4. Opening of the Meeting

4.1 Mr. Andrew Tiede, on behalf of Mr. Lalit B. Shah, Regional Director, ICAO Asia and Pacific Regional Office welcomed all participants to Bangkok. He wished all participants a Happy New Year for 2007 and highlighted the extensive ATM meeting programme that was programmed to be conducted by the Regional Office during 2007. The Regional Office was pleased to be assisting with the introduction of metric RVSM in China which was an important implementation for the region.

4.2 Mr. Tiede regretted the need to conduct the three important meetings as a combined meeting this week, however available meeting opportunities were scarce but there was still a need to facilitate the important implementation work being managed by the three groups. He looked forward to some important news about the CRA funding mechanisms that would enable CRA services to be provided to the Bay of Bengal and Arabian Sea datalink trials. Mr. Tiede was hopeful that the meeting would hear that performance of the ATFM operational trial was such that a decision to implement ATFM could be considered and thanked BBACG members for their continued oversight of the many ATM issues that were active in the region. He wished the meeting every success.

5. Documentation and Working Language

5.1 The working language of the meeting and the language for all documentation were in English. Nine (9) Working Papers and Four (4) Information Papers were presented to the FIT-BOB/8 meeting. Seven (7) Working Papers and three (3) Information Papers were presented to the ATFM/TF/9 meeting. Thirteen (13) Working Papers and seven (7) Information Papers were presented to the BBACG/19 meeting. The list of papers is shown at **Attachment 2**.

FIT-BOB/8

REPORT OF THE FIT-BOB/8 MEETING

Agenda Item 1: Adoption of Agenda

1.1 The meeting adopted the following Agenda for the meeting:

Agenda Item 1: Adoption of Agenda

Agenda Item 2: Expanded Scope of FIT-BOB

Agenda Item 3: Review Bay of Bengal ADS/CPDLC Operational Trial

Agenda Item 4: Review Arabian Sea ADS/CPDLC Operational Trial

Agenda Item 5: Review ADS/CPDLC Implementation

Agenda Item 6: Central Reporting Agency

Agenda Item 7: Data Link Guidance Materials

Agenda Item 8: Update FIT-BOB Task List

Agenda Item 9: Any other business

Agenda Item 10: Date and venue for the next meeting

Agenda Item 2: Expanded Scope of FIT-BOB

2.1 The meeting recalled that during FIT-BOB/7 (July 2006) discussion had been held in respect to the provision of FIT and CRA services to the Indonesian FIRs and which of the regional FIT groups was in the best position to provide these services. FIT-BOB/7 had agreed that the FIT-BOB and the BOB-CRA would provide services to both the Indonesian FIRs (Jakarta FIR and Ujung Pandang FIR).

2.2 Additionally, after considering a request from the Arabian Sea Indian Ocean ATS Coordination Group (ASIOACG), the FIT-BOB/7 meeting and BOB-CRA had endorsed request from ASIOACG that interim FIT/CRA services be provided by FIT-BOB and BOB-CRA.

2.3 In terms of administrative arrangements, in the interest of simplicity FIT-BOB/7 considered that the ASIOACG FIT/CRA activities should be included as part of the routine FIT-BOB and BOB-CRA meeting arrangements. As Oman and Yemen were the two States mostly affected, the Regional Office had issued FIT-BOB meeting invitations to these two States as well. Unfortunately, neither State was in attendance at the meeting.

ADS/CPDLC Implementation Programme within Indonesia FIR

2.4 The meeting was pleased to welcome a delegation from Indonesia to FIT-BOB/8, and Indonesia provided the following updated information in respect to the ADS/CPDLC arrangements in Jakarta and Ujung Pandang FIRs.

Jakarta FIR

2.5 Indonesia had originally established a trial of ADS/CPDLC in 1999 for Jakarta FIR. However, the trial was suspended as a result of a number of system difficulties and communications are presently conducted using HF radio. However, Indonesia considered that assistance from ADS/CPDLC assistance was still necessary especially in the western airspace (IOS / Indian Ocean Sector) in areas not covered by VHF.

2.6 Recently, Indonesia has commenced a programme to establish a new ADS/CPDLC facility for enhanced services at IOS, which will replace the former facility. Advanced discussions are taking place with SITA as data link service provider and it is anticipated that operational trials of ADS/CPDLC will commence in late 2007. Planning is also in place to enhance the Jakarta ATSC system by commissioning the Jakarta Automated ATS System (JAATS) which is expected to be operational in 2010/2011.

Ujung Pandang FIR

2.7 With regard to the Ujung Pandang FIR, Indonesia informed the meeting that Makassar Advanced ATS System (MAATS) had been implemented and all supporting facilities for ATS had been implemented for the Ujung Pandang FIR. ADS/CPDLC facilities were already installed and had satisfactorily completed engineering tests. The preparation of operational ADS/CPDLC procedures for would be completed by mid 2007 and Indonesia would then continue with an ADS/CPDLC operational trial in the second half of 2007.

2.8 In offering support to Indonesia, Boeing informed the meeting of some of the capabilities of the Boeing technical laboratories, including the ability of the datalink test benches to log onto a datalink ground system and simulate all datalink messaging requirements. This allowed the test bench to test all parameters of an ANSP equipment installation and create, for example, simulated deviations from track and flight level in order to test the track and level compliance detection and alarm systems in the ground installation. Boeing offered assistance in this regard to States in the FIT-BOB, and also States involved in the South China Sea operational trials. States were encouraged to contact the BOB CRA to commence coordination of testing using the Boeing test bench equipment.

2.9 IATA and Airservices Australia also offered support to Indonesia in conducting the operational trials, building on well established relationships already in place with Indonesia. IATA noted the implementation model that had been recently adopted by FIT-SEA for the operational trials in the Ho Chi Minh FIR and suggested that Indonesia may also be able to use this model to assist with datalink implementations in Indonesian FIRs.

Agenda Item 3: Review Bay of Bengal ADS/CPDLC Operational Trial

3.1 The meeting recalled that India had commenced an operational ADS/CPDLC trial in the Chennai and Kolkata FIRs of the Bay of Bengal area in February 2004. Although there was little real scope for VHF radio coverage in this oceanic area India had established VHF RCAG stations at Vizag and Port Blair to enable Kolkata ACC and Chennai OCC to provide the area control service, with HF communication support. Considering the need for enhanced surveillance and communication in the Bay of Bengal airspace of Chennai and Kolkatta FIRs, India installed ADS/CPDLC equipment and commenced operational trials at both these centres from 19th February 2004. Ground equipment from the Electronics Corporation of India (ECIL) was installed and datalink network services are being provided by SITA.

3.2 India reported that although initially very few aircraft from a small number of airline operators participated in the trial operations and there had been a steady increase in the participation of airlines. Presently, the number of aircraft participating in the trials has increased to almost 90% of the data link equipped aircraft operating in Bay of Bengal, with datalink equipped flights representing about 45% of the total traffic. In the month of December 2006 about 3000 out of 3372 ADS equipped aircraft have logged on to Chennai.

3.3 Data sampling conducted during December 2006 indicated that the daily number of uplink/downlink messages at Chennai varied from 2000 to 2500 per day, and from 1000 to 1500 at Kolkata. CPDLC messages averaged around 250 per day.

3.4 Pending finalization on funding arrangements and establishment of Bay of Bengal CRA, problem reports were being forwarded to bradly.d.cornell@boeing.com at Boeing. India conveyed their thanks for the responses being received from Boeing. SITA is providing regular updates on unexpected service interruptions as well as planned outage. India considered this another positive approach towards provision of better service and appreciated the efforts of SITA in this regard.

3.5 The number of problems encountered has reduced considerably. Out of 83 Problem reports, 40 are related to avionics, 20 are related to SITA link connectivity and 23 related to ground systems. The problem regarding log on failures with A330 series was discussed in the previous meeting and the input given by Boeing and SITA were useful in identifying and rectifying the system problem both at Chennai and Kolkatta.

3.6 The problem reports are now mostly repetitive in nature and relate mainly to CPDLC connectivity, particularly with certain aircraft types like A334 and B772 series. However there is no problem with ADS connectivity. Unexpected avionics responses, and unexpected ground system errors were also encountered. With the implementation of suitable software updates in the ground system, the errors are observed to be minimizing.

3.7 At present 'Time lag' problems also still exist in the system. Time delays in the round trip delivery of messages (ranging from 50 seconds to as high as seven minutes) were observed. The relevant data are being collected for analysis by CRA.

Agenda Item 4: Review Arabian Sea ADS/CPDLC Operational Trial

4.1 Recalling that India had commenced operational ADS/CPDLC trial in the Mumbai FIR in July 2006, the meeting recognized that the Arabian Sea airspace in Mumbai FIR is an extremely busy airspace connecting South East Asia and Gulf Sates to the west. As many as eight parallel ATS routes and four crossing routes transit through this airspace, with about 30 points of conflict. Due to the inherent limitations of HF radio, provision of air traffic control service was a serious challenge to the Mumbai Controllers. The Airports Authority of India (AAI) had therefore implemented ADS/CPDLC in 2006 to enhance surveillance and communication capabilities, Raytheon ground equipment was installed, with datalink network services provided by SITA. The ground system provides an integrated display of all tracks (Radar, ADS and FPL tracks in the order of priority) on the controller display.

4.2 India noted that there has been progressive improvement in the number aircraft participating in the trials, with on average 30 to 40 % of total traffic normally logging on to ADS/CPDLC. The numbers of aircraft are in accordance with the following table:

ROUTE	NOVEMBER 2006		DECEMBER 2006	
	TOTAL	LOGGED ON	TOTAL	LOGGED ON
L301	2868	890	3261	912
P574	2169	403	2652	397
N571	1582	610	1641	588
P570/R456	1200	379	1426	515
M300	1248	370	1258	390
M638/P518	473	141	539	130
N563	230	084	453	089

4.3 Following is the list of major participating airlines:

1. Emirates – 45 to 60%
2. Qatar Airways – 11-12%
3. Singapore Airlines – 10%
4. Ethihad – 6%
5. Thai Airways – 6%

4.4 Cathay Pacific, Lufthansa, Srilankan Airlines, Saudi Airways, Kuwaiti Airways, Air France, Yemini Airlines and Indian national carrier Jet Airways are some of the other airlines participating. India sought assistance from IATA in encouraging airline participation in larger numbers.

4.5 India reported that as a result of the commencement of operational trials, there has been marked improvement in the communication and surveillance in the Arabian Sea airspace resulting in more efficient air traffic management.

4.6 The system is in operation for almost 17 hours per day. No serious problems have been encountered so far. The mechanism for sending problem reports to Boeing as the BOB-CRA is in place, however very few problem reports had been raised for the Mumbai FIR trial operations. SITA is providing regular updates on unexpected service interruptions as well as planned outage.

Agenda Item 5: Review ADS/CPDLC Implementation

5.1 In noting that the availability of BOB-CRA services (see Agenda Item 6) would probably enable progress to be made towards implementation the in the Bay of Bengal and Arabian Sea areas, the meeting considered the advisability of States publishing a set of standard procedures for use by participants in the regional datalink trials. As the existing India AIP Supplements had been current for some time, issuing a standardised set of procedures for the trial would also alert operators that the trials were still active and could encourage greater participation by airspace users. The standard procedures adopted for India could then be further adopted by Sri Lanka, Myanmar and other States as the respective States joined the trial.

5.2 The meeting noted that a similar approach had been adopted by the FIT-SEA for the operational trial in the Ho Chi Minh FIR that would commence in March 2007 and that some preparatory work on a set of standardised procedures had been completed. The meeting agreed that using the Ho Chi Minh procedures (**Appendix A** refers) as the basis for the Bay of Bengal/Arabian Sea procedures would assist regional standardisation. India agreed to work with IATA in drafting and promulgating a suitable set of standardised procedures.

Status of regional implementation

5.3 The meeting was updated in relation to the status of regional ADS/CPDLC implementation for the States of the BBACG as follows:

India

5.4 The update from India has been included as Agenda Items 3 & 4 above.

Indonesia

5.5 The update from Indonesia has been included at paragraphs 2.4 to 2.9 above.

Malaysia

5.6 Malaysia informed the meeting that they were finalizing the tender documentation for the acquisition of new ADS/CPDLC equipment and tenders were expected to be opened during early February 2007. Malaysia anticipated reaching engineering readiness with the new ADS/CPDLC equipment in late 2007 with the intention of joining the Bay of Bengal operational ADS/CPDLC trials in the first quarter of 2008.

Myanmar

5.7 Myanmar was not present at the meeting and had not provided additional information over the comprehensive update presented to FIT-BOB/7 in July 2006.

Singapore

5.8 Singapore reaffirmed to the meeting that their ADS/CPDLC equipment had been operational for some years. Planning was now in progress towards the implementation of RNP/10 based 50/50NM separation using CPDLC during late 2007 and for RNP4 based 30/30NM separation in 2010.

Sri Lanka

5.9 Sri Lanka was not present at the meeting, however the meeting was informed that a NOTAM (**Appendix B** refers) had recently been issued by Sri Lanka notifying that datalink services were available to FANS 1/A equipped aircraft operating in the Colombo FIR.

5.10 As this was the first information available from Sri Lanka for some time, the Regional Office would undertake coordination with Sri Lanka in order to accurately establish the arrangements being used by Sri Lanka for datalink services.

Thailand

5.11 Although the international airspace of Thailand was mostly covered by radar and VHF radio, Thailand had recognised a need for datalink and had conducted some earlier trials with stand-alone equipment. The construction of the new Bangkok ACC, which was expected to commence operations in late 2008, had provided an opportunity to further study the matter and the outcomes of the present planning discussions were expected to be available in late 2007 or early 2008. Thailand would update FIT-BOB as this information became available.

Tables of ADS/CPDLC Equipage and ATS Status

5.12 Recognising that up-to-date information was important in the planning and conduct of operational trials, the meeting reviewed and updated the Tables of ADS/CPDLC Equipage and ATS Status for the Bay of Bengal/Arabian Sea/Indonesian FIRs as shown in **Appendix C.** The Secretariat stressed the importance of maintaining the list of contact officers up to date in order to facilitate timely and efficient communications in relation to operational trial activities.

SATCOM Capacity/Performance Planning Process

5.13 The meeting recalled that SITA had briefed FIT-BOB/7 in relation to a global satellite capacity/performance planning initiative to obtain from customer airlines and ANSPs their expectations of traffic evolution and feed it into a performance model that will identify the number of channel units needed to provide the required level of performance. Ongoing global capacity planning by all stakeholders is necessary to draw up a plan for maintaining the availability of the classic aeronautical service at an acceptable level of performance through 2018.

5.14 To provide a basis for long term satellite traffic load estimates to assist data link service provider (DSP) network planning, FIT-BOB/7 had drafted a table of ADS/CPDLC implementation planning for all FIT-BOB and FIT-SEA FIRs including estimated dates for implementation of CPDLC communications, ADS/CPDLC full implementation, 50/50 reduced separation using CPDLC and 30/30 reduced separation using ADS & CPDLC. The meeting reviewed and updated the table, as shown in **Appendix D**.

5.15 SITA informed the meeting that they had been preparing a template document for discussion during the March 2007 meeting of ISPACG. Subject to acceptance by ISPACG, the template would be made available to other FIT groups to facilitate this data collection.

Agenda Item 6: Central Reporting Agency

Commencement of BOB CRA services

6.1 The meeting recalled that matters regarding establishment and funding of CRA services for the Bay of Bengal and Arabian Sea operational ADS/CPDLC trials were discussed in earlier BBACG and FIT-BOB meetings. It had been agreed that Boeing would provide CRA services and that IATA would provide a mechanism under which a levy would be collected by IATA on behalf of India and paid to the Boeing CRA. Accordingly an agreement was required to be executed between the Airports Authority of India and IATA for collection of the charges on behalf of India and an additional agreement between IATA and Boeing to enable payment to Boeing.

6.2 Under the institutional arrangements in force in India, since the charges involved fell into the category of Aeronautical Charges, government approval was a pre-requisite for signing the agreement. Accordingly Airports Authority India took up the matter with Government of India and was now pleased to convey to the meeting the approval from the Government of India. AAI would shortly commence formal communications with IATA for the purposes of finalizing the agreement and other arrangements as per the agreed terms of reference. AAI, in coordination with IATA would also finalize the AIP Supplement, modalities for data collection and submission of problem reports in respect systems at Chennai, Kolkata, Mumbai and Delhi.

6.3 Noting the extensive delay that had occurred in establishing financial arrangements that enabled the provision of CRA services for the Bay of Bengal and Arabian Sea airspaces, the meeting congratulated India on this news. The lack of BOB-CRA services had meant that complex problem reports had been unable to be analyzed and the technical parameters of the data link operations had been unable to be verified. Consequently, without the CRA services being available, no progress could be made beyond the current trial operations. Having BOB-CRA services available would enable suitable technical assessment to be made and would assist markedly in the full implementation of datalink services.

6.4 The meeting also thanked IATA for its continued willingness to act as the financial agent in these matters and looked forward to an accelerated implementation of datalink technologies in the Bay of Bengal and Arabian Sea areas.

6.5 The meeting recalled that the SCM BOB CRA (June 2005) had recognized that although India would be the State involved in providing data to IATA for charging purposes, the remaining States surrounding the Bay of Bengal should also be alerted to the imminent commencement of CRA services. SCM BOB CRA had requested that the Regional Office provide suitable advice to surrounding States in this respect and had drafted a suitable generic AIP Supplement (see **Appendix E)**.

6.6 Although only minimal delays were expected in completing the financial arrangements, the meeting agreed that the Regional Office be kept fully up to date with progress in this regard. When the financial agreements had been signed the Regional Office should then communicate with surrounding States by State Letter, advise them that the CRA services were available and request that they issue the AIP Supplement.

BOB-CRA Confidentiality Agreements

6.7 The meeting considered arrangements for data confidentiality agreements between States, Airlines, Data Link Service Providers (DSPs) and the BOB-CRA. The meeting recognized that the CRA required access to detailed data link audit data in order to fully investigate and resolve problem reports. The confidentiality agreement documents the rules by which the CRA is allowed access to required information and that such information will not be used for marketing or other commercial purposes. States and operators participating in the BOB ATS data link trial are invited to sign the confidentiality agreement (**Appendix F** refers) and send a copy to the FIT-BOB CRA (Bradley.d.cornell@boeing.com).

Submission of Problem Reports

6.8 In accordance with the provisions of the FOM, Problem Reports (PRs) from all FIT-BOB members should be submitted directly to the CRA as soon as possible on each occasion in order that the CRA could request audit data in a timely matter. The meeting recognized that key data elements such as the tail number, flight number, date, time, and brief description of the problem are essential in order to obtain required audit data. A copy of the PR form is attached in **Appendix G** to the Report.

6.9 In recognizing the importance of quick and efficient communications between the parties involved in investigating a PR, the meeting agreed that the list of contact officers contained in the Tables of ADS/CPDLC equipage and ATS Status (see Appendix C) were suitable but should be kept fully up to date.

Periodic Status Reports

6.10 The meeting noted that ANSPs should complete and submit the FANS 1/A Periodic Status Report (**Appendix H** refers) in accordance with FOM provisions at monthly intervals as agreed by the FIT-BOB, to meet requirements for the dissemination of information and as an indication of system

performance. Additionally, the report should identify any trend discovered in system deficiencies, the resultant operational implications, and the resolution, if applicable.

6.11 Communications service providers were also expected to submit monthly FANS 1/A Periodic Status Reports on the performance of their networks at specified intervals. These reports should also contain system outage information.

Funding of Safety Monitoring

6.12 The Secretariat updated the meeting in relation to the longstanding issues surrounding the provision of robust and reliable regional airspace safety monitoring arrangements, including those for RVSM and reduced horizontal separation minima as well as data link CRA funding.

6.13 APANPIRG/17 (August 2006) had acknowledged the importance of safety monitoring and noted the concerns about the sustainability of the voluntary approaches that were in place regionally. In this regard the United States of America had informed APANPIRG/17 that its voluntary funding of safety monitoring could not be continued indefinitely.

6.14 APANPIRG/17 recognized the genuine concerns expressed in respect to the general complexity of the matters under discussion and specifically in relation to matters of legal liability. This would require careful and focused consideration and APANPIRG/17 agreed that the most appropriate mechanism in this respect was to constitute a task force to study the issues and develop appropriate documentation and implementation plans.

6.15 Additionally, APANPIRG/17 recognized that in matters such as these, each State had individual responsibility and therefore APANPIRG was unable to act for all States regionally in this respect. Progress on these matters would require the concurrence of all States involved, not just those in attendance at the meeting. In order to allow States time to consult within their own administrations and consider the matter thoroughly, APANPIRG/17 agreed to establish a task force to draft implementation proposals for regional airspace monitoring committees, formulating appropriate Terms of Reference (**Appendix I** refers) to support the following Decision:

Decision 17/47 – Task Force to establish Regional Airspace Safety Monitoring Committees

That a Task Force be established to develop and distribute to States by 30 June 2007 implementation proposals for the establishment of Regional Airspace Safety Monitoring Committees. The Task Force would work in accordance with the terms of reference in Appendix A to the Report on [APANPIRG/17] Agenda Item 2.4 and use, *inter alia*, recent ICAO guidance materials in relation to the global approach for the funding of airspace safety monitoring.

6.16 In considering the issue, the 43rd Conference of Directors General of Civil Aviation, Asia and Pacific Regions (Bali, Indonesia, 4-8 December 2006) had reviewed APANPIRG Decision 17/47, recalling that the matter of organizing and funding safety monitoring services had been discussed at previous Conferences of the Directors Generals of Civil Aviation in Asia and Pacific. The importance attached to the subject was given expression in Action Items 41/6 and 42/4 adopted at the two most recent Conferences.

6.17 Noting the concern about the slow progress that had been achieved on this matter, the 43rd Conference urged those administrations involved in the task force to commit appropriately empowered experts to develop the necessary materials and information required to implement the guidance recommended by the Council of ICAO, adopting the following action item to this effect:

Action Item 43/4 - Funding of Safety Monitoring

Recognizing the importance of establishing sustainable approaches to the funding of safety monitoring so that on-going CNS/ATM implementation initiatives in Asia/Pacific will not be delayed and that safety and efficiency will not be compromised, the Conference:

> Urged the administrations associated with the APANPIRG Task Force on establishment of Regional Airspace Safety Monitoring Committees, to designate, at their earliest possible convenience, appropriately empowered experts to participate in the Task Force.

Agenda Item 7: Data Link Guidance Materials

Guidance Material – Datalink Procurement, Deployment and Implementation

7.1 In recognizing the lack of suitable guidance material in relation to the procurement, deployment and implementation of integrated data link systems (including AFN, ADS, CPDLC and AIDC), the Regional Airspace Safety Monitoring Advisory Group (RASMAG) had commenced work towards drafting suitable regional guidance material in this respect.

7.2 The RASMAG primary authors from Japan and New Zealand consider that the material is now complete, but suggested to RASMAG/6 that it be circulated to the FANS Implementation Teams for the Bay of Bengal (FIT-BOB) and South-East Asia (FIT-SEA), Informal Pacific ATC Coordinating Group (IPACG) and Informal South Pacific ATS Coordination Group (ISPACG) for comment. Final adjustments would be made to the draft during the next RASMAG meeting scheduled in June 2007, with a view to presenting the Guidance Material to APANPIRG/18 in September 2007 for adoption as regional guidance material.

7.3 A copy of the draft *Asia/Pacific Guidance Material for ADS/CPDLC/AIDC Ground Systems Procurement and Implementation* is included as **Appendix J** to this report. The meeting was invited to review the draft documentation and provide feedback to the Secretariat by the end of April 2007 for consideration by RASMAG/7 in June 2007.

FANS 1/A Operations Manual (FOM)

7.4 The meeting recalled that APANPIRG/15 (August 2004, Bangkok) had agreed that States should take all relevant ICAO provisions on data link into account when establishing their operating requirements and procedures. Further, APANPIRG/15 agreed under Conclusion 15/7 that the FANS 1/A Operations Manual (FOM) provided the necessary procedures for ATS providers and should be used as a basis to operate ADS and CPDLC in the Asia and Pacific Region with aircraft equipped with the FANS-1/A systems.

7.5 Version 4 of the FOM has been published effective 28 September 2006. Copies of the FOM may be freely downloaded from the following websites:

http://www.crasa.cra-japan.org (the JCAB CRASA web page)
http://www.faa.gov/ats/ato/130.htm (the FAA's Oceanic Procedures Branch)
http://www.faa.gov/ats/ato/ipacg.htm (the IPACG web page)
http://www.faa.gov/ats/ato/ispacg.htm (the ISPACG web page)

Guidance Material for the End-to-End Monitoring of Data Link Systems

7.6 The meeting recalled that under Conclusion 16/20, APANPIRG/16 had adopted the Guidance Material for End-to-End Safety and Performance Monitoring of Air Traffic Service (ATS) Data Link Systems in the Asia/Pacific Region. The guidance material was intended to provide a set of working principles for ATS data link system performance monitoring that would be applied by all States implementing these systems, as well as providing detailed guidance on the requirements for establishing and operating FIT and CRA.

7.7 Copies of the Guidance Material are available from the website of the ICAO Asia/Pacific Regional Office at http://www.icao.int/apac/ under the "eDocuments" menu.

Agenda Item 8: Update FIT-BOB Task List

8.1 The meeting reviewed and updated the Task List for the FIT-BOB, incorporating information provided during the meeting. The updated Task List is shown at **Appendix K**.

Agenda Item 9: Any other business

9.1 The FIT-BOB did not identify any other business for discussion.

Agenda Item 10: Date and venue for the next meeting

10.1 The meeting noted the progress that had been reported by many States during the meeting in terms of datalink implementation and that the finalization of funding arrangements for the BOB-CRA would enable the imminent commencement of CRA services in support of both Bay of Bengal and Arabian Sea trial operations. Although recognizing that the Regional Office work programme was stretched, the meeting considered that a further meeting of FIT-BOB would be necessary during November/December 2007 in order to coordinate regional datalink implementations. The Regional Office was requested to consider making arrangements for a 3-day FIT-BOB meeting during November/December 2007, to be held at the Regional Office premises in Bangkok, Thailand.

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Procedures for Limited trials for ADS/CPDLC in the Ho Chi Minh FIR wef 15 March 2007

1 Introduction

1.1 Vietnam has completed installation of an Advanced Automated Air Traffic Management System with integrated ADS/CPDLC capabilities in the Ho Chi Minh ACC. Operational tests with aircraft have also been successfully conducted. ATC personnel have also completed the required training and Vietnam is ready to conduct limited operational trials.

1.2 The purpose of the limited trial is to familiarize controllers with ADS/CPDLC applications on specific routes in the Ho Chi Minh FIR, and to resolve any problems arising, before full operations are implemented. ADS/CPDLC procedures will be based on the FANS Operations Manual (FOM) version 4.0 dated 28th September 2006. A copy of the FOM may be obtained from the FAA website address http://www.faa.gov/ats/ato/ispacg.htm

1.3 In order to limit the inconvenience and costs to operators and to meet the specific objectives of the trials, the Civil Aviation Administration of Vietnam has requested a small number of operators for their assistance in conducting this trial. The operators are Vietnam Airlines, All Nippon Airways, Japan Airlines, Cathay Pacific Airways, and Singapore Airlines. Following the successful completion of this phase of the trials, it is expected that full operational trials with the participation of all FANS 1/A equipped aircraft will be implemented. This will be advised in an AIP Supplement in due course.

2. Implementation of limited operational trials

2.1 With effect from 0001UTC on 15 March 2007,ADS/CPDLC services will be available on a 24 hour basis on ATS routes L625, L628, M765, M768, N500 and N892 to FANS-1/A equipped aircraft of Viet Nam Airlines, Singapore Airlines, Japan Airlines, All Nippon Airways and Cathay Pacific Airways.

2.2 The concerned airlines participating in the trials will be advised individually in writing by separate letters from CAAV on the procedures for the limited trials.

3 Data Link Airspace

3.1 ADS/CPDLC services are available in the oceanic controlled airspace within Ho Chi Minh FIR, on ATS routes L625, L628, M765, M768, N500, and N892 to FANS-1/A equipped aircraft. As Singapore ACC is already currently providing data link services within the Singapore FIR, close coordination between Ho Chi Minh and Singapore ACC for address forwarding function is necessary for a seamless ADS/CPDLC service within the two FIRs.

3.2 ADS/CPDLC connection will be established by either automatic or manual logon procedures in the Ho Chi Minh FIR.

FANS-l/A equipped aircraft shall conduct VHF or HF radio check (as appropriate) with Ho Chi Minh ACC prior to entering the data link airspace and confirm that ADS/CPDLC connection is established with VVTS.

4 ADS/CPDLC LOGON Procedures

4.1 The ATS Facility Notification (AFN) logon is prerequisite to any ADS/CPDLC connection.

4.2 The flight identification number and registration contained in the logon shall be identical to the flight identification number and registration as filed in the ATS flight plan.

4.3 The AFN logon address of Ho Chi Minh ACC that provides the ATS data link services is "VVTS".

4.4 FANS-l/A equipped aircraft shall logon to VVTS between 15-45 minutes prior to entering the Ho Chi Minh FIR. On the initial contact with Ho Chi Minh Radio or Ho Chi Minh Control, the pilot should confirm that ADS/CPDLC connection is established.

4.5 FANS-1/A equipped aircraft already established on data link services in Singapore FIR will be transferred automatically by address forwarding or instructed by Singapore ACC to terminate the connection with Singapore and logon manually at an appropriate time prior to the FIR boundary. The pilot should inform Ho Chi Minh Radio or Ho Chi Minh Control on initial voice contact that ADS/CPDLC communication is established with "VVTS" and should downlink a CPDLC position report.

4.6 If address forwarding is not automatically processed and "VVTS" is not the active centre, the pilot shall within 3 minutes of crossing the Ho Chi Minh FIR boundary disconnect by selecting “ATC Com Off” and then initiate a new AFN logon to the currently controlling authority i.e. "VVTS". If the address forwarding failure is detected by ATC, and “End Service” message will be sent and the pilot will be requested to logon to VVTS.

5. ADS/CPDLC Procedures in Ho Chi Minh FIR

5.1 Once ATC data link communications are established with Ho Chi Minh ACC and a CPDLC position report has been sent per FOM procedures the pilot shall initiate voice contact with Ho Chi Minh ACC via VHF/HF to ensure ADS/CPDLC controller/pilot communications are properly established. This additional voice contact procedure will only be used for the first phase of the trial.

5.2 The downlink response "WILCO" indicates that the instruction is understood and will be complied with.

5.3 Pilot read back for ATS clearance/instruction issued via CPDLC is not required.

5.4 Per FOM procedure 5.6.1, only uplink elements that are related to the overall message should be combined into a single message. Messages that contain unrelated elements could either cause confusion or result in the crew rejecting the entire message when one of the elements on its own could have been acceptable.

5.5 If the response to a multi-element message is **UNABLE** then the reply applies to <u>all</u> elements of the original message. The aircraft’s current clearance <u>shall not be</u> re-stated. A separate message containing a response to those requests that can be met will then be sent by the controller.

5.6 Free text messages shall be used only when an appropriate pre-formatted message element does not exist. In particular, the creation of a clearance request and the issuing of a clearance shall be performed by the use of pre-formatted message elements only. The use of pre-formatted message elements allows on board data processing such as the automatic insertion of the clearance information into the FMC. It also allows the controller to respond more quickly when the ATS system has the capability to automatically link a pre-formatted request to a pre-formatted response. Additionally, this process minimizes the risk of input errors.

5.7 When a free text message is required, standard ATC phraseology and format shall be used. Non-essential words and phrases should be avoided. Abbreviations should only be included in free text messages when they form part of standard ICAO phraseology, e.g. ETA.

6. Limitations to ADS/CPDLC Services in HO CHI MINH FIR

6.1 The pilot shall notify ATC of emergency situations by the most effective means available (voice or CPDLC).

6.2 If a MAYDAY or PAN message is received on CPDLC the air traffic controller will respond with the free text uplink message ROGER MAYDAY or PAN.

6.3 Special and other non-routine aircraft observations of moderate or severe turbulence, volcanic activity, etc should be reported by voice to ATS.

7. Termination of DATA LINK Service

7.1 Termination of DATA LINK Service for flights bound for the Singapore FIR

7.1.1 The ADS/CPDLC connection for FANS-1/A equipped aircraft being provided with data link services bound for the Singapore FIR will be automatically transferred to Singapore ACC 15 minutes before crossing the FIR boundary. The "CONTACT [ATS unit name] — [frequency] message will be up-linked 5 minutes before crossing the FIR boundary and "END SERVICE" messages will be automatically up-linked at the boundary, when Singapore ACC accepts the flight. In the event of a failure of the address forwarding function, an "END SERVICE" messages will be manually up-linked not later than the time the flight is crossing the FIR boundary or as soon as possible..

7.2 Termination of DATA LINK Service for flights leaving Ho Chi Minh FIR

7.2.1 The following CPDLC message will be up-linked to FANS-1/A aircraft leaving the Ho Chi Minh FIR for non-data link airspace..
"CONTACT [ATS unit name] [frequency]"

7.2.2 The pilot should acknowledge this message by sending "WILCO". When departing the data link airspace, an "END SERVICE" message will be uplinked to terminate the CPDLC connection with "VVTS"

8. Flight Plan Procedures

8.1 ATS systems use Item 10 (Equipment) of the standard ICAO flight plan to identify an aircraft's data link capabilities. The operator is responsible for inserting the following items in the ICAO flight plan:

- Item 10 - The letter "J" to indicate data link capability;
- Item 10 - The letter "D" in the Surveillance field to indicate ADS-C capability;
- Item 18 - The letters DAT/ followed by one or more letters as appropriate to indicate the type of data link equipment carried when "J" is entered in Item 10. (Refer ICAO PANS/ATM)

Example:
ICAO Item 10: .....**J**...../…**D**
ICAO Item 18: **REG/**..……...**DAT/SV** (for a satellite and VHF data link equipped aircraft)

Letter following DAT/	Type of data link
S	Satellite data link
H	HF data link
V	VHF data link
M	SSR Mode S data link

9. Data Link Failure

9.1 When CPDLC connection cannot be established successfully, the pilot should select "ATC Com off" if possible and then initiate another AFN logon. If the pilots continue experiencing the inability to establish CPDLC connection, the pilot shall inform ATS of the situation via voice.

9.2 When the pilot recognizes a failure of the CPDLC connection, the pilot should inform ATC of the situation via voice and terminate the CPDLC connection, if possible, by selecting "ATC Com Off".

10 Addressee for Problem Reports

10.1 Pilots or operators who have encountered problems with data link service shall report to the Air Navigation Department/ Civil Aviation Administration of Viet Nam, at the following address:

Civil Aviation Administration of Viet Nam
Air Navigation Department
119 Nguyen Son Street, Long Bien District,
Ha Noi, Viet Nam
Tel: 84-4-8 274 191 or 8 723 600
Fax: 84-4-8 274 194
AFS: VVVVYAAN
E-mail: and@caa.gov.vn

Director General
Civil Aviation Administration of Viet Nam

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A0344/06 NOTAMN
Q)VCCC/QCDXX/IV/BO/AE/000/999/0649N07953E005
A)VCCC
B)0701010230 C)PERM
E)REF AIP SRI LANKA PAGE ENR 1.1-13, PARA 14.
  ADS/CPDLC SYSTEM IS AVBL FOR OPERATIONAL USE IN THE COLOMBO FIR.
THE PROCEDURE AND THE REQUIREMENTS ALREADY DETAILED IN THE AIP SUB
SECTION ENR1.1, PARA 14 WILL BE FURTHER APPLICABLE. AMEND AIP PAGE
ENR 1.1-13, PARA 14.1.1 AS FLWS:
14.1.1 DATA LINK SERVICES ARE AVAILABLE TO FANS 1/A EQUIPPED
       AIRCRAFT OPERATING IN THE COLOMBO FIR
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Indian Ocean, Bay of Bengal, Arabian Sea incl ASIOACG, Indonesia- ADS/CPDLC equipage and ATS Status

(last update 28 July 2006)

STATE/ ORGANIZATION	FIR	LOGON CODE	Ground Station Manuf-acturer	DSP	ADS	CPDLC	AIDC	FDP	Test, Ops Trial or Operational	Procedures Published	BOB TRIAL	CONTACTS ATM contacts in **bold** text	REMARKS
AUSTRALIA Airservices Australia	Melbourne	YMMM	Thales	SITA	YES	YES	YES	YES	Operational	YES	NO	**Geoff Whitely**, Operations Manager Melbourne Centre, Tel 61 3 9235 7378, Fax 61 3 9235 2471, E-mail: geoff.whitely@airservicesaustralia.com	Integrated System, ADS - B in 2006/07
	Brisbane	YBBB	Thales	SITA	YES	YES	YES	YES	Operational	YES	NO	**Warren Beeston**, Operations Manager Brisbane Centre, Tel, Fax , E-mail: warren.beeston@airservicesaustralia.com	Integrated System, ADS - B in 2006/07
INDIA Airport Authority of India	Chennai	VOMF	ECIL	SITA	YES	YES	NO	YES	Ops Trial	A1783/03, NOTAM A0700/03 A1177/03 A1796/05, updated 3 monthly AIP SUP 7/2006 published 2006	YES	**Mr. S.V. Satish** Joint General Manager (ATM) Airports Authority of India Tel: +91 44 22561539 Fax: +91 44 22560700 E-mail: svsatish@aai.aero	ADS-C Integrated with DPS, work in progress to integrate with RDPS
	Kolkata	VECF	ECIL	SITA	YES	YES	NO	YES	Ops Trial	A1278/00 NOTAM A0700/03 A1177/03 A1276/05, updated 3 monthly AIP SUP 6/2006 published 2006	YES	**Mr. S.N. Ray** General Manager (ATM) Airports Authority of India Tel: +91 33 2511 9966 Fax: +91 33 2511 8873 E-mail: svsatish@aai.aero	ADS-C Integrated with DPS, work in progress to integrate with RDPS

STATE/ ORGANIZATION	FIR	LOGON CODE	Ground Station Manuf-acturer	DSP	ADS	CPDLC	AIDC	FDP	Test, Ops Trial or Operational	Procedures Published	BOB TRIAL	CONTACTS ATM contacts in **bold** text	REMARKS
	Mumbai	VABF	Raytheon	SITA	YES	YES	NO	YES	Ops Trial Early 2006	A0894/06	Arabian Sea Trial YES	**Mr. M.K. Nelli** Deputy General Manager (ATM) Airports Authority of India Tel: +91 22 26828015 Fax: +91 22 26828066 E-mail: mknelli21@gmail.com	India commenced Ops Trial in Arabian Sea portion of Mumbai FIR from 1st July 2006
	Delhi	VIDF	Raytheon	SITA	YES	YES	NO	YES	Ops Trial Early 2006	A0403/06	Arabian Sea Trial YES	**Mr. Bakhshish Singh** Deputy General Manager (ATM) Airports Authority of India Tel: +91 11 2565 4367 26828015 Fax: +91 11 2567 5120 E-mail: mknelli21@gmail.com	India commenced Ops Trial in Arabian Sea portion of Delhi FIR from 1st July 2006
INDONESIA Directorate General of Air Communications ***Note: All datalink matters for the Jakarta and Ujung Pandang FIRs are managed by the FIT-BOB and BOB-CRA***	Jakarta	WIIZ		ARINC	YES	YES	NO	YES	Test	NO	NO	Mr. Nanang S. Taruf Deputy Director System & Procedure Air Navigation Directorate of Aviation Safety E-mail: cns-atm@telkom.net **Mr. Wiyono** ATC System Specialist Soeta Itnl Airport Tel: 62 21 5506178 E-mail: dss97@centrin.net.id	Present stand alone equipment withdrawn from trial, intend to rejoin BOB trial in 2007. Jakarta Advanced ATM Centre to be commissioned 2010
	Ujung Pandang		Thales	ARINC	YES	YES	YES	YES	Test	NO	NO	Mr. Nanang S. Taruf Deputy Director System & Procedure Air Navigation Directorate of Aviation Safety E-mail: cns-atm@telkom.net **Mr. Harjoso** Deputy Director of ATS AP1 Telp : 62 21 6541961 ext 2310 Fax. 62 21 65866838 E-mail atc@angkasapura1.co.id tugiyono_w@yahoo.co.id	Makassar Advanced ATM Centre comissioned 2006, datalink not yet operational

STATE/ ORGANIZATION	FIR	LOGON CODE	Ground Station Manuf-acturer	DSP	ADS	CPDLC	AIDC	FDP	Test, Ops Trial or Operational	Procedures Published	BOB TRIAL	CONTACTS ATM contacts in **bold** text	REMARKS
MALAYSIA Department of Civil Aviation	Kuala Lumpur	WMFC					NO	YES	Tender will be opened 1st week of FEB 2007. Expect to join operational trial 1st Quarter of 2008.		NO	**Mr.Harizan Mohammad Yatim** Director ATS Tel: 603-88714000 Fax: 603-88714290 E-mail: accwmfc@tm.net.my harizan@dca.gov.my **Mr Omran Zakaria** Deputy Director ATS Email:omran@dca.gov.my	
	Kota Kinabalu (FITSEA)	WBFC					NO	YES			NO		
MALDIVES	Male		NO	NO	NO	NO	NO	NO	NO	NO	NO		
MYANMAR Department of Civil Aviation	Yangon	VYYF	Thales	SITA	YES	YES	NO	NO	Ops Trial	AIC A1/99 (10.1.99)	NO	**U Yoa Shu** Director of ATS, DCA Myanmar Tel: 95 1 663838 Fax: 95 1 665124 E-mail ats@dca.gov.mm	Stand alone. Moved to new ATS Centre 2006, intermittent participation in BOB trial
SINGAPORE Civil Aviation Authority of Singapore	Singapore	WSJC	Thales	SITA	YES	YES	NO	YES	Operational	YES	NO	yeo_cheng_nam@caas.gov.sg	Ops Trial completed 1999, integrated system
SRI LANKA Airport & Aviation Services (AASL) Ltd	Colombo	VCCC	Thales	SITA	YES	YES	NO	YES	Ops Trial	AIC-A020F-2001	NO	**Mr. Ajith Nandana Wickremarachchi** Senior Air Traffic Controller Airport & Aviation Services (Sri Lanka) Limited Bandaranaike International Airport, Colombo, Katunayake Sri Lanka Tel: 94 777344338 Fax: 94 11 2635105 E-mail: wickram1@yahoo.com	Stand alone system, intermittent participation in BOB trial

STATE/ ORGANIZATION	FIR	LOGON CODE	Ground Station Manuf-acturer	DSP	ADS	CPDLC	AIDC	FDP	Test, Ops Trial or Operational	Procedures Published	BOB TRIAL	CONTACTS ATM contacts in **bold** text	REMARKS
THAILAND AEROTHAI	Bangkok	VTBB	ARINC	ARINC	YES	YES	YES	YES	Ops Trial	3 monthly NOTAM	DEFER	**Mr. Tinnagorn Choowong** Tel: 66-2-285 9975 Mobile: 66-09-816 6486 Fax: 66-2-285 9077 E-mail: tinnagorn.ch@aerothai.co.th	Stand alone system, intermittent participatior in BOB trial
OMAN													
YEMEN													
ARINC											YES	Mr. Sarawut Assawachaichit Program Manager, Globalink Asia Tel: 66 2 2859435-6 Fax: 66 2 2859437 E-mail: sassawac@arinc.com	
CENTRAL REPORTING AGENCY (CRA)											YES	Mr. Bradley Cornell Boeing Tel: 1 425 2946520 E-mail: bradley.d.cornell@boeing.com	
IATA											YES	Soon Boon Hai Assistant Director Safety Operations & Infrastructure Tel: 65 62397267 Fax: 65 65366267 E-mail: soonbhd@iata.org	

STATE/ ORGANIZATION	FIR	LOGON CODE	Ground Station Manuf-acturer	DSP	ADS	CPDLC	AIDC	FDP	Test, Ops Trial or Operational	Procedures Published	BOB TRIAL	CONTACTS ATM contacts in **bold** text	REMARKS
IFALPA											YES	Capt. Toby Gursanscky Regional Vice President South Pacific Tel: 61 2 99487532 E-mail: gursanscky@bigpond.com	
SITA											YES	Mr. David Fung SITA Regional Manager, Asia AIRCOM CNS Services Room 1201, 12/F Centre Point 181-185 Glovcester Road Wanchai Hong Kong, China Tel: 852-9400 7979 E-mail: david.fung@sita.aero	
ICAO											YES	Mr. Andrew Tiede Regional Officer ATM Tel: 66 2 5378189, ext. 152 Fax: 66 2 537 8199 E-mail: atiede@bangkok.icao.int icao_apac@bangkok.icao.int	

Indian Ocean, Bay of Bengal, Arabian Sea and South China Sea DATA LINK IMPLEMENTATION

STATES	FIR	ESTIMATED DATE	DATE COMPLETED	NOTES
Commence ADS/CPDLC Operational Trial				
China/Hkg	Hong Kong			
India	Chennai Kolkata Delhi Mumbai	2004 2004 2006 2006	Commenced 19 Feb 2004 Commenced 19 Feb 2004 Commenced 1 July 2006 Commenced 1 July 2006	
Indonesia	Ujung Pandang Jakarta	2007 2007		New Makasar ATS Centre commissioned 2006, fully ADS/CPDLC capable; Jakarta has stand alone system, will attempt to join BOB trials 2007, new ATS Centre in Jakarta under construction, planned implementation 2010
Malaysia	Kuala Lumpur	First Quarter 2008		
Myanmar	Yangon	TBA		Conducting intermittent activity as part of BOB Trial
Philippines	Manila	TBA		
Sri Lanka	Colombo	TBA		Had previously participated in BOB trials, some equipment issues.
Singapore	Singapore	Operational		
Thailand	Bangkok	2007		Had previously participated in BOB trials, some equipment issues.
Viet Nam	Ho Chi Minh	2007		New ATS Centre Ho Chi Minh commissioned May 2006
Implement CPDLC - Data Link Communications only				
China/Hkg	Hong Kong			
India	Chennai	2007		

STATES	FIR	ESTIMATED DATE	DATE COMPLETED	NOTES
	Kolkata Delhi Mumbai	2007 2007 2007		
Indonesia	U Jung Pandang	TBA		
Malaysia	Kuala Lumpur			
Myanmar	Yangon			
Philippines	Manila	TBA		
Sri Lanka	Colombo			
Singapore	Singapore	Operational		
Thailand	Bangkok			
Viet Nam	Ho Chi Minh	2008		
Implement 50 NM/50 NM based on RNP 10				
China/Hkg	Hong Kong			
India	Delhi Mumbai Chennai Kolkata	2010, all FIRs		
Indonesia	U Jung Pandang	TBA		
Malaysia	Kuala Lumpur	TBA		
Myanmar	Yangon	TBA		
Philippines	Manila	TBA		
Sri Lanka	Colombo	TBA		
Singapore	Singapore	2007		
Thailand	Bangkok	TBA		
Viet Nam	Ho Chi Minh	TBA		
Implement 30 NM/30 NM based on RNP 4				

STATES	FIR	ESTIMATED DATE	DATE COMPLETED	NOTES
China/Hkg	Hong Kong			
India	Delhi Mumbai Chennai Kolkata	TBA		
Indonesia	U Jung Pandang	TBA		
Malaysia	Kuala Lumpur	TBA		
Myanmar	Yangon	TBA		
Philippines	Manila	TBA		
Sri Lanka	Colombo	TBA		
Singapore	Singapore	2010		
Thailand	Bangkok	TBA		
Viet Nam	Ho Chi Minh	TBA		

Draft Aeronautical Information Publication Supplement (for Thailand, Malaysia, Indonesia, Myanmar, Sri Lanka etc)

Establishment and operation of a Central Reporting Agency for data link services

INTRODUCTION

1. In accordance with regional planning agreements made under the auspices of International Civil Aviation Organization (ICAO) to enhance the safety and efficiency of air navigation, data-link capabilities have been installed in the ……..Area Control Centre.

2. In co-operation with ICAO and the International Air Transport Association (IATA), a Central Reporting Agency (CRA) has been established to provide routine system and specific problem analyses for the progressive implementation of data link operations within Bay of Bengal area. The CRA facility shall be provided by The Boeing Company (Boeing) to investigate and resolve any data-link problems. IATA and Boeing shall jointly establish and operate the CRA.

3. Operational ADS/CPDLC trials within the Kolkata and Chennai FIRs commenced on 19 February 2004.

4. Operational ADS/CPDLC trials within the (insert FIR name) FIR commenced/will commence on (insert date)

PROBLEM REPORTING

5 In accordance with the provisions of the FANS 1/A Operations Manual, all operators using the above airspace should submit problem reports arising from, or in connection with, the use of datalink to the CRA at:

[insert address]

Central Reporting Agency Data Responsibilities Agreement

What follows is a detailed process setting forth the manner by which Boeing, as the Central Reporting Agency (CRA), will handle problem report data received from FANS Interoperability Team (FIT) members.

Boeing agrees to fulfill the functions of the CRA as defined in the process description below. Boeing's use of both the Protected Data and the Release Data will be for purposes of advancing the use of FANS only and will not be used for any other commercial or marketing purpose or for Boeing-instituted litigation. It should be understood, however, that Boeing is legally obligated to respond to subpoenas and, in the event Boeing receives a subpoena for FANS Protected Data, it will provide notice to the owning FIT member prior to production under the subpoena.

This agreement will be valid for a period of five years.

Please evidence your concurrence to Boeing's use of the FANS data by signature in the space provided below and return to the undersigned.

Respectfully,

David Allen

Concurrence / Date

Name: _____

Company: _____

Cotact Information: _____

Central Reporting Agency Responsibilities

Definitions

ATSU - Air Traffic Service Unit. An organization responsible for airspace and capable of exchanging FANS messages with aircraft.

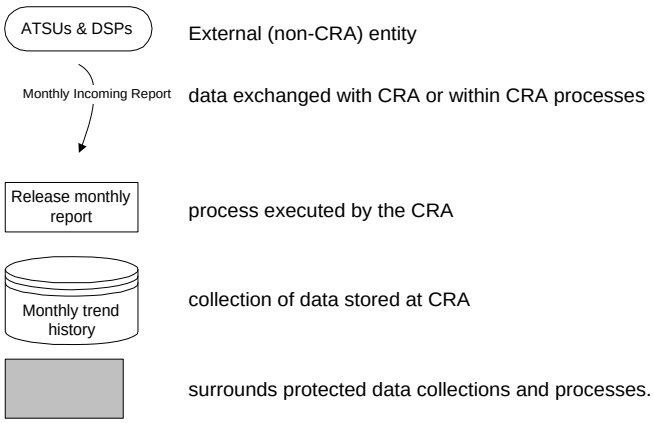
FIT - Future Air Navigation System (FANS) Interoperability Team. Team members include ATSUs, Operators (airlines), Datalink Service Providers (DSP), Pilot Unions, Equipment Manufacturers, and Regulatory Agencies.

CRA - Central Reporting Agency. An organization tasked with the regular dissemination of de-identified statistical data based on monthly status reports received from FIT members. The CRA will also track problem reports and publish de-identified information for dissemination to FIT members. Problem resolution will be the responsibility of the appropriate FIT members.

Protected Data - information which is held by the CRA for a limited time for the purpose of executing CRA responsibilities. This information is available only to the CRA and to those FIT member(s) directly involved in the problem.

Release Data - information, derived from Protected Data, which has been de-identified as to its source (including, but not limited to the operator, ATSU, DSP and Airframe Manufacturer) and affected member(s). This information will be stored for an indefinite period and will be available to all FIT members.

Data Context diagram - a figure used to show the processes and data used by the CRA. A legend is shown below:



CRA Program Engineering Coordinator: Brad Cornell
Please email a signed copy of the CRA Data Responsiablities Agreement to Bradley.D.Cornell@Boeing.Com

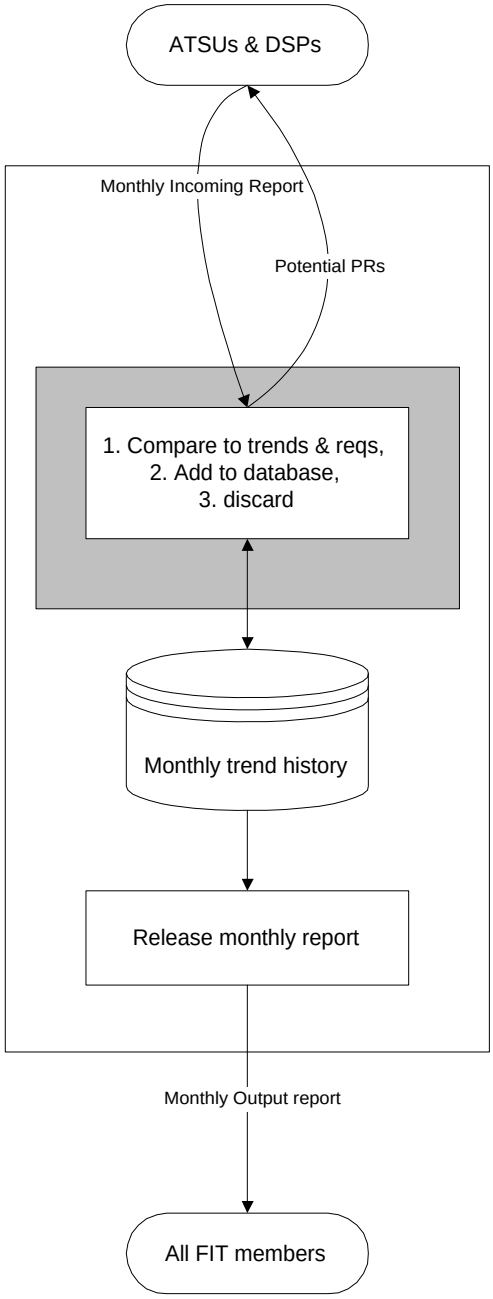
Monthly Trend Reports

Protected Monthly Trend Data
Reference the FANS Operations Manual for a copy of the monthly report form.

Released Monthly Trend Data

Each month, the data provided in the monthly report forms will be summed and averaged.

Processing of Monthly Trend Data



The CRA will compare the incoming monthly report received from each ATSU and DSP against identified performance requirements and against the aggregate monthly trend data. If any datum of the incoming report is outside required values or is radically different from the aggregate trend, then the FIT will investigate the cause and may create a new Problem Report.

The CRA will add the incoming monthly report received from each ATSU and DSP to the aggregate trend data.

The CRA will destroy the incoming monthly report received from each ATSU and DSP as soon as possible, after the data are added to the aggregates and (if required) are inserted into a Problem Report.

The CRA will release the aggregate monthly trend data to FIT members each month.

Problem Reports

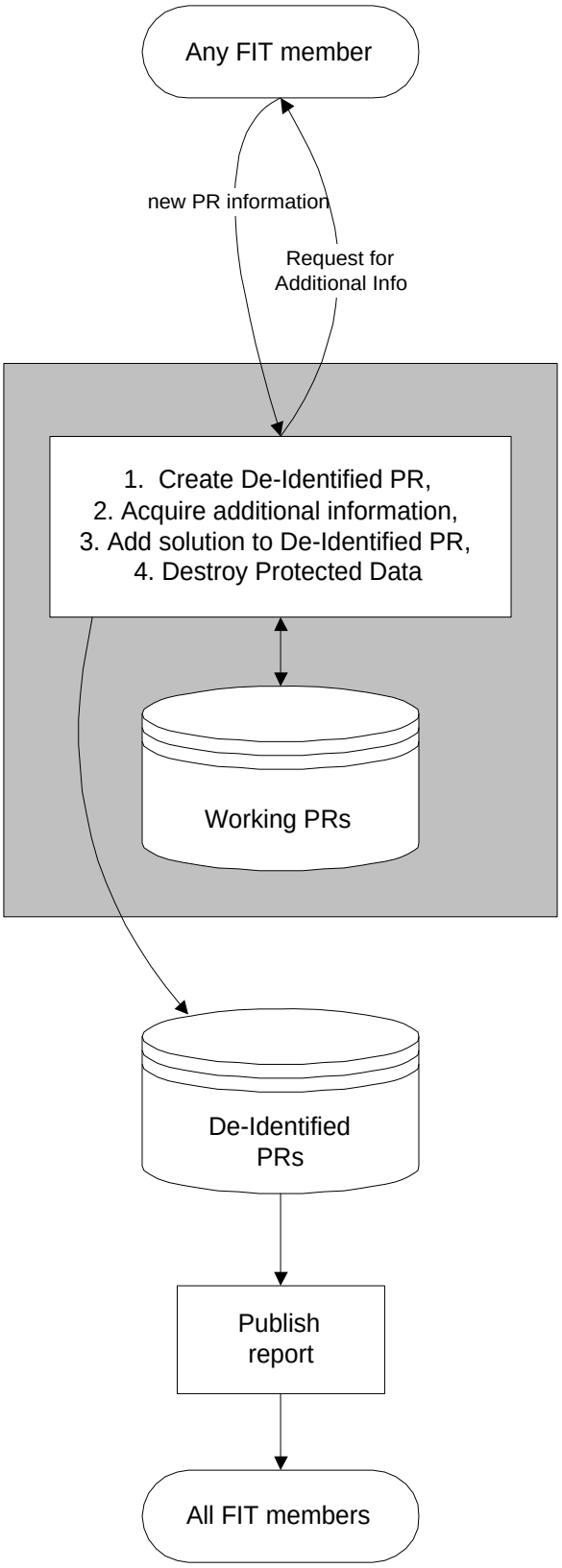
Protected Problem Report Data

Reference the South Pacific Operations Manual for a copy of the problem report form.

Release Problem Report Data

- Description of event without reference to actual time or affected parties
- Analysis of root cause of problem
- Recommended resolution
- Status of FIT progress in resolving the PR
- Status of FIT progress in implementing the solution

Processing of Problem Report Data



The CRA will accept a new problem report from any FIT member. The CRA will then create a new De-identified Problem Report.

All incoming information will be stored in the protected PR. The information will be kept in a central area. All protected information will be destroyed after problem resolution.

The CRA may need to request additional information regarding the problem from the originating FIT member and/or from other FIT members. All of this additional information will be kept in the protected PR.

When the FIT determines an appropriate resolution to the problem, a de-identified version of the resolution will be added to the Release Data.

The CRA will publish the release PR data for access by all FIT members.

FANS-1/A Problem Report

The monitoring process

When problems or abnormalities are discovered, the initial analysis should be performed by the organization(s) identifying the problem. In addition, a copy of the problem report should be sent to the Central Reporting Agency (CRA) which will assign a tracking number. As some problems or abnormalities may involve more than one organization, the originator should be responsible for follow-up action to rectify the problem and forward the information to the CRA. It is essential that all information relating to the problem is documented and recorded and resolved in a timely manner.

The parties who need to be involved in this monitoring process and problem tracking for the review and analysis of the data collected are:

a) ATS service providers or organizations responsible for ATS system maintenance (where different from the ATS provider);
b) State regulatory authorities;
c) Communication service providers;
d) Aircraft operators; and
e) Aircraft and avionics manufacturers.

FANS-1/A problem reports

Problem reports may originate from many sources, but most will fall within two categories; reports based on observation of one or more specific events, or reports generated from the routine analysis of data. For example, a problem report could arise from an incident where there was confusion about the meaning of a clearance, as the result of inappropriate use of free text. The user would document the problem, resolve it with the appropriate party and forward a copy of the report to the CRA for tracking. This one incident may appear to be an isolated case, but the receipt of numerous similar reports by the CRA that could indicate an area that needs more detailed examination.

To effectively resolve problems and track progress, the forms should be sent to the nominated point of contact at the appropriate organization and the CRA. The resolution of the identified problems may require:

a) Re-training of system operators, or revision of training procedures to ensure compliance with existing procedures;
b) Change to operating procedures;
c) Change to system requirements, including performance and interoperability; or
d) Change to system design.

FANS-1/A Problem Report

Number

Date UTC		**Time UTC**	
Registration		**Flight Number**	
Sector			
Originator		**Aircraft Type**	
Organization			
Active Center		**Next Center**	
Position			
Description			

Description of fields

Field	Meaning
Number	A unique identification number assigned to this problem report. Organizations writing problem reports are encouraged to maintain their own internal list of these problems for tracking purposes. Once the problems have been reported to the CRA and incorporated in the database, a number will be assigned by the CRA and used for tracking by the FIT.
Date UTC	UTC date when the event occurred.
Time UTC	UTC time (or range of times) at which the event occurred..
Registration	Registration number (tail number) of the airplane involved. This should be in exactly the same format as was used for the logon to the ATC Center, including any dashes used.
Flight Number	Flight identifier (call sign) of the flight involved. This should be in exactly the same format as was used for the logon to the ATC Center, including any leading zeros in the number.
Sector	The departure airport and destination airport for the sector being flown by the airplane involved in the event. These should be the ICAO identifiers of those airports.
Originator	Point of contact at the originating organization for this report (usually the author).
Aircraft Type	The airplane model involved (e.g. B777 or MD11. Where a dash number records a significant change to the equipment fit (e.g. B747400), the dash number should be provided as well.
Organization	The name of the organization (airline, ATS provider or datalink service provider) that created the report.
Active Center	ICAO identifier of the ATC Center controlling the airplane at the time of the event.
Next Center	If the problem involves a handover between ATC Centers, or occurs close to the time of a handover, then this should contain the ICAO identifier of the Center to which control was being handed over.
Position	Location of the airplane at the time of the event. This could be the latitude and longitude, but could also be specified relative to a waypoint on the route or an FIR boundary.
Description	This should provide as complete a description of the situation leading up to the problem as is possible. Where the organization reporting the problem is not able to provide all the information (e.g. the controller may not know everything that happens on the airplane), it would be helpful if they would coordinate with the other parties to obtain the necessary information. The description should include: • A complete description of the problem that is being reported • The route contained in the FMS • Any flight deck indications, including EICAS messages that occurred • Any MCDU scratchpad messages that occurred • Any indications provided to the controller when the problem occurred • Any problems being experienced with other datalink systems (such as AOC), or indications that those other systems were unaffected • Any additional information that the originator of the problem report considers might be helpful but is not included on the list above IF NECESSARY TO CONTAIN ALL THE INFORMATION, ADDITIONAL PAGES MAY BE ADDED, AND IF THE ORIGINATOR CONSIDERS IT MIGHT BE HELPFUL, DIAGRAMS AND OTHER ADDITIONAL INFORMATION (SUCH AS PRINTOUTS OF MESSAGE LOGS) MAY BE APPENDED TO THE REPORT.

FANS-1/A periodic status report

The monitoring process

When problems or abnormalities are discovered, the initial analysis should be performed by the organization(s) identifying the problem. In addition, a copy of the problem report should be sent to the Central Reporting Agency (CRA) which will assign a tracking number. As some problems or abnormalities may involve more than one organization, the originator should be responsible for follow-up action to rectify the problem and forward the information to the CRA. It is essential that all information relating to the problem is documented and recorded and resolved in a timely manner.

The parties who need to be involved in this monitoring process and problem tracking for the review and analysis of the data collected are:

a) ATS service providers or organizations responsible for ATS system maintenance (where different from the ATS provider);
b) State regulatory authorities;
c) Communication service providers;
d) Aircraft operators; and
e) Aircraft and avionics manufacturers.

FANS-1/A periodic status report

The ATS Providers should complete the FANS-1/A Periodic Status Report at specified intervals agreed by the regional FANS Interoperability Team (FIT) for the dissemination of information and as an indication of system performance. Additionally, the report should identify any trend discovered in system deficiencies, the resultant operational implications, and the resolution, if applicable.

Communications service providers are also expected to submit FANS-1/A Periodic Status Reports on the performance of their networks at specified intervals. These reports may contain planned or current upgrades to the systems and may not be required as often as the reports from ATS providers.

1.1 FANS- 1/A Periodic Status Report Form

Originating Organization			
Date of submission		**Originator**	
Status for [Month/Year]			
Performance Measure	**Data**		
DELAY	**All times will be calculated "less than" < the time band to the right.**		
Uplinks: Round-trip transit delay time (ATS Provider - delay between the time a message is sent and the time the Message Assurance (MAS) referring to this message is received) (Network provider - delay between the time a message arrives at the router and the time the MAS referring to this message arrives back at the router) Note: If access to individual message delivery media (VHF, SATCOM, HF) is not available to an individual ATSP then a report containing the total uplinks per time bands, total messages sent, and total lost messages for all media combined is acceptable. **Downlinks:** (ATS Provider - difference between embedded message time stamp and time message received from Network provider) Lost messages determined by: • Message assurance failure is received. After trying both VHF and SATCOM. Depending on reason code received, the message might, in fact, have made it to the aircraft. • No message assurance or flight crew response is received by ATSU after 900 seconds Note: If access to individual message delivery media (VHF, SATCOM, HF) is not available to an individual ATSP then a report containing the total uplinks per time bands, total messages sent, and total lost messages for all media combined is acceptable.	**Number of messages with a round trip transit delay time of less than X seconds:** VHF Data Link (Individual records for CPDLC and ADS messages if possible) X= 10s 20s 30s 60s 90s 120s 180s ≥180s Total number of VHF uplink messages: Total number of VHF lost uplink messages: SATCOM Data Link (Individual records for CPDLC and ADS messages if possible) X= 10s 20s 30s 60s 90s 120s 180s ≥180s Total number of SATCOM uplink messages: Total number of SATCOM lost uplink messages: HF Data Link (Individual records for CPDLC and ADS messages if possible) X= 10s 20s 30s 60s 90s 120s 180s ≥180s Total number of HF uplink messages: Total number of HF lost uplink messages: **Number of messages with a downlink transit delay time of less than Y seconds:** VHF Data Link (Individual records for CPDLC and ADS messages if possible) Y= 10s 15s 30s 45s 60s 90s ≥ 90s Total number of VHF downlink messages: Total number of VHF lost downlink messages: SATCOM Data Link (Individual records for CPDLC and ADS messages if possible) Y= 10s 15s 30s 45s 60s 90s ≥ 90s Total number of SATCOM downlink messages: Total number of SATCOM lost downlink messages: HF Data Link (Individual records for CPDLC and ADS messages if possible) Y= 10s 15s 30s 45s 60s 90s ≥ 90s Total number of HF downlink messages: Total number of HF lost downlink messages:	

UNAVAILABILITY **(Actual time windows of scheduled outages)** **(Actual time windows of unscheduled outages)** **(ATS**Error! Bookmark not defined. **Providers - Instances of inability to communicate with individual aircraft)**	For each window of unavailability, list start and end **times and dates**. Denote if notification was given to operators in each case. **From: To: Notification (Y/N) Partial (Y/N)**
OPERATIONAL INDICATORS **Total number of aircraft with connections** **Total number of successful connections at first attempt** **Total number of flights unable to connect** **Significant system changes and impact on performance.**	**CPDLC** **ADS**
GENERAL COMMENTS	

TERMS OF REFERENCE

Task Force for establishment of Regional Airspace Safety Monitoring Committees (RASMC/TF)

Objective

To develop proposals and take action to implement Regional Airspace Safety Monitoring Committees for the Asia/Pacific Region.

Terms of Reference

a) Develop proposals for the establishment of Regional Airspace Safety Monitoring Committees including terms of reference;

b) Identify the appropriate regional monitoring entities and determine the number and area of responsibility;

c) Formulate the duties, responsibilities and scope of regional monitoring entities;

d) Establish a formula for the basis of cost recovery as well as cost recovery mechanism;

e) Determine a methodology for assigning the responsibility for a regional monitoring entity to a State.

f) The RASMC/TF will report via RASMAG to the APANPIRG.

Composition

ICAO will facilitate the Task Force, which will consist of designated experts from the following States:

1. Australia,
2. China,
3. Fiji,
4. India,
5. Japan,
6. New Zealand,
7. Republic of Korea,
8. Singapore,
9. Thailand,
10. United States of America

— END —

INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE

DRAFT GUIDANCE MATERIAL

FOR THE ASIA/PACIFIC REGION

FOR ADS/CPDLC/AIDC GROUND SYSTEMS

PROCUREMENT AND IMPLEMENTATION

Draft V-0.8

Issued by the ICAO Asia/Pacific Regional Office, Bangkok

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CHAPTER 1 INTRODUCTION

This material has been developed under an initiative of the Regional Airspace Safety Monitoring Advisory Group (RASMAG) of the Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) to assist air traffic service (ATS) providers with the implementation of datalink-based air traffic management (ATM) systems.

For the purposes of this document, a datalink-based ATM system is one which supports automatic dependent surveillance (ADS), controller-pilot datalink communications (CPDLC) and ATS interfacility datalink communications (AIDC).

Integrated datalink systems are playing an increasingly important role in air traffic management. Datalink operations support reduced separation minima and so directly contribute to increased airspace capacity. Controller and pilot workload is reduced, and operational safety enhanced, by the automation enabled by datalink systems. As the use of these systems spreads, so more ATS providers must equip with the appropriate facilities.

The material covers two main aspects of implementation: specification and deployment.

Technical systems must be carefully specified from both the technical and operational aspects, and at the right level of detail: enough to ensure that the requirements are met, but not so much that good solutions may be excluded.

The deployment of a new system involves a number of vital steps, such as testing, training, integrating and commissioning.

This material offers guidance, rather than solutions, with the emphasis on specifying systems supporting ADS, CPDLC and AIDC.

It is not the intention of this document to provide the detailed technical information required to specify datalink applications: this information may be found in the various ICAO and other documents referenced.

1.1 OBJECTIVE

The objective of this document is to provide guidance on the specification, procurement and implementation of datalink systems for States and service providers unfamiliar with these systems.

1.2 SCOPE

The material is divided into three sections. The first covers the generalities of procuring and implementing a new system, the second is concerned with the requirements of a datalink-based ATM system, and the third gives guidance on specifying a system.

For the purposes of this material, it is assumed that the Air Navigation Service Provider (ANSP) is the organisation setting out to procure a system.

1.2.1 Procurement and Implementation

Procurement and implementation includes:

- Planning and contracting
- Supervision and inspection
- Preparation for operation
- Operational transfer

1.2.2 Requirements

The Requirements section covers general requirements for datalink systems and specific requirements for:

- Datalink Initiation Capability (DLIC)
- ADS
- CPDLC
- AIDC

1.2.3 Specification

The Specification section offers guidance on the specification of:

- System configuration
- Interfaces
- Functionality
- Human-Machine Interface
- Capacity and parameters
- Recording and data analysis

1.3 SYSTEMS OVERVIEW

A key objective of datalink systems is to support reduced separation minima: any new datalink system should be capable of supporting 30NM lateral and 30NM longitudinal separation based on RNP 4.

1.3.1 ADS

Automatic Dependent Surveillance is a surveillance technique in which aircraft automatically provide, via a data link, data derived from on-board navigation and position-fixing systems, including aircraft identification, four-dimensional position, and additional data as appropriate. There are two forms of ADS: broadcast ADS (ADS-B) and contract ADS (ADS-C). With ADS-B, aircraft broadcast positional data every few seconds; the data may be used by ground systems (and other aircraft). With ADS-C, aircraft report directly to one or more ground systems with specified data at predetermined intervals (usually tens of minutes).

Note: Throughout this document, the abbreviation ADS refers to ADS-C.

The ADS data link application allows the implementation of reporting agreements, or "contracts", which, with the exception of an aircraft in an emergency situation, are established exclusively by the ground. An ADS contract is an ADS reporting plan which establishes the conditions of ADS data reporting (i.e. the data required by the ATC system and the frequency of the ADS reports which have to be agreed upon prior to the provision of the ADS services). ADS information may be exchanged between the ground system and the aircraft by means of a single contract or a series of contracts. An ADS contract specifies under what conditions an ADS report will be initiated, and what data groups will be included in the reports.

There are three types of contract:

- *Periodic contracts* provide a report at a regular periodic interval determined by the ground system.
- *Event contracts* provide a report when or if a specified event or events take place.
- *Demand contracts* provide a single report when requested by the controller.

1.3.2 CPDLC

Controller Pilot DataLink Communications is a data link application that provides a means of communication between controller and pilot, using data link for ATC communications.

Sending a message by CPDLC consists of selecting the addressee, selecting and completing, if necessary, the appropriate message from a displayed menu or by other means which allow fast and efficient message selection, and executing the transmission. The messages include clearances, expected clearances, requests, reports and related ATC information. A "free-text" capability is also provided to exchange information not conforming to defined formats. Receiving the message will normally take place by display and/or printing of the message.

CPDLC overcomes a number of the shortcomings of voice communication, such as voice channel congestion, misunderstanding due to bad voice quality and/or misinterpretation, and corruption of the signal due to simultaneous transmissions.

1.3.3 AIDC

ATS Interfacility Datalink Communications is a data link application that provides the capability to exchange data between ATS units in support of critical ATC functions.

AIDC defines messages which are related to three phases of coordination as perceived by an ATSU.

- *Notification*, in which the aircraft trajectory and any changes may be conveyed to an ATSU from the current ATSU prior to coordination.
- *Coordination*, in which the aircraft trajectory is coordinated between two or more ATSUs when the flight approaches a common boundary.
- *Transfer*, in which communications and executive control authority is transferred from one ATSU to another.

Other AIDC messages support ancillary ATC data changes between ATSUs, including the exchange of free-text messages.

Other than the formal international communication protocol standards, internet protocol (TCP/IP) as a flexible and low cost de-fact industry standard is recommended.

CHAPTER 2 PROCUREMENT

2.1 GENERAL

2.1.1 System Quality

The overall quality of a system, the Total System Quality, is the product of three main elements: the quality of the design, the quality of production and the quality in operation.

The ***Design Quality*** is a measure how well the design process has translated the operational requirements into user specifications and the user specifications into product specifications. The design quality depends upon both the definition of operational requirements and development of user specifications by the ANSP and the system design skills of the vendor. If the operational requirements are not well defined, the specification will be compromised and the system design cannot be expected to be meet the real requirements. Similarly, if the specification does not correctly reflect the operational requirements, neither will the system design.

The ***Production Quality*** is a measure of how exactly the products match the specifications, and applies to the hardware, the software and the integration of these to form the system as a whole. In general, the vendor is responsible for production quality.

The ***Operational Quality*** is a measure of how the actual operation of the system realizes the operational objectives. This depends primarily on the way the system is operated: a badly operated system is not a good system. The operational quality is mainly influenced by the operational management of the ANSP.

The ***Total System Quality*** is the product of design quality, production quality and operational quality. To achieve high total system quality is clearly necessary to maintain the highest possible quality in each of the three areas.

Cooperation between the ANSP and the vendor is essential to achieve a high total system quality.

2.1.2 Roles and Responsibilities of the ANSP

The ANSP is ultimately responsible for successful implementation of the system. It is therefore vital that the ANSP takes a positive and active role throughout the system procurement and implementation.

The vendor is only responsible for developing and integrating a system to the ANSP's specific requirements.

Air traffic controllers, as the end-users of the system, must play a positive and active role throughout the procurement and implementation activities. The clear and complete definition of operational requirements and the final testing

in an operational environment are both critical and are unlikely to be completed successfully without significant controller input. Clearly defined system requirements and specifications are vital in order for potential vendors to be able to offer a suitable system.

Controllers should also be able to contribute to the design, development and integration activities, and must be directly involved in the testing and commissioning processes.

2.1.3 Relationships: Requirements, Specification and Test/Evaluation

The figure below shows the relationships between the operational requirements, the system requirements, the specification, the design and the test and evaluation process. Only the combination of a complete and feasible definition of the requirements, consistent design, quality assured development and adequate review, testing and evaluation at each stage can provide a quality system.

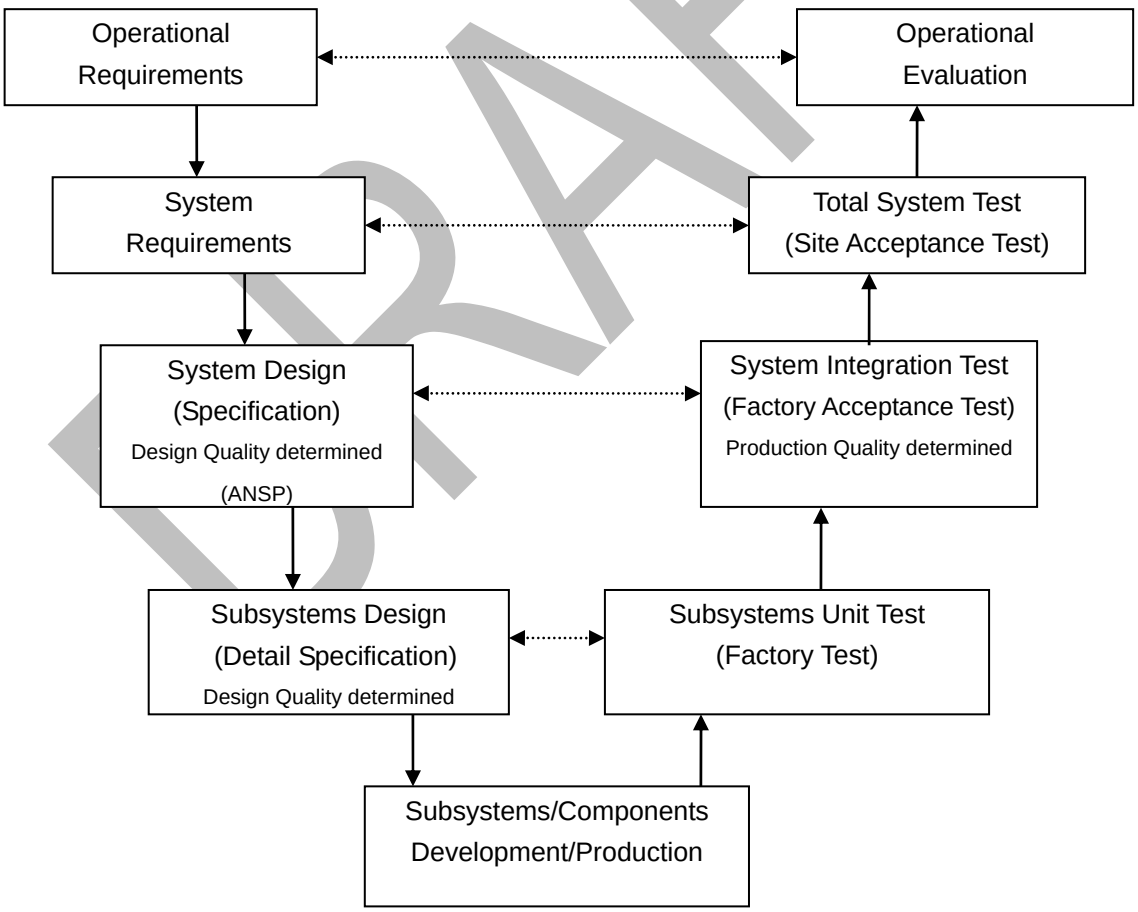

Figure1. Relationship between Requirement, Specification and Test/Evaluation

2.2 PROJECT MANAGEMENT

A project manager should be appointed as early as possible in the project. The basic role of the project manager is to ensure that the project proceeds within predetermined time, resource and cost boundaries. Project management requires a range of special skills, and serious consideration should be given to employing a professional project manager for the duration of the project.

The project manager must be given appropriate levels of financial and organisational authority so that he or she can make project decisions without constant recourse to higher management. It is essential that the terms of reference of the project manager are clearly documented and that they detail these authorities.

The project manager will be responsible for managing all aspects of the project, with particular emphasis on scheduling the many activities of ANSP personnel to match those of the system supplier. He or she will also play a major role in keeping the project within the time and budget constraints by determining what, if any, changes are made to the scope of the contract.

2.3 PLANNING AND CONTRACTING

2.3.1 Operational Requirements

The first, and perhaps most critical, stage of the planning and contracting phase is the definition of the ATS Operational Requirements; these must clearly define precisely what the system is to do. Operational requirements should not define how the results are to be achieved – that can be done in the specification.

There is no place for choice in a requirement, and the wording must reflect this; “must”, “shall” and “will” make requirements mandatory. The use of words such as “may”, “should” and “could”, “maximum” and “minimum” and “if”, “except” and “unless” make a requirement imprecise, because the reader does not know exactly what is required. “There should be 10 sectors” or “there should be at least 10 sectors” is vague. “There will be 10 sectors” is precise and leaves no doubt as to what is required.

The operational requirements should be established by a team of experienced controllers whose professional knowledge and experience encompasses all aspects of the ATS operation, supported by engineers and by other specialists as necessary.

2.3.1.1 Studies of Existing Systems

The operational requirements team must have an appreciation of how datalink systems work in the operational environment; this is best achieved by studying existing systems and talking to experienced controllers, engineers and managers in other ATS facilities. The study should cover operational and technical practices and should pay particular attention to problems encountered and lessons learnt.

Controllers using these systems will be well aware of any features that do not work well or are not user-friendly, and will have suggestions for how the system could be improved. This is valuable information that should be considered when developing the specification and during the contract negotiation phase; in the latter case, a supplier could be invited to change such features in an otherwise satisfactory system.

2.3.1.2 Confirmation of Service Environments

The operational requirements team should establish the current ATS environment as the baseline, taking into account:

- Airspace structure and major airports.
- Sector configuration and VHF/radar coverage.
- The required separation minima (30/30NM horizontal separation or better)
- Traffic flows (routes, number, flight levels, etc.).
- ATS procedures.
- Related ATS facilities.

2.3.1.3 Operational Requirement Analysis

From the baseline, the team should analyse trends to determine the likely changes in the operational environment over the projected life of the system. The operational requirements can then be determined, if necessary using the projected environment at several points during the projected system life, and should detail, at the very least:

- The anticipated peak and mean traffic levels.
- The number of sectors, based on the traffic levels.
- Specific services for each sector.
- Inter-sector services.
- Inter-ATSU services.

Once these are established, the specific requirements to provide these services, such as displays and communications, can be determined.,

2.3.2 Design and Review

The next stage is for the team to define the system concept in terms of both operational requirements and technical feasibility, perhaps using other facilities as a base reference. The concept should be reviewed by controllers and managers who are not part of the team; any changes proposed should be discussed with the team and the concept modified accordingly.

2.3.2.1 Conceptual Design

The conceptual design must be documented clearly and should include the following:

- ATS functions needed (e.g. ADS reports, traffic display).
- Performance goals for the targeted airspace.
- Sector configuration.
- Physical configuration and layout.
- System operation (e.g. redundant parallel operation, automatic recovery, etc.).
- Standards to be applied (e.g. ARINC-745, RTCA DO-258A).
- Interface requirements for related ATS facilities.
- Datalink Service Provider and its interface.
- Human Machine Interface (e.g. display size, use of colour, input devices).

The document should also identify any new operational procedures that may be required, both for new techniques, such as the use of ADS, CPDLC and AIDC, and for other changes.

2.3.2.2 Technical Feasibility Study

The team may then determine the technical feasibility of meeting the operational requirements, particularly in terms of the functionality required, the characteristics and performance of existing systems and the available budget. Preliminary information from vendors will give an indication of the systems and capabilities that are available, so that the team can decide on the most appropriate procurement option:

- A standard “off-the-shelf” system.
- A customized off-the-shelf system.
- A custom-built system.

The criteria to be used in evaluating systems in the market will include:

- Functionality meeting the requirements.
- Adequate performance and capacity to handle future traffic.
- User-friendly and intuitive operation.
- High reliability under all anticipated service conditions.
- Simple connection with related systems and facilities.
- Required standards are met.

2.3.2.3 Specification

When the operational requirements and the feasibility studies have been completed the specification can be developed. This is discussed in detail in CHAPTER 5.

2.3.2.4 Design Review

The purpose of this design review is to ensure that the conceptual design meets each and every one of the operational requirements and that it is technically achievable and attainable.

The design review team should be independent of the requirements team but should also comprise controllers, engineers and managers. The review may take the form of a walk-through of the conceptual design documents or a desk-top simulation.

The design review report should cover:

- Compliance with operational requirements.
- Connectivity with related systems and adjoining facilities.
- Flexibility and expandability in the future.
- Any operational or technical issues.

2.3.3 Request for Proposal (RFP)

A fully-documented and approved Request for Proposal (RFP) should be submitted to prospective vendors.

2.3.3.1 Objective

The objective of the RFP is to secure fully compliant proposals from a number of competent vendors.

2.3.3.2 Content

The RFP should contain all the information required for prospective vendors to make a complete and compliant proposal. Any omissions will result in enquiries from vendors, which will take time and effort to respond to. The RFP should contain:

- The specification.
- Operating environment, including:
    - External temperature and humidity ranges.
    - Temperature and humidity ranges in the equipment area and operational area.
    - Mains power supply voltage and frequency.
- Acceptance testing requirements.
- Maintenance support requirements.

- Training requirements.
- Warranty requirements.
- A draft contract, to allow vendors to see what contract requirements they will have to meet, and what arrangements they may have to make to meet them.
- Bidding conditions, including:
    - Submission of separate technical and financial bids.
    - Confidentiality.
    - The enquiry process.
    - The closing date for enquiries.
    - The closing date for bids.
    - Notification of short-listed bidders.
    - Notification of preferred bidder.
- Financial conditions, including
    - Bid bonds (if required).
    - Requirements for financing (if necessary).
    - Proposed payment schedule.
- The proposal evaluation process, including the evaluation criteria.

2.3.3.3 Enquiry Process

It is inevitable that some bidders will ask for clarification of details or for additional information. To avoid giving advantage to any particular bidder, there should be a formal process to ensure that all bidders receive the same information. This may be done by issuing a bulletin to all bidders containing each question received and the response. This should be done at frequent intervals so that vendors have time to adjust their proposals if necessary.

2.3.4 Evaluation of Proposals

Proposals must not be opened before the stated final date for bids.

The evaluation of proposals must be, and be seen to be, fair and traceable. All stages of the evaluation process should be clearly documented and the reasons for each decision recorded.

Ideally, the evaluation team will include all the members of the team that drew up the specification, complemented by other personnel as necessary. It is good practice to isolate the evaluation of the financial proposal from the rest of the process. Besides maintaining the confidentiality of the financial bids, this avoids any influence of the technical evaluation on the financial and *vice versa*.

The evaluation process and criteria stated in the RFP must be strictly followed: this should avoid any protest by unsuccessful bidders.

Proposals are not always perfect, nor do they always fully cover every item of the RFP, and so there may be a need for clarification during the evaluation phase. It may be necessary to request additional technical or financial information in order to complete the evaluation; this should take the form of a simple request for the specific information required. However, there should be no negotiation at this stage, of either technical or financial elements.

Once the preferred bidder has been selected, the other bidders should be informed that they may be invited to negotiate if a contract cannot be concluded with the preferred bidder.

2.3.5 Contract Negotiation

There should be no negotiation with bidders before the selection process has been completed. Once the preferred bidder has been determined, negotiations on the detailed conditions are acceptable. Negotiations may be by correspondence or face-to-face, and should involve the appropriate experts from the ANSP.

It is important that the negotiations cover all aspects of the contract, including the vendor's schedule. The negotiating advantage is with the purchaser until the contract is signed; it then passes to the vendor. Changes made after the contract has been signed are inevitably costly and often time-consuming.

The negotiations must be clearly documented.

If a satisfactory contract cannot be concluded, the next preferred bidder may be invited to negotiate a contract; alternatively, the tender process may be started again, but this is a costly process and is unlikely to produce a better outcome.

When the contract has been signed, the other bidders should be informed.

CHAPTER 3 IMPLEMENTATION

The implementation phase begins when the contract is signed.

Typically, the vendor's activities during the implementation phase include design review, manufacture, factory testing, documentation, training, delivery, installation, site acceptance testing and handover.

The ANSP is involved in all these activities to some degree, except manufacture; but the ANSP must also prepare for the operation of the system. This will involve developing test requirements, planning training, organising staff deployment, developing procedures and planning the operational transfer from the existing to the new system.

3.1 IMPLEMENTATION SCHEDULE

The project manager can now use the vendor's schedule as the basis for finalising the overall project schedule. The project schedule should detail all anticipated activities, including system design reviews, factory and site acceptance tests, training (both vendor training and internal training), commissioning and operational transfer. The schedule should also show related activities such as development of operational and technical procedures and preparation of operational material such as charts.

3.2 CONTRACT SUPERVISION

The project manager is normally responsible for supervision of the contract works. This can generally be achieved by monitoring the vendor's progress reports, at least until the vendor starts work on site.

It is likely that desirable changes to the specification or the contract will be identified during design reviews or factory testing. However, careful management of change is essential. Every change will incur costs and delays.

A formal change control system should be implemented, with every change being submitted for approval only after costs and delays have been established. The procedure should identify the levels of cost and delay that the project manager can approve.

3.3 SYSTEM DESIGN REVIEW

This review takes place after the vendor has completed the design for the system, and, as with the concept design review, is intended to ensure that the design meets all the operational and technical requirements. The design review is the point at which the design quality is determined It is also the last stage at which design changes should be made; however, changes made at this stage are likely to incur costs and delays.

3.4 FACTORY ACCEPTANCE TEST

The factory acceptance test is the last opportunity for the ANSP to identify problems before the system is shipped out from the factory and is the point at which the

production quality is determined. It is also usually the first opportunity for ANSP personnel to examine and try out the system, and is often combined with factory-based training. It is important that operational as well as technical personnel attend the factory acceptance: it should be a test of operational features as well as of technical compliance.

The vendor should produce a detailed test schedule well before the beginning of the test, so that the ANSP can consider whether the tests meet the requirements and whether any additional tests should be included.

The results of any tests performed by the vendor before the acceptance test should be made available at the start of the acceptance test.

Any problems that are encountered during the factory test should result in agreed corrective actions to be undertaken by the vendor. These may be carried out before shipping or on site, according to the nature of the problem. The results of the factory test form an important part of the contract documentation, as they record the performance of the system and the agreed corrective actions.

3.5 PREPARATION FOR OPERATION

There are a number of items that the ANSP must address in preparation for operation of the new system. These include:

- Development of operational procedures.
- Development of system management procedures.
- Preparation of system data (for maps, etc).
- Establishment of system parameters.
- Development of internal training courses for controllers, system operators and technical staff.
- Development of operational transfer plan.
- Safety assessment.

The ANSP is responsible for carrying out these tasks, although some assistance and information from the vendor will be necessary to complete them. Some of the work can be carried before the installation begins, but it may be more convenient to leave some until the vendor’s specialists are on site.

While it is not appropriate for this guidance material to address each item in detail, some items do merit discussion.

3.5.1 Operational Procedures

The FANS 1/A Operations Manual (FOM) has been adopted for Regional use and contains the procedures for the use of the datalink applications.

The ANSP may need to develop other procedures.

3.5.2 System Management Procedures

Procedures for managing the system must be developed. These should cover such topics as system start, changeovers between “main” and “standby” systems, contingency operations, map data management, data recording and monitoring,

3.5.3 Preparation of System Data

The ANSP will be required to provide data to define, for example, FIR boundaries for hand-off processing and airspace maps for the display system. The vendor will provide details of the information required and may either process the data into the system or, preferably, train and assist the ANSP staff to do so.

The preparation of this type of data can be a very detailed and time-consuming process, and due allowance should be made in the project plan.

3.5.4 Establishment of System Parameters

System parameters are used to set values for a number of variables used in the software. These parameters can be changed, but normally only by software specialists. Typical system parameters include timer intervals, for example to set the default interval between ADS periodic contracts, standard range settings, display colours, etc.

The vendor will detail the system parameters and will be able to suggest suitable values; however, the ANSP must make the final decision on each parameter. The parameters should be set before site acceptance testing, so that their effect can be determined. The parameter values should be finalised before operational transfer and changes avoided during the initial period of operation.

3.5.5 Development of Training Courses

It may not be practical or appropriate for the vendor to provide initial training for all personnel, and future training requirements must also be considered. The ANSP must develop its own training courses to complement the initial training by the vendor and to meet its future training requirements.

3.5.6 Operational Transfer Plan

The operational transfer plan should detail each step of the transfer, particularly with regard to contingency measures to recover from system problems or unexpected operational difficulties.

For each step, the plan should give details of the timing, the people involved and any other resources that may be required. It is important to clearly define the measures or events that determine that each step has been satisfactorily completed.

It is also important that the plan is made widely available so that everyone involved understands what will happen.

The operational transfer process is discussed in 3.8 below.

3.5.7 Safety Assessment

It is most important that a safety assessment (or safety case) is prepared for the introduction and operation of the system. The purpose of the safety assessment is to identify all the risks associated with the introduction and operation of the system, to establish the level of each risk and to determine how those risks can be removed or reduced to an acceptable level.

Examples of risks are ADS link failure, workstation failure, inadequate controller training, and failure to close a CPDLC message sequence.

The resulting safety assessment document will list all the risks that have been identified, the associated risk levels and the measures adopted to remove or mitigate each risk.

Safety assessments are described in detail in ICAO Doc 9859, Safety Management Manual.

3.6 TRAINING

Comprehensive training is vital so that controllers, system operators and maintenance personnel must all be able to carry out their tasks competently and effectively as soon as the system becomes operational. A comprehensive training plan is a prerequisite for a successful training programme.

Training is perhaps the most important of all the preparatory tasks.

3.6.1 Controller Training

While the separation standards that controllers apply will probably not change, at least not immediately on introduction of the new system, the tools they use will have changed significantly. The training must cover both the operation of the new workstations and the associated tools and, equally importantly, the procedures for using the datalink applications.

Training on the manipulation of the displays and controls should be provided initially by the vendor, and the ANSP's training staff should be included in the first courses. The training staff can then develop and deliver that training.

The procedures for the use of datalink applications have been developed within the Region and are laid out in regional documents. The vendor cannot be expected to provide training on datalink procedures; this is a task that must be performed by professional training controllers. The training modules must be developed well in advance, ideally in cooperation with the training sections of other ANSPs that have experience of datalink operations.

The timing of the training is important. There will almost certainly be several courses to train all controllers, and all training should be completed before operational transfer. The controllers on the earliest courses may have difficulty remembering what they have been taught; one solution is to provide short refresher courses shortly before operational transfer.

3.6.2 System Operator Training

The operation of the system includes starting and stopping the system, switching between operational and standby units, rebooting, system recovery, changing system parameters, loading data for maps, etc, and installing software changes.

The vendor must provide the first training courses for system operators. The syllabus must include the items identified above, with sufficient background to allow the operators to understand the implications of the various actions that they will be expected to perform. They should also be given a good understanding of the various functions of the system.

The training should include practical sessions using the full system, so that the operators experience the various tasks at first hand.

3.6.3 Maintenance Training

The first training courses for maintenance technicians must also be carried out by the vendor. With systems of this type, technicians must be able to diagnose faults down to circuit board level. However, as these systems include a number of computers, technicians must have an understanding of the general software structure. They should also be trained to differentiate between hardware and software faults, and to undertake simple software recovery activities.

3.6.4 Simulator Based Training

If simulator facilities are provided as part of the system, a large proportion of the training can be carried out using these facilities. Simulators are particularly valuable in allowing controllers to experience unusual or exceptional conditions, such as traffic overloads, weather deviations, route changes, emergency descents, conflictions and system failure.

3.7 SITE ACCEPTANCE TEST

The site acceptance test is the last stage before handover by the vendor. This test is crucial. It is the last opportunity to identify problems while the system remains the responsibility of the vendor and should be resolved at the vendor’s expense. Once the acceptance documents are signed, the vendor can fairly claim that any new problems are the responsibility of the ANSP and will seek costs if asked to rectify them.

The vendor should produce a test schedule well before the tests are due to start, but it is unlikely that the schedule will contain tests that exercise operational procedures. The

ANSP, in consultation with the vendor, should develop operational scenarios that will test a wide range of procedures and functions and add these to the schedule.

3.7.1 Physical Checks

The first stage is typically a physical inspection and inventory check to ensure that all items are present and serial numbers recorded accurately. It is important to inspect the physical condition of all units and record any defects.

3.7.2 Technical Tests

This is generally followed by the technical tests which establish whether the system is correctly set up and is working properly. The system parameters are usually set during these tests, though some may need to be adjusted during the operational tests. System start-up, changeover and shut-down procedures, as well as contingency degradation and recovery processes, must also be tested.

3.7.3 Operational Tests

The operational tests determine whether the operational characteristics are correct, the controls function as expected and the system handles incoming and outgoing data correctly. There should also be tests to ensure that the system operates correctly under the specified maximum load.

These tests will typically take several days to complete as all functions must be tested from all workstations. A number of typical scenarios should be prepared in advance so that the tests can be carried out in a realistic environment.

It is essential that live testing of the datalink functions takes place. Tests of ADS and CPDLC will require the cooperation of either one or more airlines or alternatively an aircraft manufacturer with a suitable test-bench. If airlines are used, it must be quite clear that ATS instructions passed are for test purposes and are not to be complied with.

3.7.4 Results

As with the factory test, it is most important to record, in detail, all problems and unusual occurrences.

The outcome of the test should include an list of corrective actions to be undertaken by the vendor within an agreed timescale.

3.8 OPERATIONAL TRANSFER

The most usual ways of transferring operation to a new system are the phased transfer and the parallel operation transfer.

3.8.1 Parallel Operation Transfer

The parallel operation transfer starts with old system being used operationally and the new system running in parallel with its controllers going through their

tasks as though that system was operational. When the time comes to switch over to the new system, the old is system is operated in parallel for a short time as a fall-back in case of unforeseen problems. Operation of the new system need not be full-time until shortly before transfer: for example, it would be appropriate to start parallel operations during low traffic periods and work up to busy periods. H24 parallel operation is not necessary until immediately before and after transfer.

The parallel operation transfer is generally preferable as it allows the new system to be run, in its entirety, in an environment that is as close as possible to fully operational before actually taking over the operational load. However, it does require full staffing of both systems during periods of parallel operation.

3.8.2 Phased Transfer

In the phased approach, operations are transferred bit by bit, typically one sector at a time, until the whole operation is running smoothly on the new system. This type of transfer may be more appropriate where the space available dictates that only one or two positions can be transferred at a time or where limited staff numbers mean that it is impossible to operate both systems simultaneously.

In this type of transfer, it is good practice to keep at least one sector available on the old system as a contingency position.

3.8.3 Preparation for Transfer

The transfer must be carefully planned; in particular, there must be close coordination with external ATS units that may be affected. Staff must be thoroughly briefed before the start of the transfer process and must be kept informed of any changes to the plan.

The criteria for deciding when operations can be transferred to the new system must be clearly defined in advance. If a phased transfer is planned, transfer criteria should be set for each phase.

It is quite possible that problems will arise and it may be necessary to return the operation to the current system or to the last successful step, as appropriate. The reversion process should be established in advance – if contingencies have not been planned for, it is very likely that mistakes will be made and the problem compounded.

After the transfer has been successfully completed, it is useful to hold a debriefing to determine what went well and what did not. This can identify potential problems and possible areas of concern with both the technical and the operational aspects of the system and the new procedures.

CHAPTER 4 REQUIREMENTS

4.1 GENERAL REQUIREMENTS

The integrated ATS datalink system will incorporate AFN, ADS, CPDLC and AIDC.

The system will be linked with other automated systems. The FDP system provides flight plan data, such as the flight identification and flight path. The ATS operation will be enhanced if the system has the ability to feedback current aircraft positions to the FDP system to update the flight data.

The system will be linked to aircraft by a datalink service provider (DSP).

The system will be capable of transmitting and receiving AFN, ADS and CPDLC messages complying with RTCA/DO258A-EUROCAE/ED-100 and AIDC messages complying with the Asia/Pacific Regional Interface Control Document for AIDC (ICD).

The system will include the ACARS Convergence Function (ACF) to convert messages between the character-oriented data of ACARS and the bit-oriented data used in ADS and CPDLC.

The system will provide air traffic controllers with:

- Display of message exchanges.
- Display of updated aircraft positions and maps.
- Tools for measuring separation in distance or time.
- Tools for measuring angles between aircraft flight paths.
- Information on aircraft flight status.
- HMI tools for composing ADS and CPDLC messages.
- Alerts for exception conditions (e.g. expected message not received, coordination overdue).
- Conflict probe capability.
- Electronic flight progress strips, and paper strips if required.
- Presentation of emergency status.
- Other information pertinent to ATS operations.

The system capacity will be determined from:

- Traffic density at the peak hours.
- Frequency and size of messages per aircraft.
- Airspace size and number of waypoints.
- Number of FANS capable aircraft operating in the airspace.

- Anticipated growth of FANS operation.
- Number of displays.
- Number of connections for terminal systems.

4.1.1 Notification of Error Messages

The system will be capable of performing the cyclic redundancy check (CRC) on each message.

The system will be capable of format and validity checks appropriate to each message.

Controllers will be notified when the system detects:

- A message error.
- A message sequence error.
- A duplicate message identification number.
- Message non-delivery.
- An expected response not received.

4.1.2 Time Stamps and Timers

CPDLC and AIDC messages will be time-stamped; however, the form of some timestamps is actually set differently from that specified in Doc 9694.

By setting and/or deactivating various timer values for the messages received in response to transmitted messages, the system will monitor whether or not aircraft responses arrive within a specified time limit.

Timers are generally based on the operational requirements of each ATSU. However, the timers for sending messages relating to the automatic transfer of CPDLC connection and to AIDC will be set according to bilateral agreements with adjacent ATSUs concerned.

A timer file will be provided in the system for:

- Timeout settings for delayed response.
- Timing to initiate actions in ADS/CPDLC operations for:
    - Connection request (CR).
    - ADS periodic, event and demand requests.
    - Automated transfer of connection to the next ATSU.
    - Sending Next Data Authority (NDA) message.
    - Sending AFN Contact Advisory (FN_CAD): at least 30 minutes prior to FIR boundary message.
    - Sending End Service message prior to the aircraft crossing the FIR boundary (e.g. 5 minutes before).

- Timer to trigger actions for sending AIDC messages.
- Timer for re-transmission of the message when no response is received within a specified time.

4.1.3 Applicable Documents

4.1.3.1 ICAO Documents

Annex 10, Volume III, Communication Systems

Manual of Technical Provisions for the Aeronautical Telecommunication Network – Doc 9750

Manual of Air Traffic Services Data Link Applications – Doc 9694

Regional Supplement to the ASTERIX Interface Control Document (ICD) for the Asia/Pacific Region

Asia/Pacific Regional Interface Control Document (ICD) for ATS Inter-facility Data Communications (AIDC), version 2

Guidance Material for End-to-End Safety and Performance Monitoring of ATS Datalink Systems in the Asia Pacific Region

FANS 1/A Operations Manual

4.1.3.2 Industry Standards

The industry standards for ATS datalink systems are described in the latest versions of the following documents.

- ARINC 622: ATS Datalink Applications over ACARS Air-Ground Network (end-to-end).
- RTCA DO-258/EUROCAE ED-100: Interoperability Requirements for ATS Applications Using ARNC 622 Data Communications.
- ARINC 620: Datalink Ground System Standard and Interface Specification (ground-to-ground).
- ARINC 619: ACARS Protocols for Avionics End Systems (Airborne).
- ARINC 429: Mark 33 Digital Information Transfer System (DITS).

Note: It should be noted that some message parameters for avionics are categorized as ‘option’ data, but provide information useful for ATS operations.

4.1.4 Data Recording

The contents and timestamps of all messages will be recorded by the system. There will be a facility to retrieve, display and printout the recorded data.

4.1.5 System Performance Monitoring Tool

The Central Reporting Agencies (CRAs) perform safety assessments of datalink performance, and to support this function, in accordance with the FOM,

ATSUs are required to produce monthly statistics of end-to-end system performance in daily operations. The system performance criteria from the FOM are reproduced at APPENDIX C. The system should have appropriate tools for monitoring and analysing the performance data for reporting to the appropriate monitoring agency.

4.2 DATALINK INITIATION CAPABILITY

4.2.1 AFN Logon Functions

The AFN logon functions provide the necessary information to enable ADS and CPDLC communications between the system and aircraft avionics systems for:

- Logon.
- Forwarding logon information to the next ATSU.

Note: Details of Datalink Initiation Capability (DLIC) functional capabilities are provided in Doc 9694 Part 2.

The required capacity for AFN logons will be determined from the operational requirements, such as estimated number of FANS aircraft at the peak hours and anticipated growth of FANS traffic.

The system must be capable of accepting or rejecting AFN logon requests.

The system will be linked with the FDPS to correlate the AFN logon data automatically with the aircraft flight plan.

The controller's workstation should be capable of displaying the following data:

- Address and version number of the aircraft applications, if required.
- Response from the aircraft with timestamp.
- Status of correlation of the aircraft with its stored flight plan.
- Indication of 'Acceptance' or 'Rejection' to the logon request from aircraft.

When an aircraft downlinks its supported applications and their version numbers in an FN-CON message, the ground system response must indicate whether or not it supports those version numbers.

The system must be capable of sending the Acceptance message or the Rejection message with reason, as appropriate.

4.2.2 Use of AIDC for Forwarding AFN Message

The ATS system should be capable of sending the FANS application message (FAN), in accordance with the ICD. When possible, the system should use the AIDC FAN message for address forwarding in preference to the AFN application.

4.3 CPDLC

4.3.1 General

The required capacity of the CPDLC function will be determined by taking account of the operational policy and procedures and the airspace characteristics, such as the number of FANS-capable aircraft, airspace size and number of waypoints, the communications necessary in ATS operations, and of the estimated future growth of datalink operations.

The system will be capable of processing the specified number of message exchanged with each of the aircraft.

Down-linked CPDLC messages will be displayed to controllers. Tools must be provided to allow simple and intuitive initiation of, or response to, CPDLC messages.

Note: The size of the free text field is limited to 80 characters (instead of 256) for some specific aircraft types.

CPDLC position reports should be used to display aircraft positions when no ADS report is available.

The system will have the capability of terminating CPDLC connection with the aircraft.

4.3.2 Transfer of CPDLC between ATC Sectors

The system will allow transfer of CPDLC between sectors of an ATSU without changing the data authority and with the same CPDLC link.

4.3.3 CPDLC Message Exchange Requirements

The system will be capable of handling the message set and the standardized free text messages defined in the FOM, as well as free text.

The system will allow controllers to review uplink messages prior to sending.

4.3.4 Message Handling Order

Messages will be handled in order of priority.

Messages with the same priority will be processed in the time order of receipt.

The controller will be alerted to unsuccessful receipt of the required response in the specified time or receipt of Message Assurance Failure (MAF).

4.3.5 Responses

The system will allow controllers to send any response messages linking with the reference number of the message received. The relationship between the message and its intent and the response requirement is defined in the FOM.

4.3.6 Message Closure

A CPDLC dialogue will not be closed until an appropriate closure response for

that message with same reference number is received.

When the closure response message is sent, the dialogue is closed and the system will reject any further attempt to send a response message.

The capability of closing a CPDLC dialogue, independent of CPDLC closure message receipt, will be provided.

4.4 ADS

4.4.1 General

The capacity of the ADS function will be determined from the operational policy and procedures and the airspace characteristics, including number of FANS capable aircraft, periodic reporting rate, airspace size, waypoint event report frequency, usage of event and demand contracts, and projected traffic growth.

The system will be capable of initiating periodic, event and demand contracts.

The system will be able to support a demand, an event and a periodic contract simultaneously with each aircraft.

The system will apply validation checks to incoming data by reference to flight plan data in relation to time, altitude, direction and position.

The system will be capable of processing ADS reports to display aircraft positions, tracks and altitude. Between ADS reports, aircraft positions will be extrapolated and displayed automatically at specified intervals.

The datalink system should have the capability of supporting 30NM lateral and 30NM longitudinal distance based separation standards.

Air and earth reference data of ADS reports will be provided for controllers if required.

The types of ADS contract are described at 5.3.1 ADS.

4.4.2 Message Handling

ADS messages will be processed by the system in the following order:

1. ADS emergency mode.
2. Demand/event reports.
3. Periodic report.

Within these categories, messages will be handled in the order received.

The following errors will be notified to controllers:

- Message validation error.
- Message sequence error detected with time stamp.
- Time-out of ADS report in response to request.
- Periodic and waypoint event report failure.

4.5 AIDC

4.5.1 General

General descriptions of AIDC applications, requirements, functional capabilities, and message contents are provided in the latest version of the ICD.

The AIDC application exchanges ATC coordination information between ATSUs.

Bilateral agreements between ATSUs are necessary to determine the operational and system requirements for both ATSUs, and should be made before developing the system. These agreements should cover:

- The ICD to be applied – Asia/Pacific or other ICD.
- message set to be used.
- usage of messages (e.g. timing of transmission).

The AIDC application requires that:

- messages are generated and sent in time-ordered sequence.
- messages are delivered in the order in which they are sent.

When an ATSU queues received messages, messages with the highest urgency type will be placed at the beginning of the queue. Messages will be assigned one of the following urgency attributes:

- Normal.
- Urgent.
- Distress.

The time used in the AIDC application will be accurate to within 1 second of UTC.

A timestamp will be generated when the message is dispatched and will consist of the date (YYMMDD) and time (HHMMSS).

Where an AIDC message is linked to a previously sent message, the message will contain reference information, including the ID of the referenced message.

4.5.2 Asia/Pacific Interface Control Document (ICD)

The Asia Pacific ICD for AIDC provides the standardized procedures for inter-facility message exchanges.

(The purpose of the ICD is to ensure that inter-facility message exchanges between ATSU equipped with automated ATS systems in the Asia/Pacific Region are harmonized to a common standard.)

Until ATN becomes available, the engineering details needed to implement the exchange of messages described in Appendix A of the ICD will need to be

agreed to bilaterally.

4.5.3 Message Header

Every message will contain an AFTN header. The AFTN IA-5 message header, including the use of the Optional Data Field defined in Annex 10, will be employed for the exchange of data. AFTN priority indicator FF will normally be used for all data exchanges.

A message header consists of the optional data field (ODF), addressing, message/data identification number, reference information, time stamp and cyclic redundancy check (CRC).

4.5.4 ATS Coordination Messages

AIDC provides the means by which data is exchanged between and within ATSUs for the notification of flights approaching FIR boundary, the coordination of boundary crossing conditions and the transfer of ATC services.

AIDC messages are also used to exchange emergency, track definition, and application management information as well as for transfer of surveillance data.

4.5.5 Detailed Information Provided in ICD

The appendices to the ICD describe:

- ATS coordination messages (Appendix A).
- Error codes (Appendix B).
- ATM application naming conventions (Appendix C).
- Implementation Guidance Material – IGM (Appendix D).
- Relationship to ICAO AIDC messages (Appendix E).

4.5.6 Performance Requirements

The performance requirements for the trip time of messages need to be specified and agreed to with neighbouring ATSUs to ensure effective use of AIDC. Recommended performance figures are specified in Appendix D of the ICD.

The methodology for monitoring AIDC performance is provided in Appendix A of the Guidance Material for End-to-end Safety and Performance Monitoring of ATS Datalink Systems in the Asia/Pacific Region.

CHAPTER 5 SPECIFICATION

The development of the specification should, wherever possible, be a team effort, with operational and technical personnel working together to achieve the optimum result. Specifications produced by technical personnel often concentrate on technical features at the expense of operational suitability, when the whole purpose of the system is to support operational activities!

In developing a specification for any technical system, it is important to achieve the right level of detail. Too little detail leaves the purchaser at the mercy of potential suppliers, while too much may preclude suppliers from offering very suitable equipment. In general, it is probably appropriate to specify requirements in great detail only where those requirements are essential to the operation, and otherwise to leave the supplier a reasonable amount of freedom. An off-the-shelf system can be expected to be less expensive than one that is custom-designed.

It is also important to get the specification right. Proposals will be priced on the specification, and any changes required later, particularly after the contract is signed, will be costly in terms of price and completion time.

This section on specification covers the system configuration, its interfaces with other systems, its functionality, the operator interface, system capacity, and recording and data analysis.

5.1 SYSTEM CONFIGURATION

The system configuration depends upon the operational environment. In specifying the configuration, a number of issues must be considered:

- Is it to be a stand-alone ADS/CPDLC/AIDC system, is it to be part of an integrated system or is it to be interfaced with a separate ATM system?
- How many sectors are required?
- How many workstations are required per sector? If more than one, why?
- What contingency configuration is required?
- Is complete duplication of the system required?
- What are the requirements for main/standby computers and independent contingency workstations?
- Will there be duplication of communications bearers? If so, which ones?
- Assuming the normal operational configuration is one workstation per sector, how many contingency workstations are required?

5.2 INTERFACES

The System must have a number of interfaces to send and receive data; some of these are essential, others may be useful or just nice to have. This section concentrates on the essential and the useful.

5.2.1 Communication Service Provider

In the current FANS 1/A environment, ADS and CPDLC messages are passed between aircraft and the System using the ACARS data messaging system. ACARS was developed by the datalink service providers (DSP) to pass information between the airline operating centre (AOC) and the aircraft. ADS and CPDLC required an air-ground datalink and, in the absence of the Aeronautical Telecommunication Network (ATN), the ACARS system was used.

Access to the ACARS datalink is available only from the DSPs; ARINC and SITA are the major DSPs; they provide global coverage and complete management of the signal between the ATSU and the aircraft, including selection of most appropriate datalink path (VHF, satellite or HF). There are also some national or regional DSPs, such as AVICOM Japan.

It is essential therefore to specify the appropriate interface port(s) to connect to the chosen DSP. This is typically an RS232 serial port, but the exact requirement should be confirmed with the DSP.

5.2.2 ATN

It is intended that the ADS and CPDLC functions will eventually be carried by the ATN. The purpose of the ATN is to “provide data communication services and application entities in support of the delivery of air traffic services (ATS) to aircraft; the exchange of ATS information between ATS units; and other applications such as aeronautical operational control (AOC) and aeronautical administrative communication (AAC).” [Annex 10, Vol III, 3.3]

It is important, therefore, that any new system should either include provisions for, or have a defined upgrade path to provide, interfacing with the ATN.

ICAO Doc 9705 - Manual of Technical Provisions for the Aeronautical Telecommunication Network (ATN) is the appropriate source of interface data for the ATN.

At present, the ATN is under development and trials are being carried out in several ICAO Regions.

5.2.3 AFTN/AMHS

The AFTN is currently the carrier for ground-ground messaging between ATC units and carries AIDC messages in the FANS 1/A environment. The AHMS (Aeronautical Message Handling System) is the ground-ground messaging

application of the ATN. The AMHS is also referred to as the ATSMHS (ATS Message Handling System).

AIDC messages will be passed via the AFTN until the ATN is operational. However, AFTN/AMHS gateways will increasingly be used to provide a transition between the AFTN and ATN. These gateways transpose AFTN messages into AMHS format and vice versa.

Any new system should include at least one AFTN/AMHS gateway. AIDC messages generated in AMHS structure can then be transmitted via the AFTN and incoming messages from the AFTN will be transposed to AMHS structure. After the ATN becomes operational and the AFTN is no longer used, the gateway can be removed.

5.2.4 ATS systems

In many cases, interfaces to other ATS systems will be necessary. This may be because an ADS/CPDLC system will use the flight data or other processing capability of another system or because the new system will be directly connected to another system.

5.2.4.1 Flight Data Processing System

Where an ADS/CPDLC system is to rely on an existing system to provide flight data, the interface required will depend on the data to be passed. The ADS/CPDLC system may have no flight data processing capability and merely require flight plan information for identification purposes, or it may have some capability to up-date flight plans received from the other system and return the up-dated information.

In either case, the interface may need to transform data formats between the 2 systems. It is therefore essential that the data formats used by the existing system are detailed in the specification so that they are allowed for in proposals; otherwise, costly contract variations may be required.

5.2.4.2 Radar Data Processing System

Data imported from a separate radar data processing system will take the form of track data or possibly plot data. As with interfaces for flight data, it is most important to detail the radar data formats in the specification.

If ADS data is to be exported to a separate radar data processing system or display system, the formats required by those systems also must be detailed.

5.2.4.3 Direct Connection between Systems

When a full system (with FDPS and perhaps RDPS as well as ADS/CPDLC/AIDC) is to be connected directly to an existing system for full data interchange, details of all the data formats of the existing system should be included in the specification.

5.2.5 Radar Data

If the System is to receive direct radar feeds from existing radars, the output data format of each radar must be detailed.

Most new systems are designed around the ASTERIX surveillance data formats; specifying ASTERIX where possible will allow the greatest flexibility for the future. The ASTERIX Standard was adopted as the ICD for surveillance data exchange for the Asia/Pacific Region in 1998. Information on ASTERIX may be found at:
http://www.eurocontrol.int/asterix/public/subsite_homepage/homepage.html

The “Regional Supplement to the ASTERIX Interface Control Document for the Asia/Pac Region” gives details of location-specific ASTERIX coding.

Inputs from military radars may be non-standard or require additional processing; any available details should be included.

5.2.6 ADS B Data

Where ADS B data is available or anticipated, the system should be capable of accepting and processing such data.

5.2.7 Meteorological Data

Many modern systems make provision for the use of meteorological data for updating predicted waypoint times in near-real time. However, this type of prediction may require very large amounts of data and may not be justified if experience shows that weather variations have very little effect on the routes concerned or where the weather patterns are such that occasional manual input would suffice.

If there is a requirement for regular automatic data input, the available sources of data should be investigated and the appropriate formats should be specified.

5.3 FUNCTIONALITY

This section covers the core applications of the system, ADS, CPDLC and AIDC, and their supporting functions, AFN and ACF.

5.3.1 ADS

ADS is a means of surveillance in which an aircraft reports its current position, intent and other pertinent information via the datalink function to an ATSU. ADS is detailed in ARINC 745-2.

The ADS reporting rate and the types of data to report are determined by ADS contract requests from an ATSU. An aircraft can report to up to four ATSUs simultaneously.

There are three types of ADS contract: the periodic contract, the event contract and the demand (“one-shot”) contract.

5.3.1.1 Periodic Contract

The ATSU sets up a periodic contract with the aircraft to obtain regular position reports; the contract specifies to the aircraft the reporting rate, any optional data groups be added to the basic ADS report, and the frequency at which the optional groups are to be included in the reports.

Only one periodic contract can be established between an ATSU end system and a particular aircraft at any one time. The periodic contract normally remains in effect until the contract is cancelled by the ATSU.

The system must be capable of pre-defining the reporting rate as a system parameter and of allowing the controller to change the rate, on a case by case basis, to meet operational requirements.

The system must also allow the controller to include any of the permissible additional data groups in a periodic contract request.

Some systems have the capability of automatically changing the reporting rate from one area to another; however, this could increase system cost and complexity.

5.3.1.2 Event Contract

An event contract specifies a request for reports whenever a defined ‘event’ occurs. Only one event contract can be established between a ground system and a particular aircraft at any one time; however, the event contract can contain multiple event types. There are four event types.

The **Vertical Rate Change Event** is triggered when the aircraft’s vertical rate is either less than or greater than a parameter defined in the contract.

The **Lateral Deviation Change Event** is triggered when the aircraft’s actual position exceeds a lateral distance parameter from the aircraft’s expected position on the active flight plan in the FMC.

The **Altitude Range Change Event** is triggered when the aircraft’s altitude exceeds the altitude ceiling or floor defined in the contract by the ground system.

Once a vertical rate, lateral deviation or altitude range event trigger has occurred, a recurrence of this event no longer triggers an event report. If required, a new event contract must be initiated each time one of these specific events occurs.

The **Waypoint Change Event** is triggered by a change to the next or the next-plus-one waypoints. Such a change normally occurs due to routine waypoint sequencing. However, it will also be triggered by occurrences such as a change to a non-ATS waypoint entered by the

pilot for operational reasons, or execution of a new route affecting the next or next-plus-one waypoints. Unlike the other event contracts, the waypoint change event trigger remains in effect for all waypoint changes.

Once an event contract has been established, it remains in effect until the specific event requests are fulfilled, or it is cancelled by the ground system.

The system must be capable of pre-defining the event trigger parameters and of allowing the controller to change the event parameters as required.

5.3.1.3 Demand Contract

The demand contract is a “one-off” request from the ground system for an ADS report containing specific data as defined in the request. A demand contract can be requested by the ground system at any time. The demand contract request does not affect any existing contracts.

The system must allow the controller to initiate a demand contract, including optional data fields.

5.3.1.4 Emergency Mode

The emergency mode can only be activated by the pilot and is normally cancelled by the pilot. While it is possible for a ground system to cancel the emergency mode status, most ground systems do not have this capability; however, some ground systems allow the controller to modify the “display” of the emergency mode status.

The system must recognise the emergency flag and display the emergency status to the controller.

5.3.2 CPDLC

CPDLC provides a two-way message system between controller and pilot. It comprises an number of pre-defined up-link and down-link messages, some of which are complete in themselves, while others require data (such as time, flight level, etc) to be added. There are also two free-text messages available in each direction, one reserved for emergency use.

To send a message, the controller selects the required message and enters any required data. (Options for selecting messages and entering data are discussed below under Human-Machine Interface.) The system then automatically codes the message in bit-oriented format and presents it for transmission.

On reception of a down-link message, the CPDLC application decodes the message and presents it to the controller.

The current message set is detailed in the FOM, and the system must provide the complete up-link message set and be capable of accepting and decoding the complete down-link message set.

Some message sequences require “closure”:

- A message requiring a response remains open until a referenced response is received.
- A message is closed when either a response is not technically required, or after a referenced response other than STANDBY or REQUEST DEFERRED has been received.

The system must manage message closure protocols in accordance with the requirements of the FOM.

5.3.3 ACF

ADS and CPDLC both operate on bit-oriented data, while ACARS is character-oriented. The ACARS Convergence Function (ACF) converts the bit-oriented data of ADS and CPDLC to the character-oriented data used by ACARS, and vice versa.

If the system is to operate over ACARS, the ACF must be specified as an essential requirement.

(The ACF is not required where the ATN is the carrier.)

5.3.4 AFN

The AFN function provides the transfer of information required to support the initiation of datalink connectivity between an aircraft and an ATSU. The AFN is a character-oriented application.

Because it is essential to ADS and CPDLC operation over ACARS, the AFN function as detailed in ARINC 622-4 must be a requirement of the system specification.

5.3.5 AIDC

The AIDC application supports information exchanges for notification, coordination, and the transfer of communications and control functions between automated ATS systems located at different ATSUs.

The AIDC message set is defined in the ICD. This message set was based on ICAO agreed methods and messages wherever possible; elsewhere, new messages used existing ICAO field definitions to the extent possible.

5.4 OPERATOR INTERFACE

5.4.1 Human Factors

Human factors play a major part in the success or failure of a system to meet its operational objectives. A system that is uncomfortable to use will lead to

controller dissatisfaction, which as controllers are an essential part of the overall system, can only degrade the overall system performance.

Displays and keyboards that are poorly designed from a human factors aspect will be inefficient and may cause actual harm to the users. Bad display design can affect the eyes and bad keyboard design may result in occupational overuse syndrome (repetitive strain injury). The human factors implications of the system specification should be very carefully considered, and it may be appropriate to get specialist advice.

5.4.2 Displays

One or more displays are required to handle the ADS, CPDLC and AIDC messages. Many systems incorporate message handling in the situation display.

Modern displays use LCD technology and may be as large as 600 x 600mm, with typical resolution of 2048 x 2048 pixels. Smaller displays may be more appropriate for some uses, particularly if there are 2 displays at a controller position: a second display is often used for flight data handling. However, the arrangement of displays will largely depend on the extent to which the new system is to be integrated with existing systems.

While colour displays offer great advantages in differentiating between different categories of data, the choice of colours for the various categories can be very contentious. It is essential that colour allocation is not arbitrarily decided, but is based upon sound human factors principles. Inappropriate colour choices can contribute to fatigue, confusion and errors. To avoid these problems, a human factors expert should be engaged to advise on the use of colour.

Different symbols should be used for radar tracks, ADS-B tracks, ADS-C tracks and tracks generated from flight plan information. The track symbol should be that of the source of the highest quality information. At the current stage of development of ADS-B systems, radar is generally accepted as the best surveillance data, followed by ADS-B and then by ADS-C. Flight plan tracks are the lowest quality.

The status of the CPDLC connection is important information for the controller and is best displayed in the track label.

5.4.3 Message Handling

Message handling for ADS, CPDLC and AIDC messages is usually achieved by some form of menu access for generating messages and by pop-up windows for replying to incoming messages. Most systems now offer access via the track label.

For CPDLC, there are two elements to generating most messages: selection of the specific message and entry of necessary data. The message selection should be simple: there are about 180 uplink messages available. Some

systems present a selection of appropriate messages – for example, by offering only height-related messages if the height field in the track label is selected. ADS contract messages are more simple and infrequently required, so that a simple menu-type operation is normally adequate. AIDC messages can usually be generated automatically form flight plan data.

If a particular message handling method is required, it should be clearly stated in the specification.

The language for all menus and message sets should be English: English is the de facto language for radiotelephony within the Asia-Pacific Region. While it may seem attractive for menus and CPDLC messages to be displayed in a local language, this will inevitably lead to loss of English language proficiency and so will work against the new ICAO language proficiency provisions in Annexes 1, 6, 10 and 11. These provisions require that from March 2008, pilots, aeronautical station (radio) operators and air traffic controllers shall demonstrate the ability to speak and understand the language used for radiotelephony communications to specified levels.

5.4.4 Input Devices

The controller input devices include the text input device and the pointing device.

The text input device is normally a keyboard and there are various types of keyboard (standard, ergonomic, etc). The type should be specified if it is considered important; however, it is worth noting that controllers do not have to input large amounts of text in an ADS/CPDLC system. Touch panels may be offered instead of keyboards.

The mouse is the most common and probably most flexible pointing device; others include the track-ball and the light pen. It is difficult to locate a track-ball and keyboard so that they are well-placed for both left- and right-handed people, and light pens have been poorly received by many controllers.

Wireless connections for the input devices will reduce the clutter on the workstation working surface and allow more freedom of movement for the pointing devices. However, electro-magnetic compatibility with nearby equipment must be carefully considered.

5.5 CONTROLLER TOOLS

Controller tools include such items as:

- Conflict probe
- Temporary maps
- Bearing-distance lines
- Velocity vectors

- Label overlap avoidance

5.5.1 Conflict Probe

Conflict Probe is a tool to determine whether a proposed flight plan will come into conflict with another during a specified period.

The Conflict Probe is normally initiated by the controller for a particular aircraft. The probe compares the proposed trajectory with the current planned trajectories of other aircraft information and displays the position and time of calculated conflicts to the controller. The period covered by the probe is typically fairly long (up to several hours), as the main use of Conflict Probe is when a routing change is proposed under a flexible track regime.

Conflict Probe is a very complex function, requiring considerable computer power, and consequentially can be expected to be expensive.

5.5.2 Temporary Maps

Temporary maps allow controllers to depict on the display areas of interest on a temporary basis. Temporary maps should be simple both to construct – a few straight lines is usually adequate – and to switch on or off on the display.

5.5.3 Bearing-Distance Line

As its name suggests, a bearing-distance line allows a controller to measure the bearing and distance between 2 points on a display. The points might be an aircraft track symbol and a reporting point or 2 aircraft track symbols.

Some systems allow one or both ends of the line to lock on to an aircraft track symbol, so that the bearing and distance information displayed is updated as the aircraft move.

Multiple bearing distance lines, if available, can be useful.

5.5.4 Velocity Vectors

Velocity vectors display a vector from the track symbol showing the calculated position of the track after a specific time. The time is normally preset to a default value (typically 2 minutes); most systems allow the controller to set a different value.

Some systems also allow velocity vectors to be shown for all tracks or for a selected track only.

5.5.5 Label Overlap Avoidance

Label overlap avoidance allows the track labels to be moved to avoid labels overlapping one another. This is done by rotating some labels to new positions relative to the track symbol or by changing the distance of some labels from their symbols. The process is normally automatic, but should allow the controller to set selected labels to a preferred position.

5.6 SYSTEM CAPACITY

The required system capacity is directly related to the number of ADS, CPDLC and AIDC messages, the number of radar tracks, the number of active flight plans, the number of workstations and so on. These, in turn, are directly related to the volume of traffic, particularly the peak traffic volume.

The system capacity is normally expressed as the number of active flight plans that the system can handle at one time; in this context, “active” means that the system is using or processing the flight plan information in some way.

It is clearly important that the system capacity should allow for traffic growth over the projected life of the system, which for modern systems is typically 5 to 7 years between major upgrades or replacement. The anticipated growth should therefore be carefully assessed using the best projections available, and should allow for daily and seasonal traffic peaks.

However, it is also important not to set the capacity requirement too high, as this will almost certainly result in increased cost.

Some growth rates over those periods are shown below to give an indication of future capacity requirements based on current traffic:

Anticipated Annual Growth	Total Growth over		
	5 years	6 years	7 years
5%	28%	34%	41%
7.5%	44%	54%	66%
10%	61%	77%	95%

5.7 RECORDING AND DATA ANALYSIS

The system should record all incoming and outgoing ADS, CPDLC and AIDC messages for use in incident and accident investigations. It is imperative that all recordings are time-stamped. Messages are typically recorded onto a tape cartridge or DVD, and the system should allow change-over of the cartridge or DVD with no interruption to the recording.

Annex 10 Vol II and Annex 11 require communications, including AIDC and CPDLC, to be recorded and the recordings to be retained for at least 30 days for accident/incident investigation purposes. Chapter 3 of the FOM details some specific recording requirements for both safety investigation and performance monitoring.

The recording system should allow replaying of the situation and identification of messages were sent or received by the system.

Provision should also be made for recording data for use by the agencies monitoring RNP, RVSM and datalink performance. These are the Safety Monitoring Agency (SMA), the Regional Monitoring Agency (RMA) and the Central Reporting Agency (CRA) respectively. Generally, the data required by RMAs and SMAs is captured by the FDPS.

To meet CRA requirements, the specification should include a requirement for datalink performance monitoring tools and analysis software. The analysis software should, at the least, be capable of extracting time-stamps, addressees and message types from all incoming and outgoing messages.

The table below summarises the FOM datalink monitoring requirements for ATS providers.

Requirements	**Monitor/Record**
Operational Procedures	Time stamped ATS messages with identification and reference numbers
	Message Assurance
	Anomaly event report
Performance	End-system availability
	Transit times
Safety (i.e. operational, performance and interoperability requirements which are used to mitigate the effect of a failure condition)	Time stamped ATS messages with identification and reference numbers/MAS
	Anomaly event reports
Interoperability	Time stamped ATS messages with identification and reference numbers/MAS

APPENDIX A GLOSSARY

ACARS	Aircraft Communications Addressing and Reporting System
ACAS	Aircraft Collision Avoidance System (ICAO
ADS	Automatic Dependent Surveillance
AEEC	Airline Electronic Engineering Committee
AFN	ATS Facilities Notification
AFTN	Aeronautical Fixed Telecommunication Network
AIDC	ATC Inter-Facility Data Communications
AIP	Aeronautical Information Publication
AMHS	Aeronautical Message Handling System
ANSP	Air Navigation Service Provider
AOC	Airline Operational Communications
APANPIRG	Asia/Pacific Air Navigation Planning and Implementation Regional Group
ARINC	Aeronautical Radio Incorporated
ATC	Air Traffic Control
ATM	Air Traffic Management
ATN	Aeronautical Telecommunication Network
ATS	Air Traffic Services
ATSMHS	ATS Message Handling System
ATSU	ATS unit
AVICOM	AVICOM Japan Co. LTD
CAA	Civil Aviation Authority
CNS	Communications, Navigation, Surveillance
CPDLC	Controller Pilot Data Link Communications
CRA	Central Reporting Agency (for datalink)
CRC	Cyclic Redundancy Check
DL	Downlink message
DSP	Datalink Service Provider
EUROCAE	European Organization for Civil Aviation Equipment
FANS	Future Air Navigation System
FIR	Flight Information Region
FIT	FANS Interoperability Team (IPACG, ISPACG)
	FANS Implementation Team (FIT-BOB, FIT-SEA)
FMC	Flight Management Computer
FMS	Flight Management System
GES	Ground Earth Station (satellite)
GPS	Global Positioning System (USA)
HF	High Frequency (3-30 MHz)
IATA	International Air Transport Association
ICAO	International Civil Aviation Organisation
IFATCA	International Federation of Air Traffic Controllers Associations
IFALPA	International Federation of Air Line Pilots' Associations

IPACG	Informal Pacific ATC Coordinating Group
ISPACG	Informal South Pacific ATS Coordinating Group
MAS	Message Assurance (data message)
MCDU	Multipurpose Control Display Unit (ACARS & FMC)
MU	Management Unit (ACARS)
NDA	Next Data Authority
NOTAM	Notice To AirMen
RASMAG	Regional Airspace Safety Monitoring Advisory Group
RMA	Regional Monitoring Agency (for RVSM)
RNP	Required Navigation Performance
RTCA	RTCA Inc.
RVSM	Reduced Vertical Separation Minima
SATCOM	Satellite Communication
SATVOICE	Satellite Voice Communication
SITA	Société Internationale de Télécommunications Aéronautiques
SMA	Safety Monitoring Agency (for RNP)
SR&O	System Requirements and Objectives (FANS-1 document)
TCAS	Traffic Alert and Collision Avoidance System (USA)
TMU	Traffic Management Unit
UL	Uplink message
VHF	Very High Frequency (30-300 MHz)

APPENDIX B REFERENCES

Annex 10, Volume III, Communication Systems		ICAO
Procedures for Air Navigation Services, Air Traffic Management	Doc 4444	ICAO
Manual of Technical Provisions for the Aeronautical Telecommunication Network (ATN)	Doc 9750	ICAO
Basic Air Navigation Plan – Asia and Pacific Regions	Doc 9673	ICAO
Manual on Airspace Planning Methodology for the Determination of Separation Minima	Doc 9689	ICAO
Manual of Air Traffic Services Data Link Applications	Doc 9694	ICAO
Safety Management Manual	Doc 9859	ICAO
Asia/Pacific Regional Plan for the new CNS/ATM Systems		ICAO Asia Pacific Office
Regional Supplement to the ASTERIX Interface Control Document (ICD) for the Asia/Pac Region		ICAO Asia Pacific Office
Asia/Pacific Regional Interface Control Document (ICD) for ATS Inter-facility Data Communications (AIDC), version 2		ICAO Asia Pacific Office
Guidance Material for End-to-End Safety and Performance Monitoring of ATS Datalink Systems in the Asia Pacific Region		ICAO Asia Pacific Office
FANS 1/A Operations Manual		
Interoperability Requirements for ATS Applications using ARINC 622 Data Communications	DO-258A / ED-100A	RTCA and EUROCAE
Air-Ground Character-Oriented Protocol Specification	618-5	ARINC
Data Link Ground Systems Standard and Interface Specification (DGSS/IS)	620-5	ARINC
ATS Data Link Applications Over ACARS Air-Ground Network	622-4	ARINC
Aircraft Communications Addressing Reporting System (ACARS)	724B-5	ARINC
Air Traffic Services Systems Requirements & Objectives (ATS SR&O)		Boeing

APPENDIX C PERFORMANCE CRITERIA

Criteria	Definition	Values
Performance	End-to-end round trip time for uplinks. (from sending of the uplink until reception of the MAS)	Round trip time of 2 minutes, 95% of messages. Round trip time of 6 minutes, 99% of messages.
	End-to-end one way time for downlinks. (comparison of message time stamp and receipt time)	One way time of 1 minute, 95% of messages. One way time of 3 minutes, 99% of messages
	Uplink messages only: Undelivered messages will be determined by: • Message assurance failure is received. After trying both VHF and SATCOM. Depending on reason code received, the message might, in fact, have reached the aircraft. • No message assurance or flight crew response is received by ATSU after 900 seconds	Less than 1% of all attempted messages undelivered
Availability	The ability of the network data link service to perform a required function under given conditions at a given time: The maximum allowed time of continuous unavailability or downtime should be declared (MTTR)*	99.9% TBD
Reliability	The ability of a data link application/system to perform a required function under given conditions for a given time interval: it can be expressed in MTBF (Mean Time Between Failure) *	TBD
Integrity	The probability of an undetected failure, event or occurrence within a given time interval.	10^{-6}/hour

∗ Availability = MTBF x 100/(MTBF+MTTR)

Note: RTCA SC189/EUROCAE WG 53 defines the performance requirements for specific operational environments.

FIT- BOB TASK LIST

(last updated 23 January 2007)

	ACTION ITEM	TIME FRAME	RESPONSIBLE PARTY	Status	REMARKS
~~1.~~	~~ATS providers to adopt the FOM and to review and update their ATSU operating procedures to align with the FOM.~~	~~Ongoing activity as additional States join the operational trial.~~	~~All States~~	~~Ongoing~~ ~~Closed~~	~~APANPIRG/15 (August 2004) adopted (Conclusion 15/7 the FANS1/A Operations Manual (FOM) as the basis for ADS and CPDLC operations in conjunction with Annex 10, PANS/ATM and regional guidance material.~~ ~~FIT-BOB/8 considered this Conclusion now widely circulated~~
~~2.~~	~~ATS providers to coordinate with adjacent ACCs to review and update letters of agreement for introduction of ADS/CPDLC services on a trial basis.~~	~~Ongoing activity as additional States join the operational trial.~~	~~All States~~	~~Ongoing~~ ~~Closed~~	~~Ensure common ATC procedures applied.~~
~~3.~~	~~Issue NOTAM on the commencement of the operational trial in line with the model NOTAM provided by FIT-BOB/3.~~	~~Ongoing activity as additional States join the operational trial.~~	~~All States~~	~~Ongoing~~ ~~Closed~~	~~Some States have already issued NOTAM on their operational trial.~~ ~~Sri Lanka to issue new AIC for recommencement of trial~~ ~~FIT-BOB/8 considered this a routine activity, no specific task list item required.~~

	ACTION ITEM	TIME FRAME	RESPONSIBLE PARTY	Status	REMARKS
					~~Sri Lanka issued permanent NOTAM A0344/06 in January 2007 advising operational datalink services available Colombo FIR.~~
4.	~~Coordinate with FIT-BOB States on implementation of the operational trial.~~	~~Ongoing activity as additional States join the operational trial.~~	~~ICAO, Malaysia. Sri Lanka, Myanmar, Bangladesh~~	~~Ongoing~~ ~~Closed~~	~~Determine status on trial participation~~ ~~Sri Lanka planning to recommence trial in June/July 2005 TBA~~ ~~Routine updates at FIT-BOB meetings~~
5.	Coordinate with Indian Ocean States on harmonizing implementation of operational trial.	As soon as practicable	ICAO APAC FIT-BOB, ASIOACG and Indian Ocean States	Ongoing	Operational trials underway in BOB since February 2004 , Arabian Sea since July 2006 FIT-BOB will provide interim FIT and CRA services for Informal Arabian Sea/Indian Ocean ATS Coordination Group (ASIOACG) and all Indonesian FIRs
6.	~~Coordinate with Middle East and East African Regional Offices on implementation of operational trial in the Arabian Sea and Indian Ocean.~~	~~As soon as practicable~~	~~ICAO APAC~~	~~Ongoing~~ ~~Closed~~	~~To harmonize inter-regional implementation of ADS/CPDLC and to ensure common operating procedures established.~~ ~~Secretariat to inform Middle East and East African offices of Arabian Sea trial from January 2006.~~

	ACTION ITEM	TIME FRAME	RESPONSIBLE PARTY	Status	REMARKS
					~~Secretariat to inform ICAO Middle East Office of arrangements for ASIOACG during Interregional meeting September 2006~~ ~~ICAO APAC and MID Offices in coordination to convene SWACG meeting May 2007, SWACG meeting will function as coordination mechanism.~~
7.	Collecting of ADS/CPDLC problem reports and submit to CRA.	Immediate	States, operators	Ongoing	To be submitted to CRA as soon as practicable to facilitate analyzing the reports. ~~BOB CRA (Boeing) planned operation TBA.~~
8.	Establish provisions for monthly ~~monitoring date~~ ADS/CPDLC system performance data to be submitted to the CRA.	Monthly	States	Ongoing	Essential for evaluating overall system performance within the trial airspace. ~~BOB CRA (Boeing) planned operation TBA~~

	ACTION ITEM	TIME FRAME	RESPONSIBLE PARTY	Status	REMARKS
9.	Compile data on aircraft ADS/CPDLC equipped in the trial airspace.	6 monthly	States, IATA	Ongoing	To keep record of aircraft participating in the trial and determine overall benefits derived by population of aircraft operating in the trial airspace. India would provide periodic updates to FIT-BOB of participating airframes
10.	~~Training of controllers and technical staff on ADS/CPDLC operational procedures based on the FOM.~~	~~Ongoing activity as additional States join the operational trial.~~	~~States~~	~~Ongoing~~ ~~Closed~~	~~FIT-BOB/8 considered this a routine activity, no specific task list entry required.~~
~~11.~~	~~Nominate contact person (ATS and technical) and keep details updated.~~	~~As soon as practicable~~	~~States, operators~~	~~Ongoing~~ ~~Closed~~	~~Important that CRA has contact with engineering and operational personnel to analyze problem reports and performance data.~~ ~~Contact persons to be included in table of ADS/CPDLC and ATS status retained by FIT-BOB~~ ~~BOB CRA (Boeing) planned operation TBA.~~
12.	Establish data confidentiality agreements with States and operators participating in the trial airspace.	Immediate	CRA, States and operators	As required	Necessary to establish agreement with data providers for release of data and to de-identify reports.

	ACTION ITEM	TIME FRAME	RESPONSIBLE PARTY	Status	REMARKS
13.	Update ICAO Guidance material on CNS/ATM Operations in APAC Region.	As soon as practicable	ICAO	Ongoing	Part III harmonized with FOM. ICAO Headquarters continuing the review/harmonisation of Guidance Material. International Data Link manual (IDLM) in preparation under auspices of ICAO EUR/NAT Office
~~14.~~	~~Coordinate with FOM editorial group on request for change to the FOM.~~	~~As required~~	~~BOB FOM editor~~	~~Ongoing~~ ~~Closed~~	~~BOB FOM editor to be nominated~~ ~~FOM includes Request for Change (RFC) processes. Send all FOM RFCs to the Regional Office.~~ ~~Procedures in the FOM for request for change.~~
~~15.~~	~~Establish CRA.~~	~~As soon as practicable~~	~~ICAO/States/ IATA/ Boeing~~	~~Ongoing~~ ~~Completed~~	~~SCM regarding CRA funding held December 2003. Boeing & IATA coordinating funding arrangements for CRA and process expected to be completed April 2005.~~ ~~Additional SCM BOB CRA held June 2005.~~ ~~BOB CRA (Boeing) in operation from January 2007.~~

	ACTION ITEM	TIME FRAME	RESPONSIBLE PARTY	Status	REMARKS
16.	Provide authorization for IATA to invoice and collect user charges to fund the CRA, and States to enter into agreement with IATA to provide required data.	As soon as practicable	India, Sri Lanka, IATA	Ongoing	In coordination with ICAO and IATA, India and Sri Lanka ~~States~~ to issue AIP SUP notifying users of charging for CRA services for operators using ADS/CPDLC in FIT-BOB data link service area ~~BOB CRA (Boeing) planned operation TBA.~~
~~17.~~	~~Include details of Indonesia and ASIOACG States Oman and Yemen in Table of ADS/CPDLC Equipage and ATS Status.~~	~~As soon as practicable~~	~~ICAO, ASIOACG~~	~~Ongoing~~ ~~Closed~~	~~Important that CRA has contact with engineering and operational personnel to analyze problem reports and performance data.~~ ~~BOB CRA (Boeing) planned operation TBA.~~ ~~(Raised FIT-BOB/7)~~
18.	~~Prepare suitable table of ADS/CPDLC implementation planning for all FIT-BOB FIRs including estimated dates for implementation of CPDLC communications, ADS/CPDLC full implementation, 50/50 reduced separation and 30/30 reduced separation to provide basis for long term satellite traffic load estimates to assist DSP network planning.~~	~~As soon as practicable~~	~~ICAO, FIT-BOB States/ IATA~~	~~Ongoing~~ ~~Closed~~	~~SITA has launched global satellite capacity/performance planning initiative to collect data from ANSPs and users to ensure timely network enhancement to meet future network requirements~~ ~~(Raised FIT-BOB/7)~~ ~~SITA preparing template for consideration by ISPACG March~~

	ACTION ITEM	TIME FRAME	RESPONSIBLE PARTY	Status	REMARKS
					~~2007, will subsequently be adopted by FIT-BOB~~
19.	~~All States to review and update AIP information to ensure that Logon address (e.g. VOMF) included on charts is correct.~~	~~As soon as practicable~~	~~FIT-BOB States~~	~~Ongoing~~ ~~Completed~~	~~Pilots will use Logon code depicted on charts (including Jeppesen etc) as data link address.~~ ~~(Raised FIT-BOB/7)~~
20.	~~All States to ensure that data link ground equipment is configured such that Uplink Logon code (e.g. VOMF) matches code depicted on charts~~	~~As soon as practicable~~	~~FIT-BOB States~~	~~Ongoing~~ ~~Completed~~	~~Some example have been identified where Uplink Logon utilizes code other than the charted code~~ ~~(Raised FIT-BOB/7)~~
21.	India and IATA to agree on and circulate a list of applicable waypoints for flights in the Bay of Bengal and Arabian Sea areas for charging CRA levy	As soon as practicable	India, IATA	Ongoing	(Raised FIT-BOB/7)
22.	Sri Lanka and IATA to agree on and circulate a list of applicable waypoints for flights in the Colombo FIR area for charging CRA levy	As soon as practicable	Sri Lanka, IATA	Ongoing	(Raised FIT-BOB/7)

	ACTION ITEM	TIME FRAME	RESPONSIBLE PARTY	Status	REMARKS
23.	Secretariat to standardize the reporting arrangement for Problem Reports Procedures	As soon as practicable	ICAO, CRA	Ongoing	FIT-BOB/7 agreed that the use of different procedures from those of FIT-SEA was undesirable and agreed that the matter should be further studied, with a view to aligning the procedures if at all possible. FIT-BOB/8 briefed re interim arrangements in Ho Chi Minh FIR for trial March 2007. FIT BOB area PR should be sent direct to CRA
24.	Regional Office to coordinate with Sri Lanka re their NOTAM A0344/06 of 0701010230 and financial agreement for collection of CRA levy.	As soon as practicable	Sri Lanka, Regional Office	Ongoing	Sri Lanka NOTAM A0344/06 notifies datalink services available in Colombo FIR.
25.	Prepare and promulgate by AIP Supplement/NOTAM a set of standardised procedures for the operational trials in the Bay of Bengal and Arabian Sea areas	As soon as practicable	India, Sri Lanka IATA, Regional Office	Ongoing	Review existing procedures in conjunction with the Ho Chi Minh procedures for March 2007 operational trial in order to optimise procedures

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ATFM/TF/9

REPORT OF THE ATFM/TF/9 MEETING

Agenda Item 1: Adoption of Agenda

1.1 The meeting adopted the following Agenda for the meeting:

Agenda Item 1: Adoption of Agenda

Agenda Item 2: Review Outcomes of ATFM Operational Trial

Agenda Item 3: Future Direction and Arrangements

Agenda Item 4: Any other business

Agenda Item 5: Date and venue for the next meeting

Agenda Item 2: Review Outcomes of ATFM Operational Trial

2.1 The meeting recalled that the task force was addressing an ATFM operational trial, not a BOBCAT system trial or an ATFMU trial. Accordingly, ATFM/TF/8 had considered the performance of the ATFM operational trial under four separate component areas, rather than as a single entity. In this regard ATFM/TF/8 agreed that trial performance would be assessed in the following areas:

a) the BOBCAT system,
b) the Air Traffic Flow Management Unit (ATFMU),
c) the Airlines, and
d) the Air Navigations Service Providers (ANSPs)

2.2 The BOBCAT system and the ATFMU had reached operational endorsement as a result of assessment during ATFM/TF/8. Both system components had continued to perform accurately and consistently since the last task force meeting and no difficulties were anticipated in maintaining this circumstance.

2.3 However, shortcomings were still evident in both ANSP and airline performance, as described below.

Operational Trial Data Analysis

2.4 The meeting recalled that the ghosting phase of the ATFM operational trial commenced on 29 June 2006, followed by the commencement of the operational phase of the trial from 24 July 2006. In order to assist in accurately tracking the performance of the trial, States were requested to provide daily data on flights participating in the trial to the ATFMU for review and circulation.

2.5 ATFM/TF/8 (November 2006) recognized that the onerous requirements for data collection that had been necessary for the initial period of the operational trial placed a regrettable burden on States and airlines and required the BOBCAT Development Team to devote significant resources to data collation and analysis. In this context, ATFM/TF/8 agreed to a reduction in the frequency of data collection and considered that rather than daily data, a period of 7 consecutive days each month was expected to be sufficient.

2.6 Accordingly, ATFM/TF/8 had agreed that a 7 consecutive day data collection would occur each month, commencing from the first Sunday of each month. The meeting thanked States and airlines for providing data and request that the data collection continue in the same 7-day per month arrangement for February (commencing Sunday 4th), March (commencing Sunday 4th) and April 2007 (commencing Sunday 1st). States were requested to provide the data to the ATFMU as soon as possible after the end of the 7-day period on each occasion, and not later that 11 April 2007 for the April data in order to allow preparation for the ATFM/TF/10 meeting later in April. Additionally, the ATFMU would provide the consolidated data set and analysis to States as soon as possible after collation each month, in order that States could use the data immediately to identify problems and implement solutions.

2.7 The consolidated data set for one week periods during November 2006, December 2006 and a five day period in January 2007 was presented to the meeting. An analysis of the data was undertaken by the BOBCAT Development Team, giving rise to the following observations. A copy of the data analysis has been included as **Appendix A** and an electronic copy of the data set is available on request from the Regional Office.

2.8 It was recognized that the average daily aircraft movements entering the Kabul FIR between 2000 – 2359UTC each night is steadily increasing with figures for January 2007 rising to as high as 58 movements on some occasions. This steady increase has been forecast in line with growth predictions in the Asia and Pacific regions and may also reflect the move to northern routes under the winter meteorological conditions.

2.9 The meeting considered that the following particular circumstances had caused, and would continue to cause, difficulties for some aircraft in satisfactorily achieving their allocated slot entering the Kabul FIR.

Adherence to Estimated Elapsed Time (EET) from Departure to Kabul entry fix

2.10 The time interval for aircraft from departure to the Kabul entry fix varies from close to 7 hours from Taipei down to about 1 hour from Lahore. In between, there are departures from various airports such as Bangkok (4-5 hours), Kuala Lumpur (5.5 to 6 hours) and Singapore (6 to 6.5 hours). BOBCAT calculation time for estimated elapsed time (EET) from departure to Kabul entry time is submitted by airline dispatchers when submitting a slot request. This figure is an integral part of the slot allocation process.

2.11 The BOBCAT Development Team, when analysing the collected data over the past 3 months, noted several occasions where aircraft have either been early or late over the Kabul entry fix, outside the allocated window of 5 minutes. On some occasions the actual time taken has been at variance with the nominated EET by over 15 minutes. The observed differences were not constant between all aircraft as would happen if forecast winds had changed. The large variations between the EET and the actual time taken had led to aircraft in the metered sequence entering Kabul being in conflict with the slots of other metered flights.

Air Traffic Management of enroute flight levels

2.12 The meeting considered essential that in order to enable aircraft to satisfactorily transition from their enroute RVSM level to the CVSM level into the Kabul FIR, enroute FIRs manage traffic in such a way that this can be achieved. This is especially the case when two or three aircraft in close longitudinal proximity with each other, all programmed to enter the Kabul FIR on the same route are the wrong way around regarding flight level assignment.

2.13 The meeting noted that the entire list for slot allocations of aircraft for each night is passed to all affected FIRs. This includes the Kabul entry times, routing and flight levels for each aircraft who has submitted a slot request and been given a slot allocation.

Non-compliance with AWUT and/or no request for missed wheels up time.

2.14 Unfortunately there are still many examples of flights which significantly depart outside their AWUT window but do not seek/wait for an alternative slot allocation from the Bangkok ATFMU. The meeting urged both ANSPs and airlines concerned to follow the procedures agreed to in the AIP SUP as well as the ATFM Users Manual regarding this subject - these procedures are a fundamental part of the ATFM operational trial. The meeting called on all parties to play their part in fully complying with the operational procedures for the trial (AIP Supplement, ATFM Users Handbook etc), the outcomes of the 43rd Conference of Directors General of Civil Aviation in Asia and Pacific so that air traffic flow management procedures can be used to the maximum benefit of all.

Aircraft with no slot allocation or not adhering to the slot allocation

2.15 The meeting recalled that at the ATFM/TF/8, participants were advised that several airlines were not submitting slot requests and as such, caused issues to other aircraft who had slot allocations. It was pleasing to note that several of these airlines are now submitting slot requests and have been given slot allocations. Nevertheless there are still some airlines that have not joined in the correct process even though they have requested and received user names and passwords for their dispatch staff.

2.16 The meeting recognised that aircraft without a slot allocation or do not adhere to their given slot should not be permitted to jeopardise aircraft that follow the correct ATFM procedures. It was further recognized that ANSPs, as the controlling authority responsible for ATFM in their areas, should assist in this matter by applying the appropriate provisions of the AIP Supplement.

2.17 In particular, the meeting noted the low levels of compliance exhibited by American Airlines, Continetal Airlines, Cargolux and Vietnam Airlines. The United States FAA would follow up with the US airlines involved to draw their attention to this non-compliance issue. Additionally, the Regional Office had transmitted State Letter Ref: T3/8/13.2 – AP115/06ATM on 12 December 2006 to, amongst others, Luxembourg, United States and Vietnam drawing attention to these issues. IATA had also been proactive in drawing the attention of these, and other, airlines to the procedures for the trial. The meeting considered that as these actions took effect, this would assist in ensuring airline compliance with trial procedures.

2.18 The meeting noted that a large number of flights which had been allocated flight levels by the ATFM system and had taken a ground delay in order to wait for such levels had ultimately been denied access to these levels despite having met all the conditions under which the flight level and slot had been allocated, including meeting AWUT and complying with EETs.

2.19 IATA reiterated that ANSPs should manage the traffic in accordance with the ATFM slot allocation, in order to ensure that flights which had fully complied with the ATFM procedures were not disadvantaged in this way. IATA reminded the meeting that ATFM/TF/8 had adopted the very firm view that, in circumstances where the presence of a Kabul FIR bound non participating flight had (or would have) a negative impact on a ATFM compliant flight in terms of affecting the ability of the ATFM compliant flight to meet slot parameters entering Kabul FIR, **the ATFM compliant flight would be granted priority over the non participating flight.**

India

2.20 India highlighted a number of issues in relation to the management of enroute flights in Indian Airspace. These included the "bunching" of flights over mainland India in which a number of BOBCAT metered flights were in the vicinity of each other, periodically requiring that non-preferred flight levels or in flight rerouting be used as tactical control. Difficulties were also apparent with the availability of flight levels as military restriction in the Delhi TMA led to routes being limited to MEA of FL300, limiting availability of flight levels. This led to subsequent difficulties in positioning aircraft, with traffic on the RK – TIGER segment experiencing the most complexity.

Malaysia

2.21 Malaysia provided the meeting with an update on the ATFM operational trial in relation to operations in the Kuala Lumpur FIR for November and December 2006.

2.22 The meeting recalled that in order to assist in alleviating the traffic bunching problems on the eastern side o the Bay of Bengal, during ATFM/TF/8 agreement had been reached under which FL260 was made available to Malaysia between 1615 to 1915 UTC daily effective from 1st December 2006 for entry into the Chennai FIR on ATS route P628 at waypoint Port Blair. Additionally, the swapping of FL320 and FL300 between the westbound flights on crossing routes and westbound flights on parallel routes was agreed by ATFM/TF/8 and implemented on 15 December 2006.

2.23 The meeting was informed that prior to the implementation of the above arrangements, on 20 November 2006, KLM810 (WMKK/EHAM) had to make an orbit at abeam VPL in order to lose 8 minutes for FL280 due to FL260 and FL300 were not available in Chennai FIR.

2.24 Table 1- below shows the number of traffic congestion within Kuala Lumpur FIR for the periods of November and December 2006.

Month	Total No of Occurrences *(including affected flights that managed to climb FL340)*	Level transferred to Chennai ACC on ATS Route P628	Level transferred to Bangkok ACC on ATS Route L759 and M770
November	12 *(10P628 and 2 L759)*	2 flights at FL260 *(23 and 25 Nov 06)*	-
December	26 *(21P628 and 5 L759)*	2 flights at FL260 *(11 and 28 Dec 06)*	3 flights at FL260 *(two occurrences on 4 and one on 10 Dec 06)*
Total	38	4 flights at FL260	3 flights at FL260

Table 1 - Congestion of Traffic between 1 November 2006 and 31 December 2006

2.25 Figure 1 - below shows the number of ATFM flights between 1st August 2006 and 31st December 2006. The figure indicates P628 is still the preferred route and the traffic volume had increased from 55% in November to 62% in December 2006. The increase in traffic was the result of some airline operators planning their flights initially on P628 and eventually transiting Kabul FIR at ROSIE.

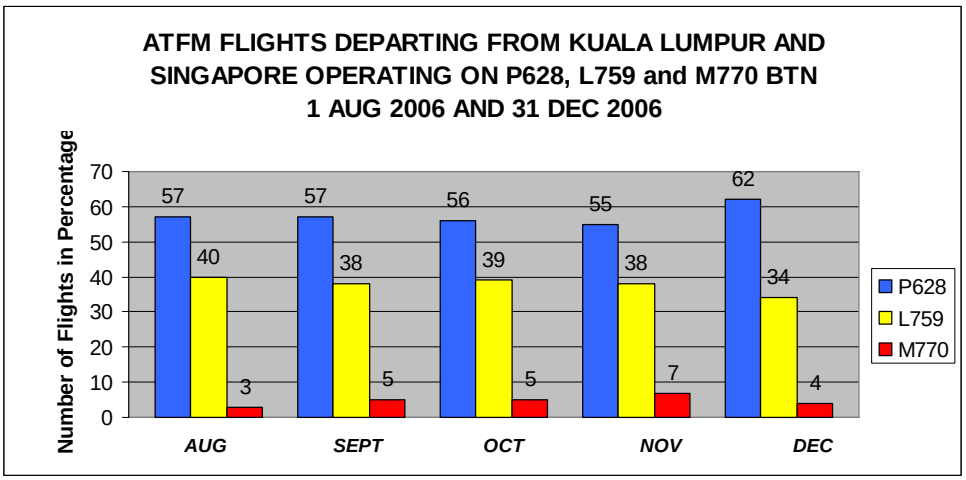

Figure 1 – ATS Route usage by ATFM flights between 1 August 2006 and 31 December 2006

2.26 Figure 2 –below shows the total number of AFTM flights departing from Kuala Lumpur and Singapore operating on P628, L759 and M770 between 1 August and 31 December 2006.

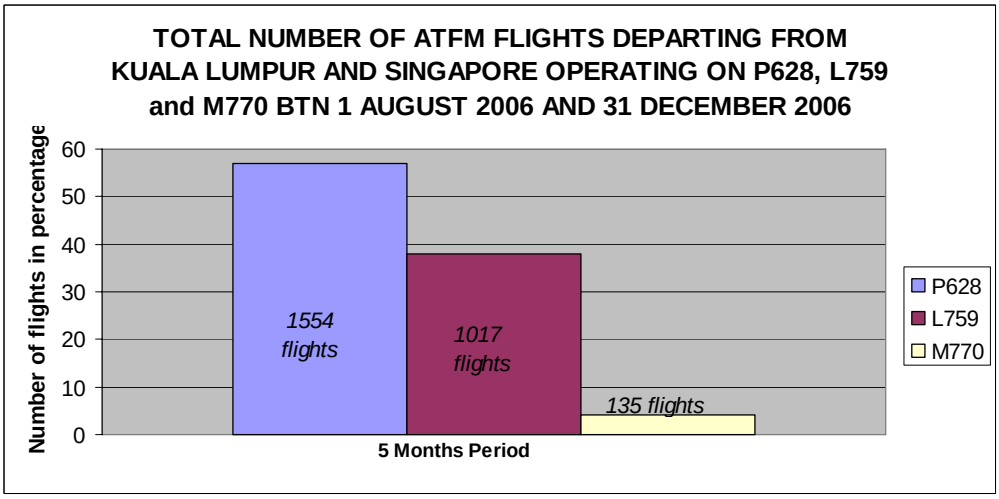

Figure 2 – Route usage by ATFM flights between 1 August and 31 December 2006

2.27 The meeting noted that the availability of FL260 and level swap from FL320 to FL300 for parallel routes had resulted in tangible improvement to the nightly long haul westbound traffic with reduction in ATC coordination and provided a great relief to controllers in managing traffic congestion in a safe, orderly and efficient manner along ATS route P628 during the peak hour period.

2.28 In order to improve the safe and efficient tactical management of traffic on P628 and L759 and also to ensure that the slot times are maintained at the Kabul FIR entry waypoints, Malaysia strongly supported the proposal for contingency conditional route as described in WP/9 to the ATFM/TF/9 meeting and requested that the contingency conditional route be established as soon as possible.

2.29 India expressed their reservations in relation to the proposed track of the contingency route, suggesting that a track to the south of P628 would be much less complex for India. The alternative route proposal from India in discussed in paragraphs 3.16 to 3.21 below.

Singapore

2.30 Singapore had provided extensive feedback to the last (ATFM/TF/8) meeting, indicating that although a number of difficulties had been encountered in the early stages of the trial, Singapore had implemented a number of local solutions that had improved the circumstances. This was still the case and, in the main, the trial was proceeding smoothly and was assisting in reducing ATC delays. Singapore ATC was proactive in ensuring that if the flight was early or late on pushback, they would confirm with the PIC on the ability to meet the slot time at Kabul FIR. This had led to some friction between ATC and PIC, however follow up action had been instigated and the situation was improving.

Thailand

2.31 Thailand had also provided extensive feedback during ATFM/TF/8, expressing broadly similar concerns to those highlighted by Singapore. Improvement was also evident over the period since the last task force meeting and Thailand expected this trend to continue.

Agenda Item 3: Future Direction and Arrangements

3.1 Although recognizing that the BOBCAT system and the ATFMU had continued to perform well and improvement was evident in most areas of trial performance, the meeting considered that there were still a number of troubling issues that were necessary to be resolved before the trial could advance to an implementation. The data analysis described above had particularly highlighted that only about 50% of flights were entering the Kabul FIR at the flight level allocated by BOBCAT. This level of compliance was not sufficient to justify implementation and it was evident that further analysis of the data was necessary to identify and correct the problem areas.

3.2 It was anticipated that further data analysis would show occurrences in which flights had been granted a higher level than originally allocated due to pilot request enroute. In some cases the natural gaps in the sequence would have meant that there was no effect on other ATFM flights, however in some instances it was evident that a level change had taken a slot allocated to another flight.

3.3 In any event, the poor correlation between the allocated BOBCAT flight level and the flight level actually flown was extremely disappointing and needed to be corrected. The meeting recognized the need for strong action by ANSPs in ensuring that ATFM compliant flights were given priority over Kabul FIR bound non participating flights and noted that this action was supported by APANPIRG Conclusion 17/12. Additionally, strong action was required to ensure that airlines and ANSPs participated fully in BOBCAT metering in accordance with the trial procedures.

3.4 The United States offered encouragement to the task force, noting that although the US had been involved in flow management functions for more than 25 years, lessons were still learnt every day. Experience had shown that once a change was made, it often meant that some additional procedures were necessary to enhance the change. Once additional procedures were in place, then changes to airspace arrangements sometimes became necessary, and so forth. In observing that this also appeared to be the experience of the ATFM/TF in the conduct of the operational trial, the US highlighted the chaotic situation that would exist if flow control was withdrawn from US operations and encouraged the task force to continue its endeavours.

Establish Small Working Group

3.5 In order to enable a deeper focus on specific issues, the meeting agreed to establish a Small Working Group (SWG) comprising representatives from India, Pakistan, Thailand and IATA. The ATFM/TF SWG would work informally and by correspondence, telephone and face to face meetings with the objective of analysing flights which did not enter Kabul FIR at the BOBCAT allocated flight level, ascertaining the reasons for the non compliance and taking or recommending actions to correct the circumstances. The SWG would use the 10 case study flights at FL280 provided to the meeting by Singapore Airlines (**Appendix B** refers) as the starting point for analysis.

3.6 The SWG would comprise the following individuals as the primary SWG officers, supported by other staff as required:

India
Mr Somasundaram, General Manager (ATM), Airports Authority of India
Mr. Sarangapani, Joint General Manager (ATM), Airports Authority of India
Mr. Bakshish Singh, General Manager (ATM), AAI IGI Airport Delhi

Pakistan
Mr Akhtar Zaidi, General Manager (ATS), Civil Aviation Authority, Pakistan
Mr Arshad Malik, Chief ATCO Lahore, Civil Aviation Authority, Pakistan

Thailand
Mr John Richardson, Consultant (ATM), Aeronautical Radio of Thailand
Mr Tinnagorn Choowong, ATC Manager, Aeronautical Radio of Thailand

IATA
Mr Soon Boon Hai, Assistant Director, Safety Operations and Infrastructure
Capt Aric Oh, Deputy Chief Pilot, Singapore Airlines.

3.7 Recognising the important role played by Pakistan, the SWG would conduct its initial meeting in Lahore, Pakistan, in the near future. The Regional Office would communicate the need for the SWG activities to the States involved and IATA by State Letter in order to facilitate these arrangements.

3.8 The SWG considered that additional data would be necessary in order to track the progress of flights through a number of FIRs. This was necessary to try and establish the point in the flight at which the AFTM level was compromised in order to remediate the situation. Additional data for flights entering the Delhi TMA and Pakistan FIRs would be necessary and the SWG would make arrangements for such data collection.

3.9 IATA agreed to circulate a de-identified and summarised version of relevant crew voyage reports to affected States in a timely manner in order to enable States to investigate the circumstances of each occurrence. India requested that all such reports be sent to Mr. Somasundaram as soon as possible on each occasion.

Establish time bounded Action Plan

3.10 In considering a suitable mechanism by which to assess at which point the operational trial could be assessed as ready to proceed to implementation, the meeting agreed that the use of identified milestones in a time bounded action plan would assist to focus the task force in moving towards implementation. The meeting prepared and adopted the Action Plan shown in **Appendix C** for this purpose.

Proposed Implementation Date

3.11 IATA advised the meeting that they considered that a minimum of 70 to 75% of flights entering Kabul at the BOBCAT allocated flight level would be a necessary metric to be achieved before implementation could be authorized. In order to achieve this it was necessary for many of the items in the Action Plan to be completed as soon as possible.

3.12 The meeting agreed that a further task force meeting was necessary in late April/early May as described in Agenda Item 5. Such a meeting would undertake a further review of operational trial performance for the purposes of making a Go/No Go decision in respect of an implementation of ATFM procedures effective from AIRAC 7 June 2007. In this context, the Secretariat requested all parties to study the Action Plan carefully and take expedient and effective actions to ensure that timely progress was made. Completion of the outstanding actions was the best way to ensure that a Go decision was able to be made.

Review of AIP Supplement – Operational Trial

3.13 The meeting recalled that the original model AIP Supplement prepared by the ATFM/TF describing the operational procedures to be used for the ATFM trial was distributed widely via ICAO State Letter [Ref: T3/8.13.2 – AP013/06(ATM), dated 24 February 2006]. Subsequently India, Malaysia, Myanmar, Pakistan, Singapore and Thailand, amongst others, issued AIP Supplements based on the model provided.

3.14 In recognizing that the operational trial had been running for approximately 4 months, ATFM/TF/8 (Nov 2006) considered that it was appropriate that the information contained in the AIP Supplement be reviewed to ensure that it was still fit for purpose and a replacement AIP Supplement be issued.

3.15 Accordingly, in order to update and replace the existing AIP Supplement, the Secretariat had prepared and circulated a model AIP Supplement (**Appendix D** refers) that incorporated the lessons learned during the operational trial thus far. In reviewing the proposal from the Secretariat, the meeting was conscious that that a number of items to be included in the AIP Supplement would arise from the work of the ATFM small working group. As such, further drafting of the AIP Supplement would be held over until closer to the ATFM/TF/10 meeting to be held in late April or May 2007, in order that the most accurate and up to date information was available for inclusion in the Supplement.

3.16 As the new AIP Supplement would be replacing an existing AIP Supplement in relation to the trial procedures, the meeting considered that a single 28-day AIRAC cycle notification of the modifications would be adequate. Following approval of the modified AIP Supplement by the ATFM/TF/10 meeting, the meeting agreed that the Regional Office promulgate the new AIP Supplement by State Letter to all States affected by the ATFM procedures. This would include the primary Bay of Bengal and South Asia States involved (India, Malaysia, Myanmar, Pakistan, Singapore and Thailand) as well as Afghanistan, Bangladesh, Indonesia, Hong Kong China and Vietnam. In the interim, the existing AIP Supplement already published for the ATFM operational trial would be retained as the trial procedures.

Establishment of Bypass Route

3.17 ATFM/TF/8 (November 2006) had agreed that the establishment of a 'Bypass Route' between L759 and P628 to be used only when bunching of flights occurred, would assist in easing the traffic congestion problems identified in the eastern Bay of Bengal. Accordingly, the Regional Office in coordination with IATA and concerned States had prepared and circulated a draft model AIP Supplement (**Appendix E** refers) proposing the establishment of the bypass route, for preliminary review and

feedback. India had provided feedback in respect of this AIP Supplement (**Appendix F** refers), raising their concerns in relation to the proposed Bypass Route.

3.18 In reviewing the model AIP Supplement the meeting agreed that an alternative implementation of a conditional route to the south of P628 as proposed by India (refer map at **Appendix G**) would adequately fulfill the purpose intended by the bypass route and was significantly less complex for India to manage. The meeting adopted this strategy in preference to the bypass route and all parties would undertake further study as soon as possible.

3.19 India proposed that the southern bypass route would be an independent segment between GIVAL and IBANI as a uni-directional route for west bound flights from Flight Level 280 to Level 460 unrestricted. The existing segment route P628 between IBANI and GIVAL would be a uni-directional route for east bound flights from Level 310 to Level 460 unrestricted. This segment would be available as a by-pass route for west bound flights also at Flight Level 260. Higher levels would be provided in Indian FIRs subsequently.

3.20 India and Thailand confirmed that they did not expect to have any difficulties with the proposal. Malaysia informed the meeting that there could be operational issues and although in principle they were agreeable to the establishment of the conditional route, they would need to study the impact internally.

3.21 States involved would coordinate in the preparation and promulgation of an AIP supplement once agreement on the route parameters was reached. The meeting acknowledged that amendments to operational letters of agreement (LOA) between affected ACCs & OCCs would be necessary, in order to detail the operational arrangements for usage of the route. States involved were urged to coordinate as soon as possible in relation to amendments to the LOAs to enable use of the new route arrangements as soon as they became available.

M770 as additional Bypass

3.22 Thailand and India agreed in principle to use M770 as an alternate route when a bunching situation occurred on L759. Flights affected by the bunching will be re-routed to M770 and rejoin L759 over the Indian continent via position PALKO and BBS. A coordination procedure would be arranged between India, Myanmar and Thailand as soon as possible.

Route Improvements India & Pakistan

3.23 In addressing the other matters raised by States and airspace users, the meeting recalled that ATFM/TF/8 had agreed that, although recognizing the potential complications, the ATS route segments proposed by IATA (see **Appendix H**) would assist traffic flows in the vicinity of DI Khan and requested India, Pakistan and Afghanistan to consider implementation of route segments connecting:

- BUTOP in India and JHANG in Pakistan (assisting N644), and
- SAMAR in Pakistan and KABUL in Afghanistan (assisting A466).

3.24 Pakistan informed the meeting that a meeting with Pakistan AIR Headquarters was scheduled for early February and that a number of issues, including the lowering of the MEA on P628 and consideration of the route segments above, would be tabled for discussion.

Review of ATFM Users Handbook

3.25 In coordination with Thailand, the Secretariat had prepared an update to the ATFM Users Handbook, a copy of which is attached as **Appendix I**. As it was anticipated that the work of the Small Working Group would result in additional amendments to the ATFM Users Handbook the matter was carried over to the next ATFM/TF meeting, at which point the up to date information available from the SWG would be incorporated into the Handbook.

Agenda Item 4: Any other business

Statement from AEROTHAI

4.1 Mr. Nopadol Sangngurn, Executive Expert, Aeronautical Radio of Thailand Ltd. gave a statement to the meeting in his role as the officer-in-charge of the BOBCAT system and Bangkok ATFMU. He noted that the meeting would appreciate the fact that AEROTHAI had invested a large amount of resources in order to bring the BOBCAT system to commissioning and to establish the operational ATFMU.

4.2 AEROTHAI wished to advise the meeting that the discussions held near the end of Task Force/8 indicated that, other additional work which was required to yield the whole ATFM mechanism suitable as an operational system, would have been completed by ATFM/TF/9. These necessary actions would have then enabled an amended AIP Supplement to be discussed and agreed to at this meeting and subsequently be implemented on AIRAC 15 March 2007. It has now come to AEROTHAI's attention that there are still outstanding impediments which do not allow this implementation to take place by this AIRAC date. This leaves AEROTHAI in a very difficult position in regard to their obligation to this project.

4.3 The meeting would recall that a similar statement to this was presented by AEROTHAI to the ATFM/TF/8 meeting in November 2006. Taking into consideration the indication given at the end of that meeting and in the spirit of cooperation and commitment, AEROTHAI has continued to staff the ATFMU as well as maintain all equipment associated with BOBCAT. Further, at the request of ATFM/TF/8, AEROTHAI have continued to accept and analyze traffic data for the benefit of the ATFM Task Force meetings; all at a considerable expense to our organization.

4.4 AEROTHAI now understand that a small working group of India, Pakistan, Thailand and IATA has now been created in an attempt to solve many of the inefficiencies identified. AEROTHAI would trust that this will be a successful initiative. It is understood that a further ATFM Task Force has been scheduled to take place on 30 April to 3 May 2007. If agreement can be reached at this meeting to implement an operational ATFM service in the area under consideration, it is further understood that an AIP Supplement would be issued for implementation of ATFM on AIRAC 7 June 2007.

4.5 AEROTHAI must reiterate to the meeting that they have given their full and complete collaboration to this project. This has involved many man hours of time, not only in the operational area of the ATFMU but also in management areas. This considerable drain on AEROTHAI staff and funds cannot continue without some clear sign that the ATFM system will progress from a trial basis into an operational stage in the near future. AEROTHAI would also state that Thailand has and will continue to give full commitment to any Air Traffic Flow Management initiatives within the region. It is AEROTHAI's view that as traffic increases, ATFM will be a necessary and integral part of Air Traffic Management in the future.

4.6 Finally AEROTHAI can now advise this meeting that, through some extensive and difficult negotiations with the Executive of AEROTHAI this week, we are able to announce that further funds will be re-channeled to support and continue our work in the ATFM project. However, AEROTHAI must also inform the meeting that this support may not continue to be available if delays continue.

4.7 Consequently, AEROTHAI would ask all ANSPs involved as well as the airline industry to use the precious time available prior to the next task force meeting to channel their dedicated efforts and to work together with AEROTHAI to achieve an operational status of this ATFM system as soon as possible but no later than AIRAC 7 June 2007.

Agenda Item 5: Date and venue for the next meeting

5.1 The meeting recognized that a significant amount of work had arisen as a result of the experience gained during the operational trial, as detailed in the Action Plan, and much of this still remained to be completed. Additionally, the Regional Office meeting programme was already heavily committed during the first third of 2007 and a meeting prior to late April was not feasible. Accordingly, the meeting agreed that a 4 day ATFM/TF/10 meeting should be held over 4 days from Monday April 30 until Thursday, May 3, 2007, at the Regional Office in Bangkok, Thailand. The meeting would consider a Go /No Go decision for the implementation of ATFM on AIRAC date 7 June 2007.

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Bay of Bengal Cooperative Air Traffic Flow Management Advisory System (BOBCAT)

ATFM/TF/9
Appendix A to the Report

Further Analysis on Trial Data
24 January 2007

Presented by ***AEROTHAI***

Analysis by Departures

Presented by ***AEROTHAI***

Analysis by Departure

- VIDP Departure: 146
  - Departures earlier than AWUT
    - Number of flights with data: 17
    - Average time departures: 6 minutes early
    - Cases: 25min, 17min, 15min
  - Departures later than AWUT
    - Number of flights with data: 51
    - Flights with more than 10 minutes late: 30
    - Involved in slot switching: 1 case
  - Departures without slot: 32
  - Departures on time: 2
  - No Departure Data: 44
    - Involved in slot switching: 4 cases

Analysis by Departure

- VTBS Departure: 287
  - On-Time departures: 48
  - Departures earlier than AWUT: 68
    - Average early: 2 minutes
    - Taking other aircraft’s slot: 7 cases
  - Departures later than AWUT: 168
    - Average late: 4 minutes
    - Involved in slot switching: 3 cases
  - Departures without slot: 3

Analysis by Departure

- WMKK Departure: 109
  - On-Time departures: 13
  - Departures earlier than AWUT: 42
    - Average early: 3 minutes
    - Taking other aircraft’s slot: 8 cases
  - Departures later than AWUT: 54
    - Average late: 4 minutes
    - Involved in slot switching: 11 cases
  - Departures without slot: 0

Analysis by Departure

- WSSS Departure: 251
  - On-Time departures: 20
  - Departures earlier than AWUT: 72
    - Average early: 2 minutes
    - Taking other aircraft's slot: 3 cases
  - Departures later than AWUT: 159
    - Average late: 4 minutes
    - Involved in slot switching: 10 cases
  - Departures without slot: 0

Analysis by BOBCAT FL

Presented by ***AEROTHAI***

Aircraft Allocated FL280

- Aircraft allocated FL280: 148
  - Aircraft flying above FL280: 92 (62%)
    - Early Kabul entry: 30
      - Flights involved in altitude switching: 8
    - On-Time Kabul entry: 42
      - Flights involved in altitude switching: 5
    - Late Kabul entry: 20
      - Flights involved in altitude switching: 4

Aircraft Allocated FL310

- Aircraft allocated FL310: 345
  - Aircraft flying above FL310: 130 (38%)
    - Early Kabul entry: 44
      - Flights involved in altitude switching: 14
    - On-Time Kabul entry: 66
      - Flights involved in altitude switching: 26
    - Late Kabul entry: 20
      - Flights involved in altitude switching: 7

Analysis by Kabul FL transit

Presented by ***AEROTHAI***

Aircraft Flying at FL280

- Aircraft flying at FL280: 88
  - Aircraft with FL350 slot: 17 (19%)
  - Aircraft with FL310 slot: 21 (24%)
  - Aircraft with FL280 slot: 44 (50%)
  - Aircraft without slot: 6 (8%)

Aircraft Flying at FL280

- Aircraft flying at FL280: 88
  - Aircraft with FL350 slot: 17
    - VIDP Departures: 5
      - Departed 4min, 11min, 21min, 37min, 41min late
    - VTBS Departures: 4
    - WSSS Departures: 6
      - SIA334 on 11Nov, 5min late dept, 32min late entry
    - Other departures: RCTP, VABB
  - Early Kabul entry: 3
  - Late Kabul entry: 6
  - Departure time checked fine with AWUT

Aircraft Flying at FL280

- Aircraft flying at FL280: 88
  - Aircraft with FL310 slot: 21
    - VIDP Departures: 7
    - VTBS Departures: 5
    - WMKK Departures: 1
    - WSSS Departures: 6
    - Other Departures: VABB, VOMM
  - Early Kabul Entry: 9
  - Late Kabul Entry: 4
  - Departure time checked fine with AWUT

Aircraft Flying at FL280

- Aircraft flying at FL280: 88
  - Aircraft with FL350 slot:
    - PAVLO: 5
    - ROSIE: 8
    - SITAX: 3
  - Aircraft with FL310 slot:
    - PAVLO: 3
    - ROSIE: 12
    - SITAX: 4

Aircraft Flying at FL310

- Aircraft flying at FL310: 318
  - Aircraft with FL390 slot: 7 (2%)
  - Aircraft with FL350 slot: 79 (25%)
  - Aircraft with FL310 slot: 180 (57%)
  - Aircraft with FL280 slot: 52 (16%)
  - Aircraft without slot: 38 (12%)

Aircraft Flying at FL310

- Aircraft flying at FL310: 318
  - Aircraft with FL350 slot: 79
    - VIDP Departures: 1
    - VTBS Departures: 30
    - WMKK Departures: 10
    - WSSS Departures: 33
    - Other Departures: RCTP, VABB(4)
  - Departure time checks okay with AWUT

Aircraft Flying at FL310

- Aircraft flying at FL310: 318
  - Aircraft with FL350 slot: 79
    - ASLUM: 28
    - PAVLO: 21
    - ROSIE: 18
    - SITAX: 12

Aircraft Flying at FL350

- Aircraft flying at FL350: 430
  - Aircraft with FL390 slot: 8 (2%)
  - Aircraft with FL350 slot: 226 (53%)
  - Aircraft with FL310 slot: 129 (30%)
  - Aircraft with FL280 slot: 39 (9%)
  - Aircraft without slot: 28 (7%)

Aircraft Flying at FL390

- Aircraft flying at FL390: 18
  - Aircraft with FL390 slot: 5 (28%)
  - Aircraft with FL350 slot: 4 (22%)
  - Aircraft with FL310 slot: 1 (6%)
  - Aircraft with FL280 slot: 1 (6%)
  - Aircraft without slot: 7 (39%)

Discussions

Presented by ***AEROTHAI***

Thank You!

BOBCAT

Flow Management Advisory System

Presented by ***AEROTHAI***

Date	Flt No	DEST	STD	AWUT	Allocated Delay	Actual WUT	AWUT VARIANCE	KABUL ENTRY WYPT	CFP FL	KABUL FIR Allocated FL	KABUL FIR Actual FL	FL VARIANCE	EET	KABUL FIR PLAN ETO	KABUL FIR Allocated ETO	Kabul FIR Actual Time Over	ETO VARIANCE
4-Dec	SQ334	PAR	15:50	16:10	0:00	16:13	0:03	ROSIE	350	350	280	-7000	5:40	21:50	21:50	21:50	
11-Dec	SQ026	FRA	15:55	16:18	0:03	16:21	0:03	ROSIE	350	350	280	-7000	5:59	22:14	22:17	22:25	0:08
15-Dec	SQ324	AMS	15:45	16:05	0:00	16:09	0:04	ROSIE	350	350	280	-7000	5:52	21:57	21:57	21:57	
19-Dec	SQ026	FRA	15:55	16:15	0:00	16:24	0:09	ROSIE	350	350	280	-7000	5:44	21:59	21:59	22:04	0:05
22-Dec	SQ334	PAR	15:50	16:10	0:00	16:12	0:02	ROSIE	350	350	280	-7000	5:52	22:02	22:02	22:02	
25-Dec	SQ334	PAR	15:50	16:11	0:01	16:15	0:04	DI-PAVLO	350	350	280	-7000	6:09	22:19	22:20	22:15	EARLY 0.05
8-Dec	SQ334	PAR	15:50	16:21	0:11	16:26	0:05	ASLUM	310	310	280	-3000	6:07	22:17	22:28	22:33	0:05
12-Dec	SQ328	MAN	15:55	16:15	0:00	16:17	0:02	ROSIE	310	310	280	-3000	5:57	22:12	22:12	22:20	0:08
14-Dec	SQ334	PAR	15:50	16:10	0:00	16:14	0:04	ROSIE	310	310	280	-3000	5:48	21:58	21:58	21:55	EARLY 0.03

Dec 2006 SQ SIN-EUR BOBCAT flights where actual FL was lower than allocated *AND* actual FL = FL280 over Kabul Entry point:

Bay of Bengal Air Traffic Flow Management Task Force

Action Plan

(last updated 26 January 2007)

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
~~8/1~~	~~Prepare Discussion Paper for 43rd DGCA Conference including directed items from ATFM/TF/8~~	~~November 2006~~	~~Regional Office~~	~~Completed~~	~~Report to ATFM/TF 9~~
~~8/2~~	~~Issue NOTAM to continue operational trial to 5 July 2007~~	~~Prior to expiry of existing NOTAM on 21 Dec 2006~~	~~All States including India, Malaysia, Pakistan, Singapore, Thailand~~	~~Completed~~	~~All the States that had issued AIP Supplement~~
~~8/3~~	~~Prepare and transmit State Letter drawing attention to number of non participating flights and non compliance by ANSPs with trial procedures~~	~~December 2006~~	~~Regional Office~~	~~Completed~~	~~Report to ATFM/TF 9. State Letter Ref.: T3/8.13.2 – AP115/06 (ATM) issued 12 December 2006~~
8/4	Non-participating airlines issues – general follow up	February 2007	IATA, ATFM Task Force, Regional Office, affected States ATFM/TF Small Working Group,	Ongoing	Report to ATFM/TF 10. FAA to follow up American Airlines and Continental Airlines. Regional Office to follow up Vietnam Airlines.
8/5	~~Non compliant~~ ANSPs issues – general follow up	February 2007	ATFM Task Force, Regional Office, affected States, ATFM/TF Small Working Group to address ANSP ~~India and Pakistan~~ issues	Ongoing	Report to ATFM/TF 10

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
8/6	To alleviate traffic bunching on L759 and P628, that a westbound conditional 'Bypass Route' across the Bay of Bengal be implemented as soon as possible	March 2007	India, IATA, Regional Office ATFM/TF Small Working Group,	Ongoing	Report to ATFM/TF10 Model AIP Supplement agreed at ATFM/TF/9
8/7	Pakistan lower the Minimum Enroute Altitude (MEA) on P628 to FL300 as soon as possible to align with MEA for P628 in India	February 2007	Pakistan, Regional Office ATFM/TF Small Working Group	Ongoing	Report to ATFM/TF/10 ICAO State Letter ref T3/8.13.2 : AP-ATM0332 transmitted to Pakistan on 21/09/06, reminder on 13/12/2006. Pakistan informed ATFM/TF/9 that the matter would be discussed at AIR HQ meeting in late January/early February 2007. .
~~8/8~~	~~FL 260 be made available to Malaysia between 1615 to 1915 UTC daily from 1st December 2006 for entry into the Chennai FIR on ATS route P628 at waypoint Port Blair~~	~~December 2006~~	~~India, Malaysia~~	~~Completed~~	~~Report to ATFM/TF 9~~
~~8/9~~	~~FL320 (vice FL300) be made available as the reserved level for crossing routes, and FL300 (vice FL320) be made available for parallel routes as soon as the level swap could be safely implemented and not later than 15 December 2006~~	~~December 2006~~	~~India, Malaysia, Myanmar, Thailand,~~ ~~Note: Malaysia will coordinate the change with Indonesia~~	~~Completed~~	~~Report to ATFM/TF 9~~

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
8/10	Establish coordination unit in Bangkok ACC to support coordination between all affected States in eastern BOB during night time busy period	February 2007	Thailand, arrangements with Malaysia, India, Myanmar	Ongoing	Report to ATFM/TF/10
8/11	Study feasibility of route segments proposed during ATFM/TF/8 to assist N644 and A466 in vicinity of DI Khan	February 2007	Afghanistan, India, Pakistan, ATFM/TF Small Working Group	Ongoing	Report to ATFM/TF/10 Pakistan informed ATFM/TF/9 that the matter would be discussed at AIR HQ meeting in late January/early February 2007.
8/12	Study and rectify inconsistency between bases of airways in the Yangon and Chennai FIRs with a view to harmonization	February 2007	India, Myanmar, Thailand to assist	Ongoing	Base of airways in Yangon FIR is charted (Jeppesen) as FL280, base in Chennai FIR charted as FL260
8/13	Study proposal for formulation of 'BOBCAT Scrutiny Group' as described in Agenda Item 7 of ATFM/TF/8 report	ATFM/TF/10	All	Ongoing	Oversight group comprising appropriate representation would be beneficial in ensuring integrity of BOBCAT operations.
8/14	Draft AIP Supplement to update and replace existing AIP Supplement	Publish on AIRAC 10 May for 7 June 2007 implementation	Regional Office, Malaysia, Singapore, India, IATA Small Working Group	Ongoing	Draft in circulation since late 2006, incorporate work of SWG. To be authorised by ATFM/TF/10
8/15	Review trial related data with a view to incrementally reducing flow buffer time from 5 minutes	ATFM/TF/10	ATFM/TF	Ongoing	Report to ATFM/TF/10

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
8/16	Consider software solution for "Flow Rate Gate"	ATFM/TF/10	BOBCAT Development Team	Ongoing	Report to ATFM/TF 10
~~8/17~~	~~Combined BBACG, ATFM/TF and FIT-BOB meeting~~	~~22-26 January 2007~~	~~ATFM Task Force, Regional Office~~	~~Completed~~	~~Comprehensive review of outcomes of ATFM operational trial with a view to taking a 'Go' decision for implementation March 2007~~
8/18	The Regional Office would work with IATA to produce a suitable summary of airline concerns in relation to in flight re-route, for relay to ANSPs affected by the operational trial.	2007	Regional Office & IATA	Ongoing	Report to ATFM/TF/10
8/19	Data provision. Provide 7 consecutive days data collection each month, commencing from the first Sunday of each month, promptly to the ATFMU	One week data per month continuously	Afghanistan, India, Pakistan, Malaysia, Singapore and Thailand	Ongoing	Report to ATFM/TF/10
9/1	That operational letters of agreement be amended in relation to the usage of 'Bypass Route' across Bay of Bengal	March 2007, to be ready as soon as Bypass Route implemented.	India, Malaysia, Myanmar, Singapore, Thailand	Ongoing	Report to ATFM/TF/10. LOAs to be in place to enable use of Bypass Route as soon as implemented.
9/2	ATFM/TF/10 meeting	April/May 2007	Regional Office, ATFM/TF	Ongoing	Comprehensive review of outcomes of ATFM operational trial with a view to taking a 'Go' decision for June 2007
~~9/3~~	~~Establish Small Working Group (SWG) to focus on non compliance by flights entering Kabul FIR with the flight level allocated by BOBCAT~~	~~January 2007~~	~~India, Pakistan, Thailand, IATA comprise the Small Working Group~~	~~Completed~~	~~SWG established by ATFM/TF/9~~
9/4	Regional Office advise India, Pakistan, Thailand and IATA by State Letter of the formation and objective of the Small Working Group and seek assistance from States to facilitate the work of SWG	January 2007	Regional Office	Ongoing	

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
9/5	Identify causal factors and recommend solutions to ensure minimum 70 - 75% compliance between flight level flown and flight level allocated by BOBCAT (exclusive of PIC request for higher level enroute that does not impact other ATFM flight). Consider short term and long term (e.g route realignment) solutions and include procedures for ANSPs and operators as necessary.	March 2007	Small Working Group	Ongoing	Report to ATFM/TF/10,
9/6	Review case study flights at FL280 provided by Singapore Airlines to ATFM/TF/9	February 2007	Small Working Group	Ongoing	Report to ATFM/TF/10
9/7	Conduct in depth analysis of available data from operational trial to establish linkages between data and reasons for poor operational trial performance, particularly Flight Level non compliance issue.	March 2007	Small Working Group	Ongoing	Report to ATFM/TF/10
9/8	Prepare information for Pakistan DGCA in relation to ATS route restrictions precipitated by defence arrangements.	April 2007	Regional Office, Small Working Group	Ongoing	Report to ATFM/TF/10
9/9	Raise awareness of Pakistan Defence Agencies and Indian Defence Agencies of the conduct of the 7th Civil Military Conference, to be conducted in Bangkok from 26Feb – 1 Mar 2007. Encourage attendance of State military and civilian counterparts at the CMAC07	February 2007	US Dept of Defence.	Ongoing	Report to ATFM/TF/10
9/10	Implement connector route between Ranong and Kota Baru in Bangkok FIR to improve access to M770.	March 2007	Thailand	Ongoing	Report to ATFM/TF/10
9/11	Beyond Kabul FIR, 3 of the routes through Kabul join in Turkmenistan leading to further capacity restrictions. Regional Office to coordinate with EUR/NAT (Paris) Office of ICAO to seek assistance in ensuring exit capacity from Kabul FIR.	2007	Regional Office	Ongoing	Report to ATFM/TF/10
9/12	Regional Office State Letter to bring to the attention of affected States number of flights without slots departing Delhi, Bombay, Hanoi, Ho Chi Minh, Hong Kong China, Bangkok and Phuket	February 2007	Regional Office	Ongoing	Report to ATFM/TF/10

ACTION ITEM	DESCRIPTION	TIME FRAME	RESPONSIBLE PARTY	STATUS	REMARKS
9/13	Thailand and India agreed to use M770 as an alternate route when a bunching situation occurred on L759. Flights affected by the bunching will be re-routed to M770 and rejoin L759 over the Indian continent via position PALKO and BBS. A coordination procedure will be arranged between India, Myanmar and Thailand as soon as possible	March 2007	Thailand, India, Myanmar, keep IATA informed	Open	Report to ATFM/TF/10

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For effective date March 2007 AIRAC – 15 March 2007(0703151200UTC)

ICAO Bay of Bengal ATS Coordination Group – ATFM Task Force

MODEL AIP SUPPLEMENT – BAY OF BENGAL ATFM PROCEDURES

Note: *Text identified as* ***(ANSPs)*** *and/or* ***(ATC units)*** *should be replaced with the name of State organizations and units as appropriate.*

EITHER

REVISED PROCEDURES AND EXTENSION OF AN OPERATIONAL TRIAL OF

OR

IMPLEMENTATION OF

AIR TRAFFIC FLOW MANAGEMENT (ATFM) OVER BAY OF BENGAL, SOUTH ASIA AND PAKISTAN THROUGH KABUL FIR

1 Introduction

1.1 On 24 July 2006, the States of the ICAO Asia/Pacific Region within the Bay of Bengal, South Asia and Pakistan airspace implemented an operational trial of an automated Air Traffic Flow Management (ATFM) service under the auspices of the ICAO Bay of Bengal ATS Coordination Group – ATFM Task Force, as detailed in previous AIP Supplement (nnnn) dated (ddmmyyyy).

1.2 Pursuant to comprehensive reviews of the performance of the operational trial by the ATFM Task Force,

EITHER ***the ATFM Operational Trial has been extended to enable the enhanced procedures described in this AIP Supplement to be trialled.***

OR

ATFM procedures are permanently implemented in accordance with the provisions of this AIP Supplement.

2 Provision of ATFM Services

2.1 ATFM services are provided by Aeronautical Radio of Thailand LTD (AEROTHAI) from the Bangkok Air Traffic Flow Management Unit (ATFMU) at Bangkok ACC. ATFM services will be limited to calculation, promulgation and management of mandatory Allocated Wheels Up Time (AWUT) and Kabul FIR flight level, ATS route and entry fix time for each affected flight. Air Navigation Services Providers (ANSPs) retain responsibility for the tactical management of flights that are subject to ATFM.

2.2 The ATFMU utilises the automated, web based Bay of Bengal Cooperative ATFM Advisory System (BOBCAT) system in meeting its ATFM responsibilities. These responsibilities will be managed in coordination with aircraft operators and ANSPs in the FIRs concerned.

2.3 The ATFMU operates on a 24 hour basis daily and is responsible for westbound flights entering the Kabul FIR at specified times, flight levels and ATS routes in accordance with paragraph 3 of this AIP Supplement. The objectives of these ATFM services are to:

a) Reduce ground and en-route delays;

b) Maximise capacity and optimize the flow of air traffic within the area;

c) Provide an informed choice of routing and flight level selection;

d) Alleviate unplanned in flight rerouting and technical stops; and

e) Assist regional ANSPs in planning for and managing future workload in the light of forecast increased traffic flows within the area.

3 ATFM affected ATS routes, flight levels and applicable hours

3.1 All westbound flights intending to enter the Kabul FIR between 2000UTC and 2359UTC daily on ATS routes A466, L750, N644 from FL280 to FL390 inclusive and G792/V390from FL310 to FL390 inclusive shall comply with the ATFM procedures contained in this AIP Supplement. This includes a mandatory requirement for all flights to obtain a specific ATFM slot allocation from the ATFMU (including AWUT) for entry into the Kabul FIR during the period mentioned above.

(Editorial Note: should the hours of BOBCAT managed period be varied/extended? Discuss during ATFM/TF/9)

3.2 Flights who plan to enter Kabul FIR without an AWUT and entry slot (comprising flight level, ATS route and entry fix time) will be accommodated only after flights with slots have been processed. Such flights should expect delays on departure, non-preferred routes and flight levels enroute as well as diversion around Kabul FIR.

3.3 In order to ensure availability of an initial slot for westbound departures from designated airports in northern India and Pakistan, (currently identified as VIDP, OPKC and OPLA), departures from these airports are given priority for FL280 in the initial slot allocation. This does not preclude these flights from planning higher flight levels with initial slot request.

(Note: Pakistan does not support para 3.3 or 6.3.3 in which restriction of FL280 is imposed on flights from OPKC and OPLA.)

(Editorial Note – this matter to be discussed during ATFM/TF/9, perhaps paragraph 3.3 to be removed. Do we need additional words to make clear that although Mumbai is not mentioned, slots are still required for departures Mumbai and perhaps some other Indian ports etc)

4 Flights Exempted from BOBCAT ATFM

4.1 The following flights are exempted from the ATFM procedures in this AIP Supplement:

a) Humanitarian or medical flights

b) State aircraft with Head of State onboard

4.2 Flights exempted from ATFM procedures shall indicate the exemption in their flight plan (Field 18 – STS-BOB ATFM EXMP).

4.3 ***(ATC Units)*** shall forward the flight plan information to the ATFMU at AFTN address VTBBZDZX.

5 Mandatory AWUT and Kabul FIR Slot allocation

5.1 Affected flights shall obtain the mandatory AWUT, Kabul FIR entry time, flight level and ATS route from the BOBCAT system. The AWUT and Kabul slot allocation will enable ANSPs to tactically control westbound flights transiting the Kabul FIR at specified times by assigning minimum spacing requirements at established gateway fix points in the vicinity of the eastern boundary of the Kabul FIR.

5.2 The application, calculation and distribution of AWUT and Kabul FIR entry fix slot allocations will be managed via internet access to the BOBCAT system in accordance with the ATFM operating procedures in paragraph 6.

6 BOBCAT-Operating Procedures

6.1 All affected flights are required to submit slot requests to the BOBCAT system by logging onto https://www.bobcat.aero between 0001 and 1200UTC on day of flight and completing the electronic templates provided.

6.2 Affected operators who do not have dedicated BOBCAT username/password access should complete the attached application form in **Appendix A** and fax the form to the ATFMU as soon as possible.

6.3 Slot Allocation Process

6.3.1 The slot allocation process is divided into 3 phases, namely the slot request submission, initial slot allocation and finally slot distribution to aircraft operators and ANSPs.

Slot Request Submission

6.3.2 Slot requests including preferred ATS route, flight level and Maximum Acceptable Delay (MAD) should be lodged between 0001 UTC and 1200

UTC on the day of flight. Slot requests may subsequently be amended prior to 1200 UTC, which is the cut-off time. Aircraft operators are encouraged to submit additional slot request options in case their first choice is not available. This may include variations to ATS route, flight level and MAD.

6.3.3 As BOBCAT will allocate FL280 on a priority basis to facilitate departures from northern India and Pakistan underneath over-flying traffic, flights departing these airports are encouraged to include FL280 in at least one slot request.

(Note: Pakistan does not support para 3.3 or 6.3.3 in which restriction of FL280 is imposed on flights from OPKC and OPLA.)

(Editorial Note: this paragraph should be removed if paragraph 3.3 is removed)

6.3.4 Flights that were not allocated a slot in the initial slot allocation, are not satisfied with the allocated slot or did not submit a slot request should select slots from the listing of remaining unallocated slots available immediately after slot distribution has been completed.

Slot Allocation and Distribution

6.3.5 Slot allocation will commence at the cut-off time at 1200UTC. BOBCAT will process and generate the slot allocation based on the information submitted in the slot requests. Notification of slot allocation will be made not later than 1230UTC via the ATFMU website. Alternative arrangements for notification of slot distribution (e.g. E-mail, Fax, Telephone) should be coordinated with the ATFMU.

6.3.6 After the slot allocation has been published at https://www.bobcat.aero, aircraft operators can:

a) Use the slot allocation result for ATS flight planning purposes

b) Cancel the allocated slot and/or,

c) Change slot allocation to another available slot in the published list of unallocated slots.

6.3.7 ***(ATC Units)*** can also view the slot allocation results at https://www.bobcat.aero.

6.4 Submission of ATS Flight Plan

6.4.1 Once aircraft operators are in receipt of the slot allocation, they shall submit the ATS flight plan using the time, ATS route and flight level parameters of the BOBCAT allocated slot.

6.4.2 In addition to normal AFTN addressees, operators should also address flight plan (FPL) and related ATS messages (e.g. DLA, CNL, CHG) to the ATFMU

via AFTN address VTBBZDZX for all flights that have submitted a slot request.

7 Aircraft Operator/Pilot in Command and ANSP Responsibilities

Aircraft Operator/Pilot in Command

7.1 In accordance with ICAO PANS ATM provisions, it is the responsibility of the Pilot in Command (PIC) and the aircraft operator to ensure that the aircraft is ready to taxi in time to meet any required departure time. PIC shall be kept informed by their operators of the AWUT, Kabul FIR entry fix times and flight parameters (route/level) nominated by BOBCAT.

7.2 The PIC, in collaboration with ATC, shall arrange take-off as close as possible to the AWUT.

ANSPs

7.3 In accordance with ICAO PANS ATM provisions, flights with an ATFM slot allocation should be given priority for take off to facilitate compliance with AWUT.

7.4 In collaboration with PIC, ***(ATC Units)*** shall ensure that every opportunity and assistance is granted to a flight to meet AWUT and allocated waypoint times.

7.5 AWUT shall be included as part of the initial ATC clearance. Flights requesting initial ATC clearance without AWUT but planning to enter the Kabul FIR during the period subject to flow metering should be advised to expect delays, non-preferred ATS routes and flight levels as well as diversion around Kabul FIR.

8 Coordination between Aircraft Operator/Pilot in Command, ANSPs and Bangkok ATFMU

8.1 The PIC shall include the AWUT in the initial ATC clearance request.

8.2 In coordination with neighbouring ATC Units, ***(ATC Units)*** may exercise discretion in allowing flights to depart up to 5 minutes before or after AWUT provided PIC confirms the ability to meet the Kabul entry fix time and subsequent use of excessively slow or fast climbing IAS or cruising mach number is not expected to impact surrounding flights.

8.3 PIC shall adjust cruise flight to comply with slot parameters at the Kabul FIR entry fix, requesting appropriate ATC clearances including speed variations in accordance with published AIP requirements.

8.4 In circumstances where it becomes obvious that the AWUT will not be met, a new slot allocation should be obtained as soon as possible and via the most expeditious means (e.g. via coordination between flight dispatcher, PIC, ***(ATC Units)*** and Bangkok ATFMU). Early advice that AWUT will be missed also enables the slots so vacated to be efficiently reassigned to other flights.

8.5 In the event that the aircraft is unable to meet the AWUT, when requested by the PIC after the aircraft has left the gate ***(ATC Units)*** shall assist the PIC to coordinate with the ATFMU for a revised slot allocation.

8.6 The ATFMU (VTBBZDZX) shall be included in the list of AFTN addressees for NOTAMs regarding any planned activities that may affect slot availability (e.g. reservation of airspace/ closure of airspace, non-availability of routes, etc).

8.7 The ATFMU (VTBBZDZX) shall be included in the list of AFTN addressees for ATS messages (e.g. FPL, DEP, DLA, CHG, CNL) related to flights participating in the ATFM operational trial.

8.8 A missed slot results in dramatically increased coordination workload for ATC and PIC and should be avoided. To minimize coordination workload in obtaining a revised slot allocation, the following procedures are recommended:

a) If the flight is still at the gate, coordination should take place via operators/flight dispatchers to ATFMU;

b) If the flight has left the gate, coordination to ATFMU may also take place via the ATS unit presently communicating with the flight.

9 Basic computer requirement

9.1 Aircraft operators and ***(ANSPs)*** are required to have computer equipment capable of connecting to the BOBCAT website https://www.bobcat.aero via the internet and satisfying the following minimum technical requirements:

a) A personal computer of any operating system with the following characteristics;

i) Processor: minimum CPU clock speed of 150 MHz;

ii) Operating System: Any that operates one of the following web browsers (i.e. Windows 2000/XP, Linux, Unix, or Mac OS);

iii) Web Browser: Internet Explorer 5.5 or newer, Mozilla 1.0 or newer, Mozilla Firefox 1.0 or newer, Netscape 7 or newer;

iv) RAM: 64 MB or larger (depending on operating system);

v) Hard Disk Space: minimum of 500 MB or larger (depending on operating system);

vi) Monitor Display Resolution: Minimum of 800 x 600 pixels; and

vii) Internet Connection: 56 Kbps Modem or faster.

10 ATFM Users Handbook

10.1 Supporting documentation, including detailed information in respect of the ATFM operations described above and other pertinent information has been included in the *Bay of Bengal and South Asia ATFM Handbook* (the "ATFM Users Handbook"), available at https://www.bobcat.aero

10.2 ANSPs and aircraft operators shall ensure that they are conversant with and able to apply the relevant procedures described in the ATFM Users Handbook.

11 Contingency Procedures

11.1 In the event that an aircraft operator or ***(ANSP)*** is unable to access the ATFMU website, the ATFMU shall be contacted via the alternative means (telephone, fax, AFTN) described in paragraph 13.

11.2 Contingency procedures for submission of slot request, including activation of Contingency Slot Request Templates (CSRT), are included in the ATFM Users Handbook.

11.3 In the event of system failure of BOBCAT, ATFMU shall notify all parties concerned and advise that ATFM slot allocation procedures are suspended. In this event, all parties concerned will revert to the existing ATM procedures as applicable outside the daily period of ATFM metering.

12 ATFM System Fault Reporting

12.1 An ATFM system fault is defined as a significant occurrence affecting an ATS unit, an aircraft operator or ATFMU resulting from the application of ATFM procedures.

12.2 Aircraft operators and ***(ATC units)*** experiencing an ATFM system fault should complete an ATFM System Fault Report Form from the ATFM Users Handbook (see **Appendix B**) and forward it to the ATFMU at the address indicated on the form. The ATFMU will analyze all reports, make recommendations/suggestions as appropriate and provide feed back to the parties concerned to enable remedial action.

13 Address of Air Traffic Flow Management Unit (ATFMU)

13.1 The ATFMU may be contacted as follows;

- Unit Name: Bangkok ATFMU
- Telephone: +66-2-287-8024, +66-2-287-8025
- Fax: +66-2-287-8027
- Tel/Fax: +66-2-287-8026
- E-mail: atfmu@bobcat.aero

- ATFN: VTBBZDZX
- Website: https://www.bobcat.aero

14. Implementation

This AIP supplement becomes effective from 0703151200UTC, and supersedes and cancels AIP Supplement (nnnn) dated (yymmdd)

15. Cancellation

This AIP Supplement will be cancelled when the contents have been incorporated into AIP.

- END

Appendix A

BOBCAT USERNAME / CONTACT INFORMATION MODIFICATION FORM

To be submitted to Bangkok ATFMU

SECTION I: ADD NEW USERS

Prefix	First Name	Last Name	Proposed Username Up to 20 characters	E-Mail Address

SECTION II: REMOVE USERS

Prefix	First Name	Last Name	Username	E-Mail Address

SECTION III: RESET PASSWORD

Prefix	First Name	Last Name	Username

SECTION IV: NOTIFICATION E-MAIL ADDRESS

❒ Change our organization's notification e-mail address to _____

SECTION V: CONTACT INFORMATION

Organization: _____

Full Name: _____

Tel: _____

E-Mail: _____

Signature: _____

Date/Time of Request:_____

Version 2 – 17 January 2007 (includes Pakistan, Thailand, ICAO feedback)

Authorized: ICAO BBACG ATFM/TF ***DRAFT***

Appendix B

ATFM SYSTEM FAULT AND EVENT REPORT FORM

To be submitted to Bangkok ATFMU

SECTION I – GENERAL INFORMATION

1. Date and Time (UTC) of Occurrence ____ / _____ / _____ / _____ / _____
   yy / mm / dd / hh / mm
2. Type of Event
   - 2.1 Failure of BOBCAT system ❒
   - 2.2 Communication Link failure ❒
   - 2.3 Non compliance with ATFM procedures by Pilot / Airline Operator / ANSP ❒
   - 2.4 Error in FPL and associated messages ❒
   - 2.5 Failure in ATFM Slot Monitoring (i.e. TWR at Aerodrome of Departure) ❒
   - 2.6 Non compliance with slot allocation window ❒
3. Restrictions applicable to the flight: _____

SECTION II – DETAILED INFORMATION

1. Organization / Administration submitting the report: _____
2. Flight Data (if applicable) – Call Sign: _____

   Attach copies of Flight Progress Strips indicating DEP, EOBT, WUT, DES or Entry Point & ETO over entry point, FL to ATC Unit/Sector area of activity as applicable.
3. Other details necessary for analysis of the incident

   Attach copies of FPL or RPL, subsequent ATS modifying messages etc. if appropriate

   _____

SECTION III – SUPPLEMENTARY INFORMATION

1. Actions already initiated: _____

   _____
2. Contact information follow-up action:
   - 2.1 Name: _____
   - 2.2 Designation: _____
   - 2.3 Tel: _____
   - 2.4 E-Mail: _____
3. Signature: _____
4. Date/Time of Report: _____

DRAFT

MODEL AIP SUPPLEMENT

ESTABLISHMENT OF BYPASS ATS ROUTE P629, DELETION OF L759 AND ESTABLISHMENT OF NEW RNP 10 ROUTE P630 IN _____ (*name of the ACC*) FIR

1 INTRODUCTION

1.1 The purpose of this AIP Supplement (SUP) is to notify:

(a) establishment of Bypass ATS route P629;

(b) deletion of ATS route L759 between waypoint PUT and BBS;

(c) establishment of ATS route P630 between PUT and PALKO to replace the deleted L759.

1.2 The ATS routes and procedures detailed in this AIP SUP will become effective at 0000UTC on xxxx 2007.

2 DETAILS OF THE ROUTES

2.1 Details of the Bypass ATS routeP629, and ATS route, P630 between PUT and PALKO applicable within the _____ (*name of the ACC*) FIR are shown in Appendix A.

2.2 Operating restrictions applicable to P629 and P630 within the _____ (*name of ACC*) FIR are detailed in paragraph 3 below.

2.3 Bypass ATS route P629 is active only between ?????/ to ????? UTC daily, however operators shall not flight plan to operate on the Bypass route. Flights which are planned on P628 or P630 may be diverted by ATC as required to the Bypass ATS route P629 in order to achieve the required lateral separation when longitudinal separation cannot be achieved on the flight planned route.

Note:

The Bypass ATS route P629 is provided for use by ATC in contingency situations to assist flights subject to ATFM to achieve the required separation. Operators should not flight plan on this route but if planned on ATS route P630 or P628 during the

hours of operation of the bypass route should be prepared to fly the Bypass route if instructed by ATC.

3 RNP 10 NAVIGATION REQUIREMENTS

3.1 RNP 10 approval is mandatory for aircraft to fly on these routes viz., ATS route, P630 – *xxx* (*name of RP*) to yyy (*name of RP*), Bypass ATS route P629 – *xxx* (*name of RP*) to yyy (*name of RP*), ATS route, P628 – xxx (name of RP) to yyy (name of RP).

3.2 Pilots must advise ATC of any deterioration or failure of the navigation systems below the navigation requirements for RNP 10. ATC shall then provide alternate separation and / or alternative routing.

3.3 Pilots of aircraft meeting RNP 10 navigation requirements must indicate /R in Field 10 of the ICAO Flight Plan.

4 SAFETY ASSESSMENT CRITERIA

4.1 The safety criteria associated with the introduction of the reduced lateral separation minima of 50 NM will be in accordance with the requirements for RNP 10 navigation performance, i.e. aircraft navigation performance shall be such that the standard deviation of lateral track errors shall be less than 8.7 km (4.7 NM).

5 MONITORING OF AIRCRAFT NAVIGATION PERFORMANCE

5.1 Monitoring of aircraft navigation performance is a joint responsibility between operators, States of Registry or States of Operators (as applicable), regulatory authorities and the ATS providers. The detection and reporting of non-conformance with the navigation requirements against the following parameters will rely primarily on radar monitoring by ATC units:

Lateral deviations

(i) a deviation of 15 NM or more from the track centre-line based on radar observations;

Longitudinal deviations

(i) where time separation is applied by ATC – when the reported separation based on ATC verified pilot's estimates vary by 3 minutes or more from the expected separation at the reporting point; or

(ii) where a distance based standard is applied by ATC based on ADS, radar observation or RNAV distance reports – when the distance varies by 10NM or more from the expected distance.

5.2 ATC will advise the pilot-in-command when such deviations are observed and implement the required investigation procedures.

5.3 The ATC authorities will investigate the causes of such deviations in conjunction with the aircraft operator and the State of Registry, or the State of the Operator, as applicable.

6 SEPARATION MINIMA

6.1 Lateral Separation Minima

6.1.1 A lateral separation minima of 50 NM may only be applied between aircraft equipped in accordance with RNP 10 navigation requirements.

6.2 Longitudinal Separation Minima

6.2.1 A longitudinal separation minima of 10 minutes or 80 NM RNAV based on Mach Number Technique (MNT) may be applied between aircraft equipped in accordance with RNP 10 navigation requirements.

6.3 Vertical Separation Minima

6.3.1 A vertical separation minima of 1,000 feet will be applied between aircraft operating between FL290 and FL410 inclusive in accordance with RVSM requirements.

7. WEATHER DEVIATION WITHOUT PRIOR ATC COORDINATION

7.1 The RVSM weather deviation procedures as contained in the Procedures for Air Navigation Services – Air Traffic Management (PANS-ATM, Doc 4444) will apply on Bypass ATS route P629 and ATS route P630.

8. OPERATORS PROCEDURES

8.1 The operator shall ensure in-flight procedures, crew manuals and training programmes are established in accordance with RNP 10 navigation requirements.

(Regional Office offers the following suggested five-letter name-codes

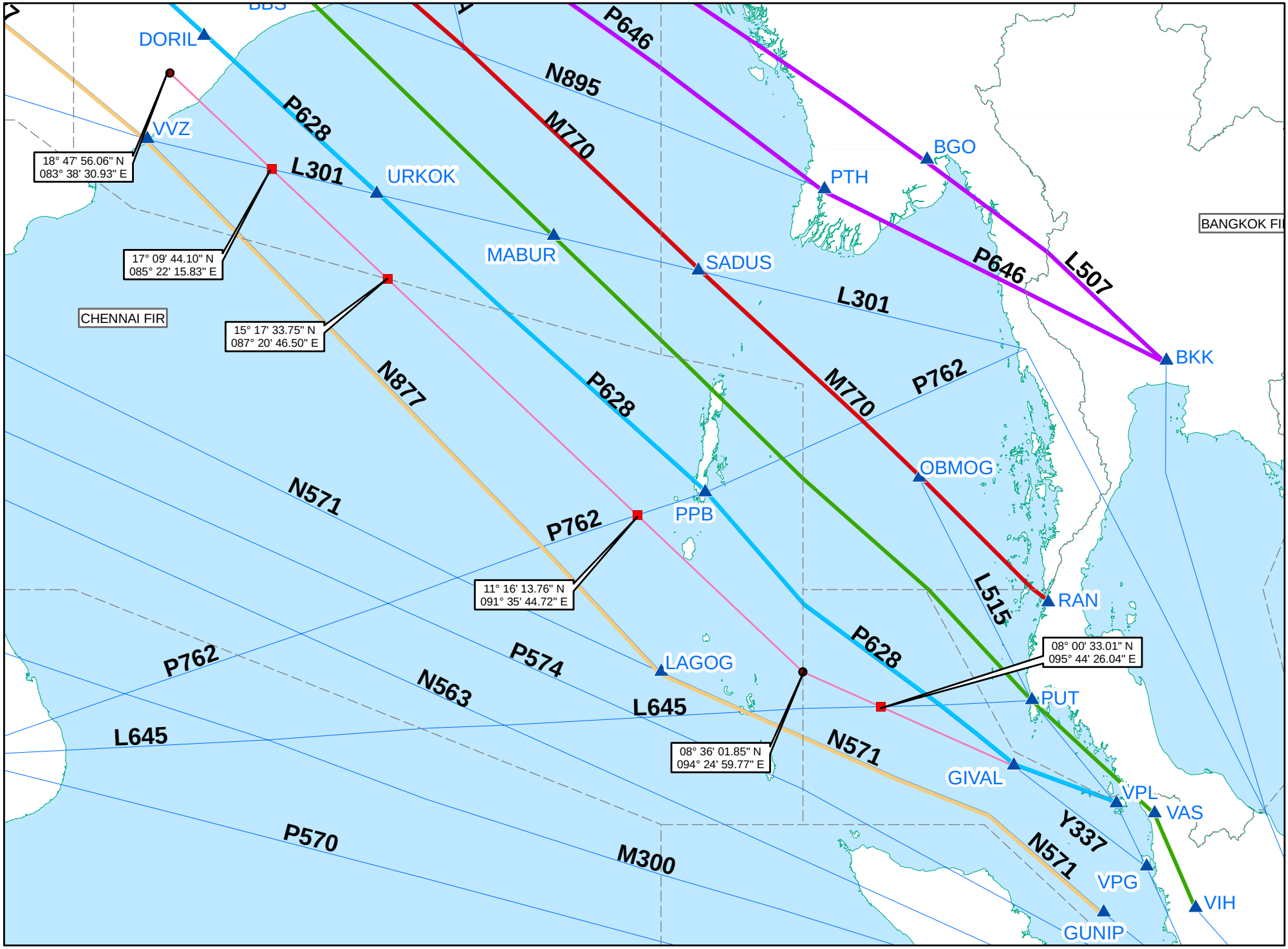
ABTUG, AGRAD, ANONO, AGELO, BASUB, BEGRU, BIDIG, BONLA, DABEN, DABMO, DOBGO, DOGAV, EGARU, EKVOM, EMRAN, GITUP, GUGAX, IBALI, IDUKO)

INDIA

COMMENTS ON THE PROPOSED CONTINGENCY BYPASS ROUTE FOR P628 AND ALTERED L 759

The route was drawn on Jeppeson Chart and following are the observations:

- In the contingency bypass route there is a kink at the coordinate **16^0 20'03.38" N 088^0 20'20.34"** E and the lateral distance between P 628 and the contingency bypass route at this point is around **38 NM**; this **coordinate needs to be changed** (around 16^0 38'09" N 088^0 38' 48" E) to get the required spacing of 50 NM.
- Total distance from GIVAL to DORIL on P 628 is 1100 NM.
- Total distance from GIVAL to DORIL via bypass route is 1116 NM.
- Total distance from PKT to BBS on altered L759 is 1025 NM.
- Total distance from PKT to BBS via bypass route is 1046 NM
- The bypass route is not giving much advantage as the difference in distance between the main routes and bypass route is around 16 to 20 NM.
- The contingency bypass route should be made available for both east and westbound traffic.
- Only one flight either west bound or eastbound will be permitted through bypass route when in climbing phase.
- Prior to releasing on bypass route WMKK should coordinate directly with Chennai OCC and Yangon ACC should not effect any level change
- Since Kolkatta ACC will have to adjust level/time for traffic merging over DORIL on P 628 and BBS on altered L759 to ensure 10 minutes longitudinal separation, level assigned to the flight on by-pass route shall not be assigned to any other flight on the main route till such time the flight rejoin the main route and 10 minutes long separation is ensured with regard to other flights.


DORIL
VVZ
18° 47' 56.06" N
083° 38' 30.93" E
17° 09' 44.10" N
085° 22' 15.83" E
15° 17' 33.75" N
087° 20' 46.50" E
11° 16' 13.76" N
091° 35' 44.72" E
08° 36' 01.85" N
094° 24' 59.77" E
08° 00' 33.01" N
095° 44' 26.04" E
CHENNAI FIR
BANGKOK FI
P628
L301
URKOK
N895
M770
P646
BGO
PTH
MABUR
SADUS
L301
P646
L507
BKK
N877
P628
M770
P762
OBMOG
N571
PPB
P762
L515
RAN
P762
P574
LAGOG
P628
PUT
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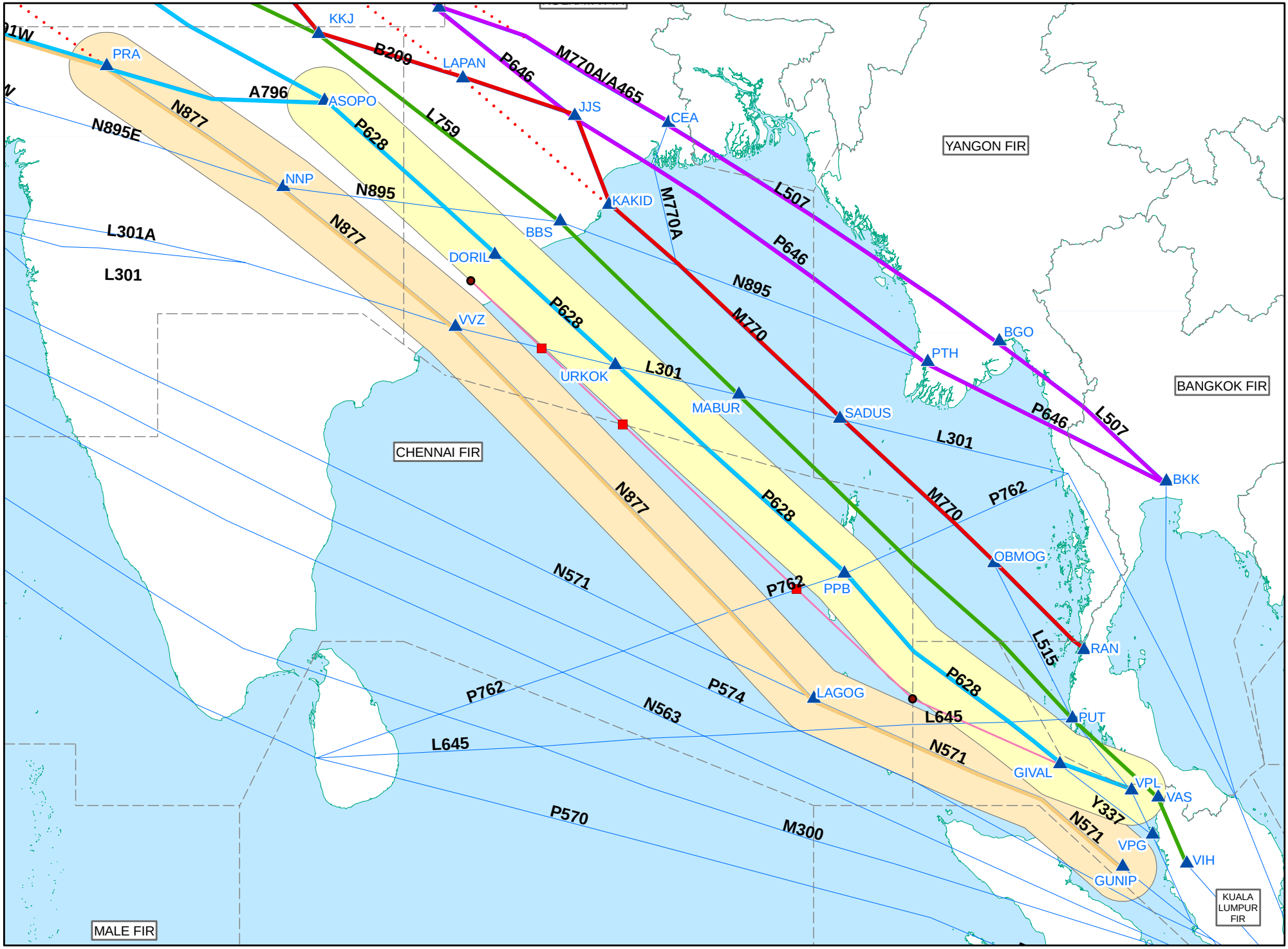
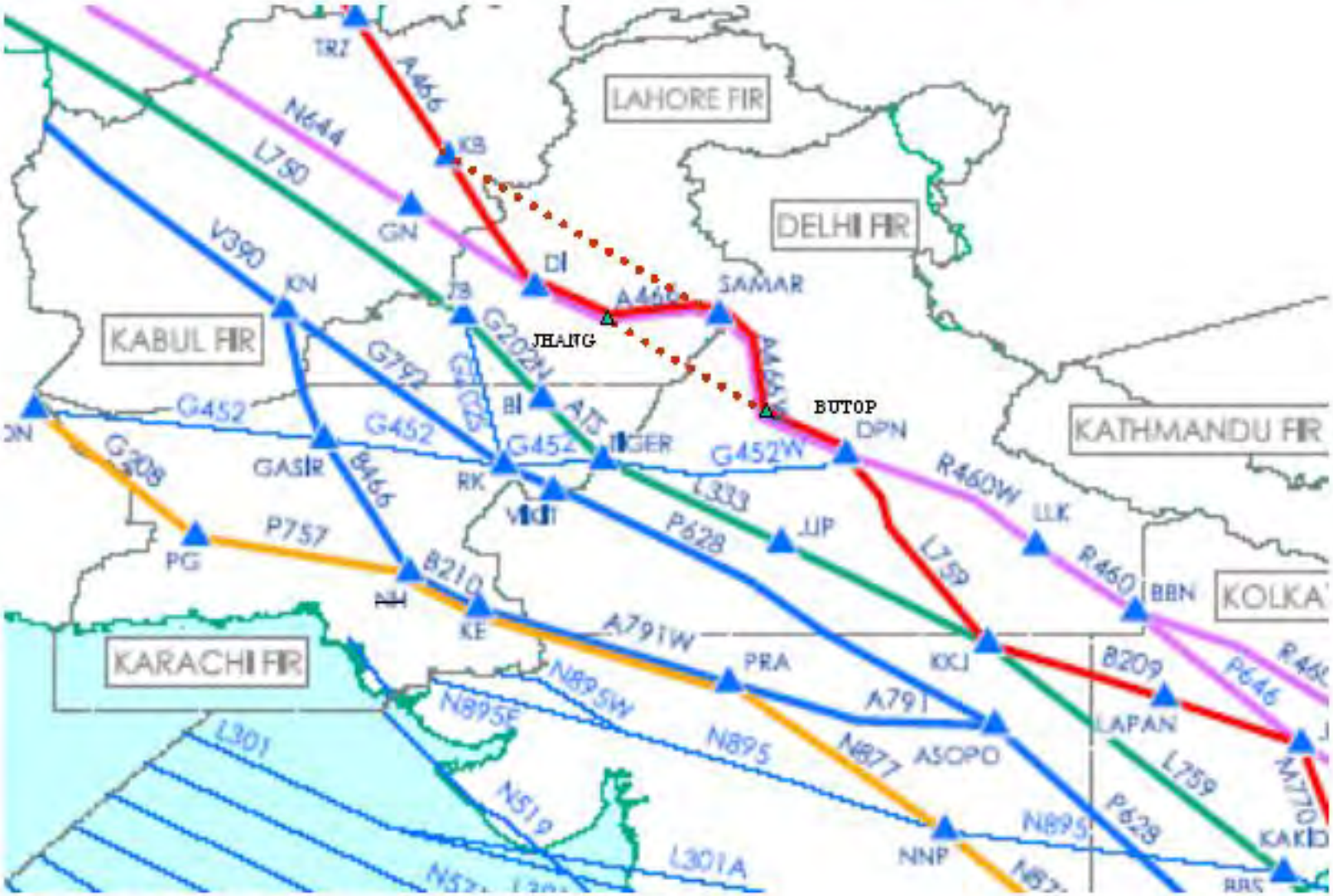
L645
L645
N571
GIVAL
VPL
VAS
Y337
P570
M300
N571
VPG
VIH
GUNIP


KKJ
PRA
LAPAN
JJS
CEA
ASOPO
NNP
KAKID
BBS
DORIL
VVZ
URKOK
MABUR
SADUS
PTH
BGO
BKK
OBMOG
RAN
PPB
LAGOG
PUT
GIVAL
VPL
VAS
VPG
GUNIP
VIH
B209
P646
M770A/A465
A796
N877
N895E
P628
L759
N895
L507
M770A
L301A
L301
M770
P762
L515
N571
P574
N563
L645
P570
M300
Y337
YANGON FIR
BANGKOK FIR
CHENNAI FIR
MALE FIR
KUALA LUMPUR FIR

ATTACHMENT 1

SAMAR/ KABUL DIRECT& BUTOP/JHANG DIRECT



BAY OF BENGAL
AND
SOUTH ASIA
AIR TRAFFIC FLOW MANAGEMENT
HANDBOOK

VERSION 1.0

16 June 2006 (new version to be inserted)

Table of Contents

Glossary of Terms

Term	Description
ACC	Area Control Centre
ADC	Aerodrome Control
AEROTHAI	Aeronautical Radio of Thailand, Limited
AFTN	Aeronautical Fixed Telecommunications Network
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Services
ANSP	Air Navigation Service Provider
ATC	Air Traffic Control
ATFM	Air Traffic Flow Management
ATFM Users Handbook	Bay of Bengal and South Asia ATFM Handbook
ATFMU	Air Traffic Flow Management Unit
ATM	Air Traffic Management
ATS	Air Traffic Services
ATT	Additional Taxi Time
AWUT	Allocated Wheels-Up Time
BOBCAT	Bay of Bengal Cooperative Air Traffic Flow Management Advisory System
CHG	Change Message
CNL	Cancel Message
CSRT	Contingency Slot Request Template
DEP	Departure Message
DLA	Delay Message
EET	Estimated Elapsed Time
ETD	Estimated Time of Departure
FIR	Flight Information Region
FL	Flight Level
FPL	Flight Plan Message
IATA	International Air Transport Association
ICAO	International Civil Aviation Organization
ICAO PANS ATM	ICAO Procedures for Air Navigation Services: Air Traffic Management
MAD	Maximum Acceptable Delay

NOTAM	Notice to Airmen
PIC	Pilot in Command
PSR	Past Slot Request
SMC	Surface Movement Control
SRT	Slot Request Template
STT	Standard Taxi Time
TWR	Control Tower
WUT	Wheels Up Time

1. Introduction

Purpose and Scope

1.1. As per ICAO Annex 11 Chapter 3.7.5, an ATFM service shall be implemented for airspace where air traffic demand at times exceeds or is expected to exceed the declared capacity of the air traffic services concerned.

1.2. Further, Annex 11 recommends that an ATFM service should be implemented on the basis of a regional air navigation agreement or through a multilateral agreement, which should make provision for common procedures.

1.3. Doc 4444 (PANS-ATM) Chapter 3.2.1.5 states that *"Detailed procedures governing the provision of the ATFM measures, and service within a region or area should be prescribed in a regional ATFM manual or handbook".*

1.4. Accordingly, the purpose of this Handbook is to provide in one document, the procedures for the operation of the Bay of Bengal and South Asia ATFM service, which have been developed through the effective use of Collaborative Decision Making between the States, ICAO Asia and Pacific Regional Office and airspace users concerned.

Objectives of Air Traffic Flow Management (ATFM)

1.5. Air Navigation Service Providers (ANSPs) concerned, ICAO Asia Pacific Regional Office, and the International Air Transport Association (IATA) considered that there was a need to introduce an automated air traffic flow management system, due to present flight level constraints at the Kabul FIR gateway points together with the limited number of route segments through the Kabul FIR. This would ensure a smooth flow of traffic through Kabul waypoints and associated route segments.

1.6. The objectives of ATFM across the Bay of Bengal and South Asia are:

a) To enhance and facilitate the orderly and efficient flow of air traffic across the Bay of Bengal and South Asia;

b) To minimize ground and enroute delays;

c) To maximize capacity and optimize the flow of air traffic within the area;

d) To plan for and manage future ATS workload in the light of forecast increased traffic flow within the area; and

e) To assess the economic and environmental impact of the implementation of the ATFM system.

1.7. The Bay of Bengal Cooperative ATFM Advisory System (BOBCAT) has been developed by Aeronautical Radio of Thailand Ltd. (AEROTHAI), in coordination with ICAO Asia Pacific Regional Office, affected Air Navigation Service Providers

(ANSPs) concerned, the International Air Transport Association (IATA) and their member international airlines to assist in managing the present restrictions for westbound aircraft operating through the Kabul FIR during the busy night time period.

ATFM Users Handbook

1.8. This *Bay of Bengal and South Asia ATFM Handbook* (ATFM Users Handbook) provides information necessary for airline operators and ANSPs to carry out their responsibilities within the BOBCAT system. The AFTM Users Handbook will be updated as BOBCAT functionalities are enhanced.

Principles of BOBCAT

1.9. The following principles have been agreed to:

a) To introduce an automated air traffic flow management system in accordance with ICAO standards and recommended practices to enhance the smooth flow of westbound aircraft transiting the Kabul FIR during the period of 2000 to 2359UTC;

b) BOBCAT provides advisory information only. ANSPs retain responsibility for tactical ATS and traffic management;

c) BOBCAT will manage mandatory slot selection through interaction with airline dispatchers via the Internet using a dedicated website;

d) To maintain or improve aircraft operations through the Kabul FIR during the above period;

e) To maintain a high level of responsiveness to requests from ANSPs, IATA and their airline operators for procedure and system improvements; and,

f) To provide reports and statistics on ATFM operations for analysis.

References

1.10. The following documents are referred to within this handbook:

a) Annex 11 Air Traffic Services;
b) Doc 4444 Procedures for Air Navigation Services – Air Traffic Management;
c) Doc 9673 Basic Air Navigation Plan – Asia and Pacific Regions;
d) Doc 9750 Global Air Navigation Plan for CNS/ATM Systems; and,
e) Doc 9426 ATS Planning Manual

Control of the Manual

1.11. This Handbook is controlled, edited and produced by the ICAO BBACG

Air Traffic Flow Management Task Force, which operates under the auspices of the ICAO Bay of Bengal ATS Coordination Group (BBACG).

1.12. The Editor for the Bay of Bengal and South Asia ATFM Handbook is:

New editor is required

Validity

1.13. The date of application of this Edition number 1.0 is 16 June 2006 and this manual shall not be used operationally before that date.

Changes to the ATFM Handbook

1.14. The ATFM Handbook will usually be updated once per year. However intervening amendments may be issued in conjunction with relevant State AIC and AIP documents.

1.15. Whenever a user identifies a need for a change to this Handbook, a Request for Change Form (RFC) should be completed and submitted to the Editor. A copy of the RFC Form is shown at Appendix A.

Version / Amendment Number	Date	Amended by	Comments
1.0	16 June 2006	ATFM/TF	The original version

2. BOBCAT Operations and Functionality

BOBCAT System

2.1 The BOBCAT will be responsible for the ATFM activities within the Bay of Bengal and South Asia areas for the routes and at the times described in States' AIP Supplements. This responsibility will be managed by the Bangkok Air Traffic Flow Management Unit (ATFMU) in coordination with aircraft operators and ANSPs in the FIRs concerned.

BOBCAT Concept of Operations

2.2 The BOBCAT concept of operations has been formulated based on the following parameters:

a) BOBCAT shall ensure slot allocations at the same flight level are not less than the agreed required spacing at each Kabul FIR entry waypoints: SITAX (A466), PAVLO (N644), ROSIE (L750) and ASLUM (G792);

b) In order to efficiently utilize airspace with regard to aircraft diverting over Dhera Ismail Khan (DI) on A466 and N644, airline operators should indicate their CVSM flight level for entry into Kabul FIR at the DI waypoint;

c) Spacing requirements between two aircraft at the same waypoint into Kabul FIR and the same flight level shall be 10 minutes;

d) An additional buffer time will be applied within the system to ensure flexibility as well as efficient and safe flow of traffic operating through the Kabul FIR;

e) In order to ensure availability of an initial slot for westbound departures from (more specific), departures from these airports will be given priority at flight level 280 for entry into Kabul FIR. Conversely, aircraft departing from other airports with longer flight times will given priority at flight levels 310-390 for entry into Kabul FIR;

f) Allocated Wheel-Up Time (AWUT) assigned by BOBCAT is based on information derived from the airline operators and ANSPs' input. This time should be based on Estimated Time of Departure (ETD), individual aerodromes' Standard Taxi Time (STT) provided by ANSPs, and any additional time that aircraft operator considers necessary (Additional Taxi Time - ATT);

g) Aircraft sequencing at the departure airport according to AWUT order will be managed by the ANSP concerned;

h) ANSP should endeavor to assist aircraft operators in order for them to meet the required AWUT;

i) Airline operators should submit ATS flight plan based on BOBCAT slot allocation for entry into Kabul FIR;

j) It is the airline operators' responsibility to arrange en route flight profile to arrive over the Kabul FIR entry waypoint as allocated by BOBCAT;

k) It is an ANSP responsibility to tactically manage aircraft entry into the Kabul FIR in accordance with the assigned route and flight level;

Bangkok Air Traffic Flow Management Unit

2.3 Bangkok Air Traffic Flow Management Unit (Bangkok ATFMU), located in Bangkok ACC, has responsibility to manage the BOBCAT system on behalf of ANSPs and aircraft operators concerned. The Bangkok ATFMU will operate for westbound flights entering the Kabul FIR during 2000UTC and 2359UTC daily.

Area of Operation

2.4 All Westbound flights intending to transit the Kabul FIR on ATS routes A466, L750, N644 between FL280 to FL390 inclusive and G792/V390 between FL310 to FL390 inclusive between 2000UTC and 2359UTC daily shall participate in the BOBCAT system. These flights are required to submit slot allocation requests to the ATFMU for processing.

ANSP and aircraft operators system requirement

2.5 Aircraft Operators and ANSPs are required to have computer equipment capable of connecting to the BOBCAT website https://www.bobcat.aero via the Internet satisfying the following minimum requirements:

a) A Personal Computer of any operating system with the following characteristics;
   ii) Processor: minimum CPU clock speed of 150 MHz
   iii) Operating System: Any that operates one of the following web browsers (i.e. Windows 2000/XP, Linux, Unix, or Mac OS)
   iv) RAM: 64 MB or larger (depending on operating system),
   v) Hard disk Space: minimum of 500 MB or larger (depending on operating system)
   vi) Monitor Display Resolution: Minimum of 800 x 600 pixels
   vii) Web Browser: Internet Explorer 5.5 or newer, Mozilla 1.0 or newer, Mozilla Firefox 1.0 or newer, Netscape 7 or newer,

b) Internet Connection: 56 Kbps Modem or faster Internet connection.

c) Printer if required (e.g. printing out information for distribution to concerned persons).

BOBCAT Operating Procedures

2.6 Westbound transit flights intending to enter the Kabul FIR on ATS routes A466, L750, N644 between FL280 to FL390 inclusive and G792/V390 between FL310 to FL390 inclusive between 2000UTC and 2359UTC daily shall participate in ATFM.

Application of System Spacing

2.7 BOBCAT is designed to arrange 10-minute spacing plus a buffer time for entry into the Kabul FIR.

Wheels-Up Time

2.8 Wheels Up Time will be calculated based on information submitted by airline operators using an aircraft's ETD + ANSP-provided STT for specific departure aerodrome + Additional Time if required by the operator. It is defined as:

WUT = ETD + STT + Additional Time required by the operator

Allocated Wheels-Up Time

2.9 Allocated Wheels-Up Time (AWUT) is the adjusted WUT calculated by BOBCAT and issued to an aircraft based on submitted entry time into Kabul FIR.

Slot Allocation Process

2.10 The slot allocation process is divided into 3 phases, namely the Slot request, initial Slot allocation and finally Slot distribution to airline operators and ANSPs. All operators concerned are required to submit slot requests to the BOBCAT system by logging onto https://www.bobcat.aero and completing the electronic templates provided.

Slot Request Procedures

2.11 Slot requests including preferred ATS route, flight level and Maximum Acceptable Delay (MAD) should be lodged by the cut-off time of 1200 UTC. Submitted slot requests may be amended at any time up until 1200UTC. To enhance opportunities for preferred slot allocation, airline dispatchers are encouraged to submit additional options in case their first choice is not available. This may include alternative route, flight level and changes to MAD.

2.12 As BOBCAT will allocate FL280 on a priority basis to facilitate departures from northern India and Pakistan underneath over-flying traffic, dispatchers are encouraged to include FL280 in at least one slot request for departures from these airports. This should not discourage airline dispatchers who are requesting a slot from other airports to also submit FL280 as one of their requests, especially during the busiest period of 2100 – 2300UTC.

2.13 Flights that were not allocated a slot although a slot request was submitted prior to the cut-off time (1200UTC) or flights who did not submit slot

request by the cut-off time, will have the opportunity to select a slot from the unallocated slots after the slot distribution has been completed.

Slot Allocation Procedures

2.14 Slot allocation shall take place after the cut-off time at 1200UTC. BOBCAT will process and generate the slot allocation based on the information submitted in the slot request, and notify the results not later than 1230UTC via e-mail and the BOBCAT website to concerned parties.

2.15 Flights departing without an allocated slot will be tactically accommodated after participating flights have been processed and should expect delays for requested routes and altitudes.

2.16 The Bangkok ATFMU will be staffed H24, during which time aircraft operators can:

a) View the slot allocation result for flight planning purposes;

b) Cancel the assigned slot; and/or,

c) Request a change of slot allocation to another available slot in the published list.

2.17 ANSPs can view the slot allocation results at https://www.bobcat.aero/.

2.18 Once aircraft operators are satisfied with the slot allocation, they shall submit their ATS flight plan using the route and level parameters of the allocated slot.

2.19 In addition to normal addressees, operators shall also address the flight plan and related ATS messages (e.g. DEP, DLA, CNL, CHG) to the Bangkok ATFMU via AFTN address VTBBZDZX.

Vacant Slot Selection After Cut-off Time

2.20 Airline operators have the ability to log into BOBCAT website at https://www.bobcat.aero/ to select a slot allocation from vacant slots shown on the appropriate BOBCAT page. The procedure of selecting slot after cut-off time is listed in the “Help” section of the website.

Cancellation or Change of Slot Allocation

2.21 Airline operators are able to log into BOBCAT website at https://www.bobcat.aero/ to change or cancel slot allocation. The procedure of cancelling and modifying slot allocation is posted in the “Help” section of the website.

Viewing Available Slots

2.22 Airline operators are able to log into BOBCAT website at

https://www.bobcat.aero/ to view available slot. The procedure for viewing available vacant slots is posted in the “Help” section of the website.

Pilot in Command Role and Responsibility

2.23 In accordance with ICAO PANS ATM provisions (Section 7.8), it is the responsibility of the Pilot in Command (PIC) and the operator to ensure that the aircraft is ready to taxi in time to meet any required departure time.

2.24 PIC shall be kept informed via their operators of the Allocated Wheels Up Time (AWUT), Kabul gateway entry time and flight parameters (route/level) nominated by BOBCAT.

2.25 In collaboration with airline operators, ANSPs shall ensure that every opportunity and assistance is granted to an aircraft to meet AWUT and allocated Kabul gateway entry time and flight level.

2.26 The PIC shall include the AWUT in the ATC clearance request.

2.27 The PIC shall arrange take-off as close as possible to the AWUT.

2.28 PIC shall adjust cruise flight to comply with slot time at Kabul FIR gateway fix, providing advice to ATC of speed and estimate variations in accordance with normal AIP requirements.

Missing the Allocated Wheels-Up Time

2.29 In circumstances where it becomes obvious that the AWUT will not be met, a new slot allocation should be obtained by the most expeditious means (e.g. via coordination between flight dispatcher/ANSPs and ATFMU).

2.30 A missed slot results in dramatically increased coordination workload for ATC and PIC and should be avoided. To minimize coordination workload in obtaining a revised slot allocation, the following procedures are recommended:

a) If the flight is still at the gate, coordination should take place via operators/flight dispatchers to ATFMU;

b) If the flight has left the gate, coordination to ATFMU may also take place via the ATS unit presently communicating with the flight.

2.31 In reference to para 2.30 b), the following steps are recommended:

a) PIC to inform ANSP of their revised estimate at the allocated Kabul entry waypoint

b) ANSP will contact and inform the Bangkok ATFMU of the revised estimate.

c) The Bangkok ATFMU will give two options to the ANSP for consideration by the PIC:

i) First option will be same route and the same requested flight level with the revised estimate for the Kabul entry waypoint or with delay to the revised estimate.

ii) Second option will be same route and a different flight level with the revised estimate for the Kabul entry waypoint or with delay to the revised estimate.

d) PIC shall contact their dispatcher to obtain a new slot allocation from the Bangkok ATFMU if the two options are not acceptable to them.

Operations of Special Flights Exempted from ATFM

2.32 The following flights are exempted from ATFM slot allocation:

a) Humanitarian or medical flights; or,

b) State aircraft with Head of State onboard.

2.33 Flights exempted from ATFM shall indicate the exemption in their flight plan (Field 18 – STS-BOB ATFM EXMP).

2.34 ANSPs shall forward the flight plan information to the Bangkok ATFMU.

2.35 A flight that is affected by a special flight exempted from ATFM shall follow the same procedure as if the aircraft has missed the AWUT.

<u>BOBCAT Username/Password Allocation and Security Policy</u>

BOBCAT Username/Password Allocation

2.36 All concerned parties requiring access to BOBCAT are required to submit a written username/password request to Bangkok ATFMU, on the BOBCAT Username / Contact Information Modification Form included in **Appendix B**, signed by authorized personnel of the organization as well as the organization seal.

2.37 The username/password request should include the following information:

a) User's Full Name;

b) User's E-Mail address; and,

c) User's proposed username.

2.38 When requesting a new username to participate in the BOBCAT system, the particular organization will note that the Bangkok ATFMU will add a unique suffix identifying the particular organization to the proposed username.

2.39 If a particular airline operator is using the services of another airline's dispatch office, that particular airline operator shall submit an official letter to the Bangkok ATFMU informing them that the other airline or dispatch organization has authority to submit slot request on their behalf. This formal letter shall be signed by an authorized person on the company's letterhead.

2.40 If there are any changes to users participating in BOBCAT, each participating organization is responsible to notify Bangkok ATFMU of the change so as to ensure access security for the system.

BOBCAT Security Policy

2.41 For the purpose of maintaining access security of BOBCAT, each user of the system is required to have a username/password, which should not be shared with others. Action taken under a username/password will be interpreted as action taken by the registered user.

2.42 To provide security for BOBCAT users, BOBCAT only stores the digest of the password to be verified against password provided by BOBCAT users. Each generated password will only be known to the BOBCAT user alone via e-mail.

2.43 Each BOBCAT user is responsible for maintaining a personal password only known by the user alone. It is also recommended that the password be regularly changed to protect against identity theft.

2.44 In the event of a lost BOBCAT username/password, the Bangkok ATFMU shall be contacted to request a password reset. The new password would then be sent to the registered user via e-mail. The user is responsible for changing the generated password into a new personal password.

2.45 To protect against identity theft issues, it is important that users logout of BOBCAT website once the task related to BOBCAT system is completed.

<u>Use of the Contact Us page on the BOBCAT website</u>

2.46 The Contact Us page is a facility whereby Airline Dispatchers and ANSPs may write a query to the Bangkok ATFMU or the BOBCAT Development Team regarding:

a) Queries on BOBCAT procedures;

b) Queries concerning past slot requests or slot allocations; and,

c) General issues

2.47 Answers to any of these matters mentioned above are unlikely to be immediate. It will depend on the question and research required.

2.48 Therefore this communication channel should not be used for answers to immediate operational issues. The correct communication medium would be via telephone to the Bangkok ATFMU in the first instance, followed by Fax.

3. Bangkok ATFMU

Bangkok ATFMU Staffing and Hours of Operation

3.1 The Bangkok ATFMU will operate H24 daily for westbound flights entering the Kabul FIR from 2000UTC to 2359UTC, with contact details as follows:

a) Telephone : +662 287 8024, +662 287 8025

b) Tel/Fax: +662 287 8026

c) Fax : +662 287 8027

d) ATFN: VTBBZDZX

e) E-mail: atfmu@bobcat.aero

Bangkok ATFMU Functions and Responsibilities

3.2 The Bangkok ATFMU has the following functions and responsibilities:

a) Manage operation of BOBCAT system so as to ensure that accurate slot requests are submitted to the system, slot allocations are completed and processes after initial slot allocation are finished in a timely manner;

b) Coordinate with airline operators and ANSPs involved in BOBCAT operations with respect to:

   i. Requesting username/password into BOBCAT system;
   ii. Submitting slot request;
   iii. Obtaining slot allocation for aircraft missing wheels-up time.

4. Airline Dispatchers and Private Operators

Submitting a Slot Request to BOBCAT

4.1 Slot requests including preferred ATS route, flight level and Maximum Acceptable Delay (MAD) should be lodged by the cut-off time of 1200 UTC. Submitted slot requests may be amended at any time up until 1200UTC. To enhance the opportunity for preferred slot allocation, airline dispatchers are encouraged to submit additional options in case their first request is not available. This may include alternative route, flight level and changes to MAD.

Use of Multiple Slot Request Options

4.2 Airline dispatchers should note that the more slot request options (routes and flight level) submitted generally increases the potential for a flight to be allocated a slot based on the requests.

Use of Estimated Elapsed Time

4.3 BOBCAT calculates Estimated Time over Kabul FIR entry waypoint based on the Estimated Elapsed Time (EET) provided by airline operators from the Wheels-Up Time. Airline operators are reminded that BOBCAT slot allocation is only as accurate as the EET provided.

Use of Standard Buffer Time

4.4 A standard buffer time of 5 minutes will be applied for entry into Kabul FIR. For example, aircraft allocated slot into Kabul FIR at 2100UTC can arrive at the waypoint up to 2105UTC.

Use of Standard Taxi Time and Additional Taxi Time

4.5 A Standard Taxi Time suggested by ANSPs at the departing airport will be used to calculate the Wheels-Up Time of an aircraft. If additional time is required by an aircraft operator, this would also be added into the WUT calculations as Additional Taxi Time.

Calculation of Wheels-up Time (WUT)

4.6 Wheels-Up Time will be automatically calculated by BOBCAT user interface based on the following equation:

WUT = ETD + STT + Additional Time Required by Operator

Procedures if No Slot Allocated or Missing Cut-off Time

4.7 Flights that were not allocated a slot although a slot request was submitted prior to the cut-off time (1200UTC) and flights which did not submit slot request by the cut-off time, will have the opportunity to select a slot from the unallocated slots after the slot distribution has been completed. The procedures for

such operations are posted in BOBCAT Website under the “Help” section.

Use of Slot Request Templates (SRT) and Past Slot Request (PSR)

4.8 Airline operators have the opportunity to save a slot request into a slot request template (SRT) with a name of their choice. This slot request template can be used to submit a slot request for a flight of a later date, or a slot request of a similar flight on the same date.

4.9 Furthermore, airline operators have the facility to view slot requests submitted on previous days and use a Past Slot Request as template for the current day’s operation.

Use of Contingency Slot Request Templates (CSRTs)

4.10 In addition to reducing workload with respect to slot request submission, the Slot Request Template feature can also be useful where airline operators are unable to reach the BOBCAT website, e.g. the airline operators’ Internet connection is down. In this case, they should advise the Bangkok ATFMU of the problem, select the appropriate Contingency Slot Request Template (CSRT) forms which are shown in **Appendix C and D**, and transmit the information to the Bangkok ATFMU via fax.

4.11 Accordingly, airline operators are requested to store up-to-date Slot Request Templates corresponding to all scheduled flights in another location outside of the BOBCAT website.

Air Navigation Service Providers (ANSPs)

General ANSP Roles and Responsibilities

5.1 AWUT shall be included as part of the ATC clearance.

5.2 When requested by the PIC prior to push back, or if the aircraft has pushed back, ANSPs shall assist the PIC to coordinate for a new slot allocation with the Bangkok ATFMU in the event that the aircraft is unable to meet the AWUT.

5.3 ANSPs shall notify specific Standard Taxi Time (STT) for the individual departure airports and any subsequent changes, e.g. taxi way works, to the Bangkok ATFMU as guidance for airline operators in estimating WUT.

5.4 ANSPs shall notify Bangkok ATFMU of any change required in the spacing at a specific waypoint within their area of responsibility.

5.5 The Bangkok ATFMU (AFTN Address: VTBBZDZX) shall be included in the list of AFTN addressees for NOTAMs regarding any planned activities relevant to BOBCAT operations (e.g. reservation of airspace/closure of airspace, non-availability of routes, etc).

5.6 The Bangkok ATFMU (AFTN Address: VTBBZDZX) shall be included in the list of AFTN addressees for ATS messages (e.g. FPL, DLA, DEP, CHG, CNL) related to flights participating in the ATFM operational trial.

Control Tower/ACC Responsibilities – Departure Airport

Standard Push-back and Taxi Time

5.7 ADC/SMC at departure airports are responsible for providing Bangkok ATFMU with a representative time between the time an aircraft pushes back and the wheels-up time of the aircraft during the period of BOBCAT operation. This time is called Standard Taxi Time (STT)

Priority Take-off for Aircraft Subjected to ATFM

5.8 In accordance with ICAO PANS ATM procedures (Section 7.8), flights with slot allocation should be given priority for takeoff over other departures to facilitate compliance with AWUT.

Procedures if aircraft unable to make AWUT or wish to depart early

5.9 In coordination with neighboring ATC Units, ANSPs may exercise discretion in allowing flights to depart up to 5 minutes before or after AWUT provided PIC confirms the ability to meet the Kabul entry fix time and subsequent use of excessively slow or fast climbing IAS or cruising mach number is not expected to impact surrounding flights.

5.10 PIC shall adjust cruise flight to comply with slot parameters at the Kabul FIR entry fix, requesting appropriate ATC clearances including speed variations in accordance with published AIP requirements.

5.11 In circumstances where it becomes obvious that the AWUT will not be met, a new slot allocation should be obtained by the most expeditious means (e.g. via coordination between PIC/flight dispatcher/ANSPs and the Bangkok ATFMU).

5.12 In the case where the delay is expected to be no more than 5 minutes past the slot window, there maybe an opportunity to tactically manage the aircraft to avoid a new slot allocation as long as it will not interfere with another aircraft's slot at the Kabul FIR entry point. This will ultimately depend on close coordination between Tower, ACC and PIC.

5.13 Where the expected delay will be more than 5 minutes, the PIC will contact ATC with the expected delay, any other pertinent information and request a new slot. The TWR controller shall immediately contact his respective ACC and request a revised slot allocation based on the PIC information. ACC shall then coordinate with the Bangkok ATFMU, obtain a new slot allocation and pass the information to the PIC via the TWR.

5.14 The PIC has the choice of the following:

a) Choosing from alternates provided by ANSPs in co-ordination with Bangkok ATFMU, or;

b) Contacting the airline operator's dispatch office to lodge a new slot allocation.

ACC Responsibilities – En Route

Coordination with Pilot In Command (PIC)

5.15 En Route ACCs should manage the transit of aircraft with BOBCAT slot allocation so that these aircraft would be in a position to make their slot allocation into the Kabul FIR.

Coordination between En Route ACCs

5.16 In circumstances where it becomes obvious that the allocated slot into Kabul FIR cannot be met, the en route ACC first becoming aware would:

a) Advise the PIC of the situation; and

b) Manage the traffic tactically

5.17 In these circumstances, the appropriate en route ACC should file ATFM System Fault and Event Report Form in **Appendix E** and submit to Bangkok ATFMU by fax or e-mail.

AIS Responsibilities – Departure Airports

Coordination with Airline Operators and the Bangkok ATFMU

5.18 The AIS office is responsible for coordinating with Bangkok ATFMU to assist in obtaining a slot allocation for airline operators who do not have access to the BOBCAT website.

5.19 The AIS office shall ensure that an airline operator proposing to submit a flight plan for a flight entering the Kabul FIR during the BOBCAT time period has a slot allocation.

5.20 The AIS office shall provide a BOBCAT Slot Request form to the airline operator who proposes to enter the Kabul FIR during the hours of BOBCAT operations. Once completed, this form shall be submitted by the AIS office on behalf of the airline operator to the Bangkok ATFMU for processing. The slot request form is shown at **Appendix F**.

5.21 In the case of an AIS office that has access to the BOBCAT website, the aircraft's slot allocation result may be viewed and used by the airline operator to complete his ATS flight plan.

5.22 With regard to an AIS office which is unable to access the BOBCAT website, the Bangkok ATFMU shall transmit the aircraft's slot allocation result to the AIS office by fax or other means. This information shall then be relayed to the airline operator, who shall submit a flight plan based on the information provided in the slot allocation.

5.23 The AIS office shall also ensure that, when the flight plan is finally completed by the airline operator, it is based on the BOBCAT slot allocation with reference to the Estimated Elapsed Time (EET) from departure airport to the Kabul FIR entry point as well as the ATS Route and Flight Level entering the Kabul FIR before transmission by AFTN.

5.24 In the circumstances that the airline operator submits slot request prior to the cutoff time, the following steps should be undertaken by the airline operators:

a) The airline operator shall contact the AIS office to obtain the result of his slot allocation request. If satisfied, submit a flight plan using the slot allocation result; or,

b) Otherwise, request a new slot allocation through the AIS office.

5.25 The Bangkok ATFMU (AFTN Address: VTBBZDZX) shall be included in the list of AFTN addressees for ATS messages (e.g. FPL, DLA, DEP, CHG and CNL) related to affected flights.

6. Contingency Arrangements

Airspace Contingencies

6.1 In the event of closure of ATS routes, flight levels or other airspace that occurs prior to the cut off time for BOBCAT slot allocation and which may affect BOBCAT operations, Bangkok ATFMU should be notified as soon as possible by the ACC concerned. In turn, Bangkok ATFMU will pass on this information to airline dispatchers to re-file slot request on routes or flight levels which are not affected. Other ANSPs will also be advised by Bangkok ATFMU of this situation.

6.2 In circumstance where closure of ATS routes or airspace as referred to in paragraph 6.1 above occurs after the slot allocation cutoff time, the following procedures are applicable:

a) If aircraft are already airborne, ANSPs, in coordination with the Bangkok ATFMU, shall tactically manage these flights based on spare slot allocations en route as well as obtaining slots for them through the Kabul FIR in coordination with PIC to avoid diversions; or,

b) If aircraft have not yet departed, new slot allocations shall be coordinated between Bangkok ATFMU and dispatchers for flights that would be affected by the closure.

6.3 Extreme weather conditions, e.g. cyclonic conditions, affecting international airspace may cause en-route diversion or cause airlines not to plan on routes affected by the extreme weather conditions. In this situation, ANSPs may also elect to increase longitudinal spacing between affected aircraft.

6.4 In the event of extreme weather conditions affecting ATFM operations, ANSPs would need to tactically manage these flights, including diversions. In doing so, coordination with Bangkok ATFMU should be considered if it will affect aircraft which are not yet airborne.

6.5 In the case of flights which have not yet departed, dispatchers should re-file on alternative routings wherever possible.

Reduction in Airspace Capacity due to Other Reasons

6.6 In circumstances where an ANSP is required to increase the longitudinal spacing between aircraft, e.g. sudden loss of staff, degradation in facilities, etc., the ANSP affected would normally take NOTAM action regarding the event as well as contacting Bangkok ATFMU with details and the resultant effect on BOBCAT operations. Bangkok ATFMU would coordinate with all concerned advising them of any changes which would affect BOBCAT operation.

6.7 ANSP responsible for areas affected by any contingency for an area or areas which may affect normal BOBCAT operations shall notify Bangkok ATFMU of the contingency and possible consequences to aircraft as soon as possible, so appropriate action and coordination can be taken.

Communication Issues

6.8 In the event that an airline operator or an ANSP is unable to access the BOBCAT website, the following means of communication with Bangkok ATFMU shall be used:

a) Telephone : +662 287 8024, +662 287 8025

b) Tel/Fax: +662 287 8026

c) Fax : +662 287 8027

d) ATFN: VTBBZDZX

6.9 In the event that an ACC is unable to log onto the BOBCAT website, the Bangkok ATFMU, on being advised, will send a copy of the slot allocation results to the affected ACC ensuring that:

a) For departure airports, AWUTs are sorted the correct order;

b) For en-route ACCs, appropriate Kabul entry waypoint(s) are selected and aircraft allocations are sorted in the correct order of ETO with Flight Level;

Complete Failure of BOBCAT System

6.10 In the event of a complete failure of the BOBCAT system, Bangkok ATFMU shall notify all parties concerned and advise that ATFM procedures are suspended. In this event, procedures will be applied by States concerned in accordance with bi-lateral agreements and as applied outside of the ATFM hours of operation.

Suspension of ATFM Operational Trial ???

6.11 In the case of an evident safety issue, reasonable actions to manage the situation, including the suspension of the ATFM operational trial, should be taken by the party first becoming aware of the circumstances.

6.12 Beyond direct safety considerations, it is possible that a request to stop the ATFM operational trial could be subjective and require some sort of value judgment. Accordingly, such a request should be relayed to the appropriate member of the Core Team of the Air Traffic Flow Management Task Force for initial consideration and, if the request was supported, further relayed to the remaining members of the Core Team in order to enable appropriate consideration of the matter. After consideration, the decision of the Core Team would be promulgated.

Non-Completion of Flight

6.13 In circumstances where an aircraft aborts his flight en route and either

diverts or returns for various reasons, this information should be transmitted to Bangkok ATFMU so that his original slot allocation for entry into the Kabul FIR can be cancelled and made available for use by other aircraft.

7. System Fault and Event Report

7.1 An ATFM system fault is defined as a significant occurrence affecting an ATS unit, an aircraft operator or ATFMU resulting from the application of ATFM procedures.

7.2 Aircraft operators and ATC units experiencing an ATFM system fault should complete an ATFM System Fault and Event Report Form from the ATFM Users Handbook (see **Appendix E**) and forward it to the ATFMU at the address indicated on the form. The ATFMU will analyze all reports, make recommendations/suggestions as appropriate and provide feedback to the parties concerned to enable remedial action.

Bangkok Air Traffic Flow Management Unit (Bangkok ATFMU)
Tel: +66-2-287-8024
+66-2-287-8025
Tel/Fax: +66-2-287-8026
Fax: +66-2-287-8027
E-Mail: atfmu@bobcat.aero
AFTN: VTBBZDZX

ATFM USERS HANDBOOK REQUEST FOR CHANGE FORM

To be submitted to Bangkok ATFMU

SECTION I: NATURE OF CHANGE

1. Subject: _____
2. Reason of Change: _____

   _____
3. Description: _____

   _____

   _____

   _____

   _____

   _____
4. References: _____

   Reference sections/paragraphs related to the change as well related documents.

SECTION II: INFORMATION OF PARTY INITIATING CHANGE

Organization: _____

Full Name: _____

Tel: _____ Date of Request: _____

E-Mail: _____ Signature: _____

SECTION III: CONSULTATION

Response due date: _____

Organization / Administration	Contact Person Name	Agreement (Agree/Disagree)	Date

SECTION IV: FEEDBACK

Action(s) Required: _____

Feedback Passed: _____ Editor: _____

RFC Number:_____ Date Received: _____

Bangkok Air Traffic Flow Management Unit (Bangkok ATFMU)
Tel: +66-2-287-8024
+66-2-287-8025
Tel/Fax: +66-2-287-8026
Fax: +66-2-287-8027
E-Mail: atfmu@bobcat.aero
AFTN: VTBBZDZX

USERNAME / CONTACT INFORMATION MODIFICATION FORM

To be submitted to Bangkok ATFMU

SECTION I: ADD NEW USERS

Prefix	First Name	Last Name	Proposed Username Up to 20 characters	E-Mail Address

SECTION II: REMOVE USERS

Prefix	First Name	Last Name	Username	E-Mail Address

SECTION III: RESET PASSWORD

Prefix	First Name	Last Name	Username

SECTION IV: NOTIFICATION E-MAIL ADDRESS

❒ Change our organization's notification e-mail address to _____

SECTION V: CONTACT INFORMATION

Organization: _____

Full Name: _____

Tel: _____ Signature: _____

E-Mail: _____ Date/Time of Request: _____

Bangkok Air Traffic Flow Management Unit (Bangkok ATFMU)
Tel: +66-2-287-8024
+66-2-287-8025
Tel/Fax: +66-2-287-8026
Fax: +66-2-287-8027
E-Mail: atfmu@bobcat.aero
AFTN: VTBBZDZX

CONTINGENCY SLOT REQUEST TEMPLATE FORM A

To be submitted to Bangkok ATFMU

SECTION I: AIRCRAFT DETAIL

Call Sign: _____

Registration: _____

Departure Aerodrome: _____

Departure Date: _____

Destination Aerodrome: _____

ETD (hhmm): _____

Aircraft Type: _____

Estimated Taxiing Time (minutes): _____
Estimated time between taxi and wheels up

SECTION II: ROUTE/FLIGHT LEVEL OPTIONS

Option No.	ETD (UTC)	MAD (Maximum Acceptable Delay)	WP1	EET1	FL1	WP2	EET2	FL2
1, 2, 3, …	*hhmm*	*Minute(s)*	*DI*	*hhmm*	*390*	*SITAX*	*hhmm*	*390*
			DI		**390**	**SITAX**		**390**
			DI		**350**	**SITAX**		**350**
			DI		**310**	**SITAX**		**310**
			DI		**280**	**SITAX**		**280**
Option No.	**ETD (UTC)**	**MAD** (Maximum Acceptable Delay)	**WP1**	**EET1**	**FL1**	**WP2**	**EET2**	**FL2**
			DI		**390**	**PAVLO**		**390**
			DI		**350**	**PAVLO**		**350**
			DI		**310**	**PAVLO**		**310**
			DI		**280**	**PAVLO**		**280**
Option No.	**ETD (UTC)**	**MAD** (Maximum Acceptable Delay)	**WP1**	**EET1**	**FL1**			
			ROSIE		**390**			
			ROSIE		**350**			
			ROSIE		**310**			
			ROSIE		**280**			
Option No.	**ETD (UTC)**	**MAD** (Maximum Acceptable Delay)	**WP1**	**EET1**	**FL1**			
			ASLUM		**390**			
			ASLUM		**350**			
			ASLUM		**310**			

SECTION III: CONTACT INFORMATION

Organization: _____

Full Name: _____

Tel: _____

Signature: _____

E-Mail: _____

Date/Time of Request: _____

Bangkok Air Traffic Flow Management Unit (Bangkok ATFMU)
Tel: +66-2-287-8024
+66-2-287-8025
Tel/Fax: +66-2-287-8026
Fax: +66-2-287-8027
E-Mail: atfmu@bobcat.aero
AFTN: VTBBZDZX

CONTINGENCY SLOT REQUEST TEMPLATE FORM B

To be submitted to Bangkok ATFMU based on previously saved Slot Request Template

SECTION I: AIRCRAFT DETAIL

Call Sign: _____

Registration: _____

Departure Aerodrome: _____

Departure Date: _____

Destination Aerodrome: _____

ETD (hhmm): _____

Aircraft Type: _____

Estimated Taxiing Time (minutes): _____
Estimated time between taxi and wheels up

SECTION II: ROUTE/FLIGHT LEVEL OPTIONS

1. Slot Request Template Name: _____
   Name of Slot Request Template which will be used to submit slot request

2. Changes from Slot Request Template Detail:

   _____

   _____

   _____

   _____

SECTION III: CONTACT INFORMATION

Organization: _____

Full Name: _____

Tel: _____

Signature: _____

E-Mail: _____

Date/Time of Request: _____

Bangkok Air Traffic Flow Management Unit (Bangkok ATFMU)
Tel: +66-2-287-8024
+66-2-287-8025
Tel/Fax: +66-2-287-8026
Fax: +66-2-287-8027
E-Mail: atfmu@bobcat.aero
AFTN: VTBBZDZX

ATFM SYSTEM FAULT AND EVENT REPORT FORM

To be submitted to Bangkok ATFMU

SECTION I – GENERAL INFORMATION

1. Date and Time (UTC) of Occurrence ____ / _____ / _____ / _____ / _____
   yy / mm / dd / hh / mm
2. Type of Event
   - 2.1 Failure of BOBCAT system ❒
   - 2.2 Communication Link failure ❒
   - 2.3 Non compliance with ATFM procedures by Pilot / Airline Operator / ANSP ❒
   - 2.4 Error in FPL and associated messages ❒
   - 2.5 Failure in ATFM Slot Monitoring (i.e. TWR at Aerodrome of Departure) ❒
   - 2.6 Non compliance with slot allocation window ❒
3. Restrictions applicable to the flight: _____

SECTION II – DETAILED INFORMATION

1. Organization / Administration submitting the report: _____
2. Flight Data (if applicable) – Call Sign: _____

   Attach copies of Flight Progress Strips indicating DEP, EOBT, WUT, DES or Entry Point & ETO over entry point, FL to ATC Unit/Sector area of activity as applicable.
3. Other details necessary for analysis of the incident

   Attach copies of FPL or RPL, subsequent ATS modifying messages etc. if appropriate

   _____

SECTION III – SUPPLEMENTARY INFORMATION

1. Actions already initiated: _____

   _____
2. Contact information follow-up action:
   - 2.1 Name: _____
   - 2.2 Designation: _____
   - 2.3 Tel: _____
   - 2.4 E-Mail: _____
3. Signature: _____
4. Date/Time of Report: _____

Bangkok Air Traffic Flow Management Unit (Bangkok ATFMU)
Tel: +66-2-287-8024
+66-2-287-8025
Tel/Fax: +66-2-287-8026
Fax: +66-2-287-8027
E-Mail: atfmu@bobcat.aero
AFTN: VTBBZDZX

SLOT REQUEST FORM

To be submitted to Bangkok ATFMU

SECTION I: AIRCRAFT DETAIL

Call Sign: _____

Registration: _____

Departure Aerodrome: _____

Departure Date: _____

Destination Aerodrome: _____

ETD (hhmm): _____

Aircraft Type: _____

Estimated Taxiing Time (minutes): _____
Estimated time between taxi and wheels up

SECTION II: ROUTE/FLIGHT LEVEL OPTIONS

Option No.	ETD (UTC)	MAD (Maximum Acceptable Delay)	WP1	EET1	FL1	WP2	EET2	FL2
1, 2, 3, …	*hhmm*	*Minute(s)*	*DI*	*hhmm*	*390*	*SITAX*	*hhmm*	*390*
			DI		**390**	**SITAX**		**390**
			DI		**350**	**SITAX**		**350**
			DI		**310**	**SITAX**		**310**
			DI		**280**	**SITAX**		**280**
Option No.	**ETD (UTC)**	**MAD (Maximum Acceptable Delay)**	**WP1**	**EET1**	**FL1**	**WP2**	**EET2**	**FL2**
			DI		**390**	**PAVLO**		**390**
			DI		**350**	**PAVLO**		**350**
			DI		**310**	**PAVLO**		**310**
			DI		**280**	**PAVLO**		**280**
Option No.	**ETD (UTC)**	**MAD (Maximum Acceptable Delay)**	**WP1**	**EET1**	**FL1**			
			ROSIE		**390**			
			ROSIE		**350**			
			ROSIE		**310**			
			ROSIE		**280**			
Option No.	**ETD (UTC)**	**MAD (Maximum Acceptable Delay)**	**WP1**	**EET1**	**FL1**			
			ASLUM		**390**			
			ASLUM		**350**			
			ASLUM		**310**			

SECTION III: CONTACT INFORMATION

Organization: _____

Full Name: _____

Tel: _____

Signature: _____

E-Mail: _____

Date/Time of Request: _____

Bangkok Air Traffic Flow Management Unit (Bangkok ATFMU)
Tel: +66-2-287-8024
+66-2-287-8025
Tel/Fax: +66-2-287-8026
Fax: +66-2-287-8027
E-Mail: atfmu@bobcat.aero
AFTN: VTBBZDZX

ORGANIZATIONAL CONTACT INFORMATION FORM

To be submitted to Bangkok ATFMU

ORGANIZATION CONTACT INFORMATION

Organization Name: _____

Organizational Unit Name: _____

Address: _____

_____

_____

_____

_____

_____

Tel: _____ AFTN: _____

Fax: _____ E-Mail: _____

Name: _____

Title: _____

Signature: _____ Date of Submission: _____

BBACG/18

REPORT OF THE BBACG/18 MEETING

Agenda Item 1: Adoption of Agenda

1.1 The meeting adopted the following agenda as the Agenda for the meeting:

Agenda Item 1: Adoption of Agenda

Agenda Item 2: Review outcomes of APANPIRG/17

Agenda Item 3: Review current operations across the Bay of Bengal and identify problem areas

Agenda Item 4: Implementation of the new CNS/ATM systems in the Region

Agenda Item 5: ATS route developments

Agenda Item 6: Development of State Contingency Plans

Agenda Item 7: Civil Military Coordination

Agenda Item 8: Review and update BBACG Task List

Agenda Item 9: Any other business

Agenda Item 10: Date and venue for the BBACG/19 meeting

Agenda Item 2: Review outcomes of APANPIRG/17

APANPIRG/17 Conclusions and Decisions

2.1 The Seventeenth meeting of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG/17) was held in Bangkok, Thailand from 21-25 August 2006. APANPIRG/17 raised a total of 55 new Conclusions and Decisions for regional action.

2.2 The meeting reviewed and discussed the 19 Conclusions and Decisions from APANPIRG/17 that were of immediate relevance in the context of ATM, AIS and SAR matters.

Annex 15 Provisions in relation to AIRAC

2.3 The attention of the meeting was drawn to the APANPIRG Conclusion 17/17 in regard to the continuing examples of implementations occurring without sufficient notice and not in alignment with the 28 day AIRAC cycles. Annex 15 – *Aeronautical Information Services* requires that notice period of at least one 28-day AIRAC cycle be given, and makes a recommended proactive that two AIRAC cycles (56 days) be given wherever possible in relation to implementations. The notice period is extremely important in relation to complex implementations and enables aeronautical data providers to upload up to date information to airborne navigation equipment.

2.4 Noting this regular and ongoing non-compliance with Annex 15 provisions in respect to AIRAC notification periods that had also been the subject of APANPIRG Conclusion 14/9, APANPIRG/17 requested that the Regional Office reinforce to States the critical safety nature of AIS and adherence to Annex 15 provisions, in particular those relating to AIRAC, as well as the need to ensure accurate and timely publication of AIS data.

2.5 The Regional Office would also ensure the matter was highlighted to the next meeting of the AITF, scheduled in February 2007, with a view to identifying a solution to this persistent problem.

Safety Concerns in the WPAC/SCS Area

2.6 Attention was drawn to the review by APANPIRG 17 of the work of RASMAG and the ATM/AIS/SAR Sub-Group in relation to operations in the Western Pacific/South China Sea area (WPAC/SCS), noting a number of continuing safety concerns that urgently needed to be addressed.

2.7 In addressing the continuing safety concerns in the WPAC/SCS area, APANPIRG/17 (August 2006) adopted Decision 17/5 calling for the establishment of an RVSM Scrutiny Group to identify, study and address problems in the safety, efficiency and harmonization of WPAC/SCS RVSM operations. APANPIRG/17 also adopted Conclusion 17/6 urging concerned States to complete, by 30 June 2007, a horizontal safety assessment for the South China Sea route structure.

2.8 Terms of Reference for the Western Pacific/South China Sea RVSM Scrutiny Working Group (WPAC/SCS RSG) are included as **Appendix A**. It was also noted that the first meeting of the WPAC/SCS RSG has been scheduled for 29 January – 2 February 2007, graciously hosted by the Civil Aviation Authority of Singapore (CAAS).

Preparedness of States to implement ATS Safety Management Systems

2.9 The meeting recalled that in August 2005, APANPIRG/16 was informed regarding a Special Implementation Project (SIP) that had been conducted by the Regional Office during August 2005 in four States in South-East Asia, with a focus on ATS safety management. A similar SIP conducted in 2004 had covered a number of States in the Bay of Bengal area and included consideration of ATS operational safety matters.

2.10 The August 2005 mission noted that ICAO recommended safety management systems had not been fully implemented by any of the four States visited and they were at various stages of developing their strategy and implementing changes to their existing safety management practices. In most cases, the State civil aviation authorities lacked funding, human resources and expertise to develop and operate ICAO compliant safety management systems. In reviewing this matter, APANPIRG/16 raised the following Conclusion:

Conclusion 16/19 – Study of States' preparedness to implement safety management systems

That, a study of States' preparedness to implement ICAO safety management systems in accordance with Annex 11 be undertaken by the Asia/Pacific Regional Office in conjunction with the ATS coordination groups and RASMAG by the first quarter of 2006, and a plan of action developed to be reported to APANPIRG/17 in September 2006.

2.11 The Secretariat informed the meeting that as a result of resource limitations at the Regional Office no action had yet been taken in relation to Conclusion 16/19. Although recognizing that State resource restrictions were such that it was unlikely that a workable plan of action could be put in place, the meeting considered that an up to date regional record of the status of State implementation of Annex 11 compliant ATS safety management systems would be valuable and encouraged the Regional Office to go ahead with a suitable survey.

Agenda Item 3: Review current operations across the Bay of Bengal and identify problem areas

Sixth Meeting of RASMAG

3.1 The meeting reviewed and noted relevant parts of the Report of the Sixth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/6), held in Bangkok, Thailand from 6-10 November 2006.

Regional Safety Monitoring Committees

3.2 RASMAG had submitted Working Paper 22 to APANPIRG/17 proposing that APANPIRG initiate steps to establish a *Regional Safety Monitoring Board – Asia* and a *Regional Safety Monitoring Board – Pacific* developed from the MID RMA model. APANPIRG/17 agreed that the most appropriate mechanism in this respect was to constitute a task force to study the issues and develop appropriate documentation and implementation plans. Additional information in this respect is included in paragraphs 6.12 to 6.17 of the FIT-BOB/8 report at Section 1 of this document.

3.3 In order to allow States time to consult within their own administrations and consider the matter thoroughly, the meeting agreed to establish a task force to draft implementation proposals for the regional monitoring "committees", formulating Decision 17/47 and associated Terms of Reference:

3.4 The meeting considered that the ability of RASMAG to continue to progress this matter was exhausted as the requisite legal and financial skill sets were not available amongst RASMAG delegates. As such RASMAG reinforced that it was critical that participants at the RASMC/TF/1 comprise State legal, financial and organizational experts with the organizational authority to make decisions on behalf of the affected States, particularly in respect to aspects of State sovereignty.

3.5 The meeting recognized that, in the absence of appropriate safety monitoring arrangements, further implementation of reduced separation applications regionally would not be able to proceed, in accordance with APANPIRG Conclusion 16/5 in this regard.

Report of MAARs RMA Activities

<u>Bay of Bengal</u>

3.6 The Monitoring Agency for the Asia Region (MAAR) presented a report on their review of airspace safety for the RVSM implementation in the Asian region. In respect to the Bay of Bengal area, the meeting was informed that in the BOB airspace, the technical risk was calculated as 0.77×10^{-9} and the operational risk as1.11×10^{-9}. The total risk was assessed as 1.88×10^{-9}, therefore current estimates of both technical and total risks <u>satisfy</u> the agreed TLS value of no more than 2.5×10^{-9} and 5.0×10^{-9} fatal accidents per flight hour respectively.

Western Pacific/South China Sea

3.7 MAAR also provided a summary of airspace safety oversight for RVSM implementation Western Pacific/ South China Sea (WPAC/SCS) area. The RVSM safety oversight had been conducted based on a one-month traffic sample data (TSD) collected in December 2005 and the most recent rolling 12 months of Large Height Deviation (LHD) reports between January 2005 and September 2006 submitted by relevant States in the WPAC/SCS region.

3.8 However, the estimate of overall risk of 11.3×10^{-9} significantly exceeds the agreed TLS values of 5.0×10^{-9} fatal accidents per flight hour due to all causes. RASMAG also recognized the adverse trend that was evident in terms of the WPAC/SCS safety assessment, recalling that previous safety assessments had also exceeded the TLS.

3.9 In this context, RASMAG strongly endorsed the early establishment of the RVSM Scrutiny Group (WPAC/SCS/RSG) as called for under APANPIRG Decision 17/5 as this was anticipated to bring the necessary sharp focus to what was evidently a deteriorating situation. The meeting also urged affected States to commence work immediately and continue work outside the WPAC/SCS RSG to correct the adverse trend as soon as possible.

ICAO Safety Management Systems Training

3.10 RASMAG noted that during September/October 2006, two SMS courses and an ATS SMS workshop were conducted at the Regional Office for States and international organizations. Each course/workshop was of 5 days duration, comprising 30 classroom hours including exercises and case studies. In all, approximately 100 representatives from 25 States and international organizations received SMS training during this period.

3.11 In September 2006, two SMS courses of 35 participants each were conducted at the Regional Office. These training courses were delivered by accredited personnel from ICAO Headquarters and were addressed at the level of the State Regulator, for officers with responsibilities for Annexes 6 and 14 as well as Annex 11, including the implementation and/or oversight of safety management systems in the areas of aircraft operations, air traffic services, maintenance of aircraft and aerodrome operations. Participants were subjected to a process of continual assessment during the course and a final written exam, in order to gain a passing grade in these courses.

3.12 APANPIRG/16 (August 2005) expressed concerns in relation to a number of matters related to ATS safety management including the non provision of safety related data by some States, the lack of robust organisational and funding arrangements to establish regional safety monitoring agencies, target levels of safety in enroute airspaces were being exceeded, significant numbers of large height deviations were being reported, horizontal plane safety assessments for RNP10 route structures were not updated and difficulties were being experienced at the interfaces between differing flight level orientation schemes (FLOS) in use regionally.

3.13 In order to address these matters, the Regional Office had received approval from the Council for the conduct of a SIP on ATS Safety Management System Training, for completion during 2006. The SIP ATS SMS Workshop was well supported by States, with a total of 29 participants from 13 States including Bangladesh, Cambodia, Hong Kong China, India, Indonesia, Japan, Maldives, Nepal, Papua New Guinea, Philippines, Singapore, Sri Lanka and Thailand.

Annual Traffic Sample Data Collection

3.14 The meeting recalled the agreement made during the Second Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/2, October 2004) that an annual provision by States of Traffic Sample Data (TSD) as well as ongoing provision of Large Height Deviation (LHD) and Gross Navigational Error (GNE) reporting – including NIL reporting -was sufficient for vertical and horizontal safety analysis. Accordingly, the month of December routinely experienced high traffic levels, APANPIRG/16 had adopted December as the standard sample period for vertical and horizontal traffic sample data collection, commencing from December 2005.

3.15 The meeting reviewed the State Letter (Ref: T3/10.0, T3/10.1.17 – AP105/06 (ATM) issued by the Regional Office in regard to the continuous monitoring and regular assessment of target levels of safety in reduced separation applications, advising States of a standardized approach to the collection of vertical and horizontal traffic sample data, and emphasizing a number of relevant Conclusions adopted by APANPIRG 16 (August 2005).

State Focal Point for ATS Safety Related Activities

3.16 ICAO had placed considerable priority on identifying and rectifying deficiencies and strongly supported the sharing of safety data. APANPIRG/16 (August 2005) had considered that with the expansion of the USOAP during 2005 in the Asia/Pacific Region and in view of the persistence of operational deficiencies as reported by IATA, a renewed effort should be made by States to take proactive action in tackling such deficiencies.

3.17 In an effort to address regional deficiencies and, in particular, to provide an ATS safety contact point in each State who would act as a focal point for safety related activities including the submission and coordination of ATS incident reports, APANPIRG/16 adopted Conclusion 16/62 requesting States to nominate a suitable contact point:

3.18 The Regional Office has established data base of the 'Safety Contact Officers' called for under APANPIRG Conclusion 16/62, a copy of which is shown in **Appendix B.**

Agenda Item 4: Implementation of the new CNS/ATM systems in the Region

4.1 The meeting reviewed the information in relation to regional datalink implementation provided in the report of the FIT-BOB/8 meeting as described in Section 1 of this report. Additionally, the meeting reviewed the information in the report of the ATFM/TF/9 contained in Section 2 of this report.

Agenda Item 5: ATS route developments

Access to Australian Flex Tracks

5.1 Australia informed the meeting that on the 27th of June 2005, Airservices Australia commenced a trial of Flex Tracks for aircraft between Asia and Australia called the Australian Organised Track Structure (AUSOTS). The trial had been very successful with participating airlines realizing large benefits from the tracks designed to maximize wind affect by seeking tailwinds and avoiding headwinds. The extrapolated benefits from actual data on savings are estimated to be in excess of 2.7 million kilograms of fuel per annum. Maximum airline participation is encouraged by minimal requirements and restrictions applied to the use of the tracks.

5.2 The implementation of AUSOTS was initially entirely within the Australian FIRs. Aircraft flying the AUSOTS tracks use the conventional fixed routes outside of the Australian FIRs and commence Flex Track at a published waypoint on the FIR boundary entering Australian oceanic airspace. As the conventional fixed route does not always position the aircraft efficiently for a Flex Track, benefits to airlines can increase with the availability of additional route options or transitions to the start of the Flex Track.

5.3 In working with the Airports Authority of Maldives, Australia had developed a number of route segments to permit aircraft more efficient access through Male airspace to join a Flex Track within Australian FIRs. These route segments are regularly used to provide significant efficiencies to airlines by providing additional route options.

5.4 The meeting was further informed that the recent expansions to AUSOTS for aircraft to the Middle East and India have identified some possible route segments to the south of Indonesia that will allow aircraft to connect to and commence the Flex Track in Australian airspace more efficiently in some wind conditions. Example tracks are shown for reference in Figure 1 below. There are presently no fixed route options to permit airlines to fly such a route.

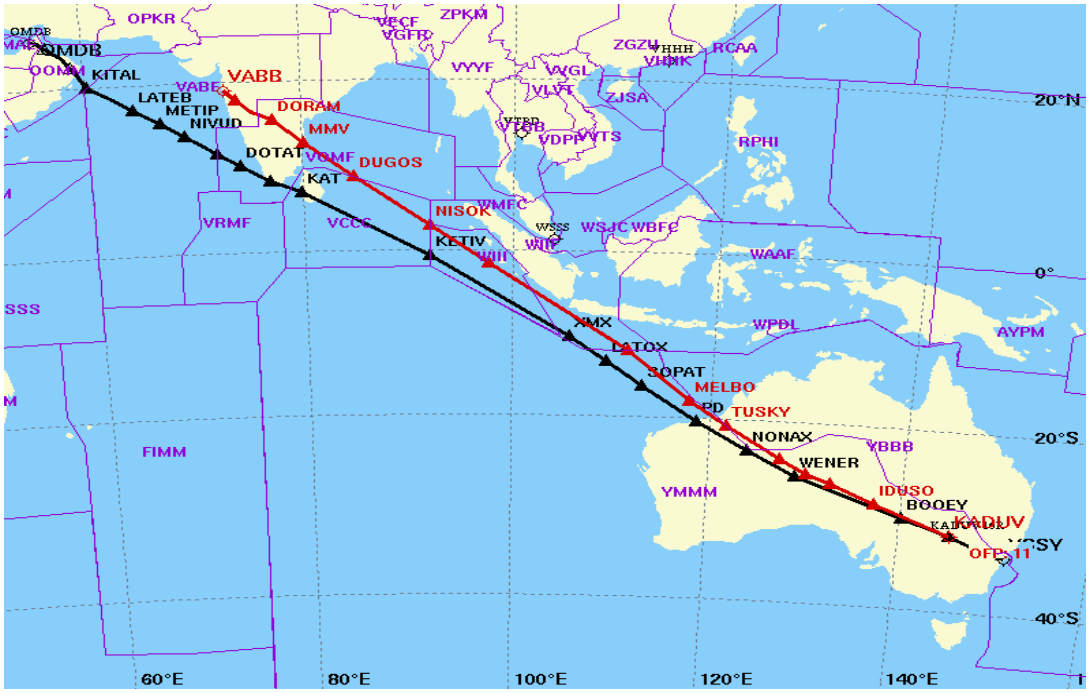


Figure 1 - Example tracks from Dubai and Mumbai

5.5 Australia had worked closely with Indonesia to refine the proposal which is presented as Figure 2 below and permits aircraft to track in both directions from NISOK to SAPDA and KETIV to XMX then ATMAL within Indonesian FIRs.

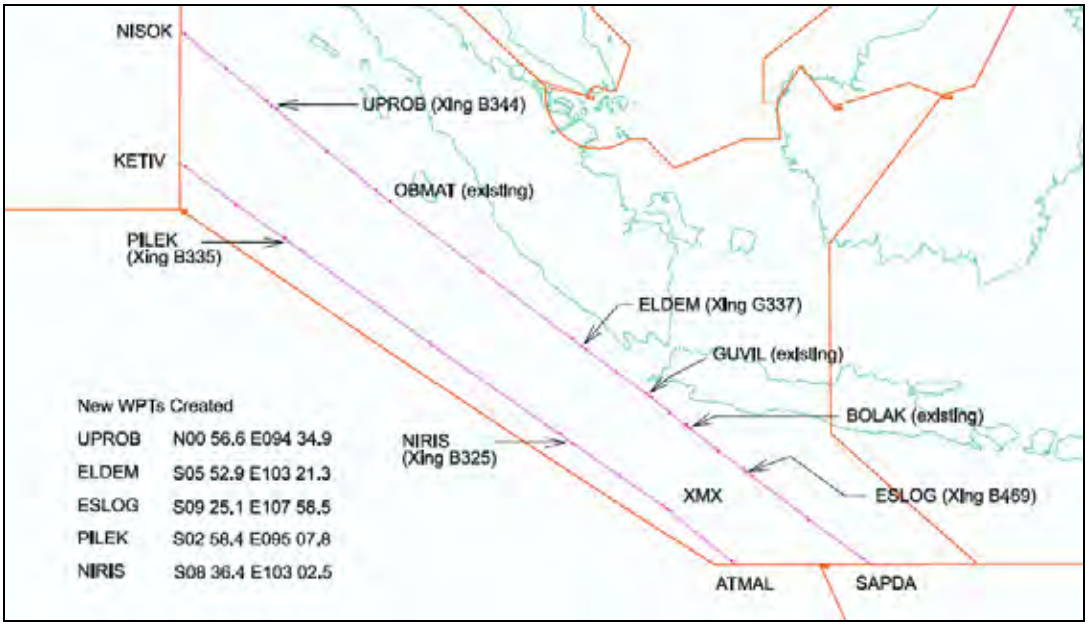


Figure 2 -Indonesian Transitions

5.6 The meeting recognized that additional connector routes through the Chennai and Colombo FIRs respectively to the Indonesia FIR boundary at NISOK and KETIV were necessary to complete the route proposal. India supported the proposal and informed the meeting that these tracks would link to fixed routes already in place in FIRs. India agreed to implement as soon as the coordination between Australia and Sri Lanka was completed and would take expeditious action in coordination with Australia to ensure that route access through Indian airspace was enabled.

5.7 In terms of the remaining route segments necessary in the Colombo FIR, as Sri Lanka was not represented at the meeting discussions in relation to the Colombo FIR did not take place. However, the Regional Office gave its strong support to the proposal and would coordinate with Sri Lanka to bring the proposal to the attention of Sri Lanka. Australia would also pursue independent coordination with Sri Lanka in this respect.

Implement Conditional Routes

5.8 The meeting recognized that the implementation of Conditional ATS Routes (CDRs), in which restrictions applied to the hours of operation, flight levels available or other conditions on the full availability of the route, not only enhanced ATS safety, reduced flight mileage and time, increased fuel saving and reduced CO_2 emission but also demonstrated effective civil-military coordination in accordance with APANPIRG Conclusion 16/17 in terms of the adoption of the equitable sharing of both convenience and inconvenience in the use of airspace and facilities by civil and military users.

5.9 APANPIRG/17 had considered that the conditional route implementations recently undertaken by India, Japan and Republic of Korea provided valuable, practical every day experiences and examples of what was intended by the related APANPIRG Conclusions and directly addressed Global Planning Initiative # 1 (GPI-1 *Flexible use of airspace*) from the Global Plan.

5.10 Accordingly, the meeting noted APANPIRG Conclusion 17/7 and 17/8 in regard to the implementation and definition of Conditional ATS Routes (CDRs) and congratulated India, Japan and Republic of Korea for the successful implementation of CDRs within their FIRs. The meeting also

commended the work of Malaysia in implementing a conditional route in late 2006 in support of the ATFM operational trial.

ATS Route Catalogue

5.11 The meeting recalled that the ATS Route Network Review Task Force (ARNR/TF, disbanded) developed the draft *Asia/Pacific ATS Route Catalogue*, which was adopted by APANPIRG/16 as a regional planning tool in support of the Basic Air Navigation Plan.

5.12 The Catalogue Version 1 was published in August 2005 and Version 3 is now available from the ICAO Asia/Pacific web site (http://www.icao.int/apac/) under the menu "eDocuments". Since August 2005, on-going updates have been undertaken by the Regional Office based on the information made available by States and airspace users.

5.13 The Secretariat encouraged all States and international organisations to review the ATS Route Catalogue regularly in accordance with APANPIRG Conclusion 16/10, take action on the route requests in the Catalogue and provide updated information to the Regional Office regularly for inclusion in the Catalogue.

Agenda Item 6: Development of State Contingency Plans

6.1 The meeting was informed of the outcome of ICAO Special Implementation Project (SIP) – Contingency Plan approved by the ICAO Council for 2006 pursuant to APANPIRG Conclusion 16/15 *Special Implementation Project for Development of a State Contingency Plan.*

6.2 After reviewing the draft National ATM Contingency Plans for the Jakarta and Ujung Pandang FIRs which were prepared as a result of the 2006 ICAO Special Implementation Project, APANPIRG/17 adopted the plans as guidance in terms of the following Conclusion:

Conclusion 17/11 – Adoption of Model National ATM Contingency Plan

That the National ATM Contingency Plans of Jakarta and Ujung Pandang FIRs, which were prepared as a result of the 2006 ICAO Special Implementation Project be adopted as a model for Asia/Pacific States in the preparation of national ATM contingency plans.

6.3 A soft copy of the draft National ATM Contingency Plan for the Jakarta FIR, which would be subject to finalization by Indonesia in due course, is reproduced as **Appendix C** to this report for reference. A similar draft ATM contingency plan has been prepared for the Ujung Pandang FIR and is available from the Regional Office on request

Agenda Item 7: Civil Military Coordination

7.1 The meeting was informed that preparations for the Civil and Military Air Traffic Management Summit 2007 (CMAC 2007) that would be hosted by AEROTHAI in Bangkok, Thailand from 26 Feb – 1 March 2007 were progressing well. The CMAC07 is jointly sponsored by the Air Traffic Control Association, the American Association of Airport Executives and the US Department of Defence, with support from the US FAA. CMAC07 is the largest forum of its kind where senior civil and military leaders discuss visions, opportunities and plans for civil/military collaboration to meet the evolving needs of the worldwide aviation community.

7.2 The CMAC07 would address civil/military airspace, air traffic and airport issues driven by evolving needs around the world and the conflict that arises in use of shared airspace. Efforts to increase capacity, especially in shared airspace, must fully integrate future civil and national air sovereignty needs.

7.3 In light of the matters raised in ATFM/TF/9 relating to the need to urgently realign ATS routes to assist with the ATFM operational trial, the meeting urged Pakistan and India to attend the CMAC07 with delegations that included both civil and military representatives.

Agenda Item 8: Review and update BBACG Task List

8.1 The meeting recognized the recent introduction of ICAO Strategic Objectives (SOs) and the Global Plan with associated Global Planning Initiatives (GPIs) and appreciated the Secretariat efforts drafting a new format Task List for the BBACG that included alignment to ICAO Strategic Objectives and Global Planning Initiatives. The meeting reviewed, updated and adopted the restructured BBACG Task List, a copy of which is reproduced in **Appendix D.**

8.2 In considering the ICAO Strategic Objectives and Global Planning Initiatives, the meeting suggested that the inclusion of this information in the summary at the commencement of each working/information paper to the BBACG would assist in rapidly raising awareness of the new definitions amongst delegates. The Regional Office agreed to institute this practice where appropriate and sought assistance from States and international organizations in also partaking in this practice.

Interregional ATS Coordination

8.3 In reviewing Item 13 on the Task List, the meeting noted with disappointment that the limited resources at the Regional Office had led to the deferral of plans for the Regional Office to pursue a periodic 'Whole of Indian Ocean' meeting. IATA noted that a number of airlines were expanding operations in this airspace and that ultra-long haul flights were becoming a greater part of the civil aviation landscape in the India Ocean area. IATA noted that currently, beyond the very active BBACG and its associated task forces, there was little ICAO presence in the Indian Ocean.

8.4 Although there had previously been an active ICAO Indian Ocean ATS Coordination Group (IOACG) and the ICAO South West Asia ATS Coordination Group (SWACG) for the Arabian Sea, no current ICAO forum operated in these areas. This had obliged States, IATA and airspace users to undertake informal activities and had led to the formation of the Informal Indian Ocean ATS Coordination Group (IIOACG) and, more recently, the Arabian Sea Indian Ocean ATS Coordination Group (ASIOACG). IATA requested that its concern at this situation be relayed via the ATM/AIS/SAR Sub Group to APANPIRG.

8.5 The Regional Office informed the meeting that, after an abeyance of 10 years, the SWACG meeting was likely to be reactivated under the auspices of the Cairo Office of ICAO and a meeting had tentatively been scheduled for May 2007. As the IOACG was under the jurisdiction of the Nairobi Office of ICAO, the Bangkok Office had little information available in this respect.

Agenda Item 9: Any other business

ANSP Seamless Airspace Meeting

9.1 The meeting was informed that, as a result of the Regional ANSP Conference sponsored by Airservices Australia and held at the Gold Coast in Australia in August 2006, a Seamless Airspace Working Group meeting hosted by AEROTHAI had been proposed, to be held at the AEROTHAI Headquarters in Thailand tentatively on 22 – 24 May, 2007. Invitations to attend this important meeting were in the process of being sent to States and aviation organizations concerned.

9.2 The purpose of the meeting would be to identify blocks of airspace incorporating multiple FIRs where commonality of technology could lead to improved efficiencies in the traffic handling of aircraft over large areas. These blocks of airspace should be related to the major traffic flows within the Asia/Pacific region, identified in the Regional CNS/ATM Plan.

ICAO Language Proficiency Provisions

9.3 The meeting recalled that on 5 March 2003, the Council (168/9) adopted Amendment 164 to Annex 1 – *Personnel Licensing* containing language proficiency requirements applicable on 27 November 2003. The provisions require that, as of 5 March 2008 pilots, aeronautical station (radio operators) and air traffic controllers shall demonstrate the ability to speak and understand the language used for radiotelephony communications to the level specified in the language proficiency requirements of ICAO documentation. The minimum level that is required be achieved is Operational Level 4.

9.4 The President of the Commission indicated to the Council that the progress of implementation of the new language proficiency requirements would be monitored through existing mechanisms such as the Planning and Implementation Regional Groups (PIRGs). A global survey of the status of implementation was conducted in early 2006 (APANPIRG Conclusion 16/21 refers) through all ICAO Regional Offices, in order to provide the ANC with up-to-date information for their review.

9.5 The meeting noted the following outcomes of a review by the ICAO Air Navigation Commission (ANC) in considering Commission working paper AN-WP/8138 and subsequent action taken by the Secretariat:

- *agreed* that the applicability date of 5 March 2008 for the demonstration of language proficiency in accordance with the requirements contained in Appendix 1 to Annex 1, be retained;

- *agreed* that States be informed of the Commission's decision and reminded of the need to take the necessary measures to implement the language proficiency requirements in a timely manner;

- *agreed* to establish an ad hoc group to develop, in coordination with the Secretariat and based on the discussion, a strategy to support the timely and effective implementation of the language proficiency requirements by States; and

- *requested* the Secretariat to provide an updated status of the implementation of the language proficiency provisions in States during the 174th Session;

9.6 Following the conclusions of the Commission, the Secretariat took the following actions:

- State Letter AN 12/44-06/90 dated 27 October 2006, was transmitted advising States that the Commission agreed that the applicability date of 5 March 2008 be retained and that they should take the necessary measures to implement the language proficiency requirements in a timely manner. The letter also contained a questionnaire concerning implementation of language proficiency requirements to be completed by 15 January 2007. The data collected through the questionnaire will be reviewed by the Commission in early 2007.

- An ad hoc group has been established and is considering options to assist States in the implementation of the language proficiency requirements.

- ICAO will host the second International Aviation Language Symposium from 7 to 9 May 2007. The theme of the symposium will be "Language Proficiency: Implementing the Requirements". The objective is to present proactive implementation models that ensure quality aviation language training and testing.

Airbus A380 Wake Vortex – Revised Guidance Material

9.7 The meeting recalled that in November 2005 two State Letters were promulgated advising States to exercise considerable caution with regard to horizontal and vertical separation between A380 aircraft and other aircraft until more definitive guidance was provided by the ad hoc working group of experts studying the matter.

9.8 In late 2006, after the release of the report by the working group of experts under the auspices of the United States Federal Aviation Administration, the European Organization for the Safety of Air Navigation (Eurocontrol), the Joint Aviation Authorities and the manufacturer, the Regional Office had issued a State Letter (**Appendix E** refers) Ref.: T3/4.4 – AP099/06 (ATM). The State Letter included revised guidance material on wake vortex separation criteria for the A380 based on the completed flight test programme and current outcome of the work group and strongly encouraged the implementation of this revised guidance as soon as possible.

Search and Rescue Workshop

9.9 As a result of the success of the International SAREX and Seminar held in Chennai in March 2005, APANPIRG/16 had raised Conclusion16/23 calling for ICAO to consider a Special Implementation Project (SIP) for a similar event to assist Sates of the Pacific. The meeting was informed that Search and Rescue SIP will be conducted in the first quarter of 2007, in order to enhance SAR services in the region. The SIP will take the format of a special 5 day Search and Rescue Workshop, to be conducted at the Kotaite Wing of the ICAO Asia/Pacific Regional Office from 26 February to 2 March, 2007. Although the SAR Workshop will use exercise scenarios with a Pacific area focus, the Workshop is a regional event and is open to all States.

9.10 Accordingly, the State Letter Ref.: T3/14.5, T3/11.6 – AP113/06 (ATM) (**Appendix F** refers) was distributed inviting representation from all States regionally at the Pacific area SAR Workshop.

Second Inter-regional Coordination Meeting (IRCM/2)

9.11 The meeting was informed that the Second Inter-Regional Co-Ordination Meeting (IRCM/2) on interface issues between the Asia/Pacific (APAC), European and North Atlantic (EUR/NAT) and Middle East (MID) Regional Offices of ICAO was held at the EUR/NAT Office in Paris on 11 to 13 September 2006.

9.12 The meeting reviewed a number of issues of relevance to BBACG activities, raising action items accordingly (**Appendix G** refers). A copy of the full meeting report of IRCM/2 is available from the Regional Office website at http://www.icao.int/apac/ under the "Meetings" menu.

First Meeting of ASIOACG

9.13 The ASIOACG/1 meeting was held in May 2006. The establishment of ASIOACG was the result of a proposal by the Regional Office to establish an annual meeting of the "Whole of Indian Ocean ATS Coordination Group" and by Airservices Australia through its active participation in the existing "Informal Indian Ocean ATS Coordination Group" (IIOACG). Accordingly, Airservices Australia in consultation with ICAO Asia and Pacific Office and Emirates undertook to convene the ASIOACG/1 meeting for the establishment of ASIOACG, to promote the expansion of ADS/CPLDC services across the region as well as the planning and implementation of airline defined optimum routes and related ATM procedures.

9.14 As discussed in paragraphs 2.1 to 2.3 of the FIT-BOB/8 report in Section 1 of this document, ASIOACG/1 sought interim assistance from the FIT-BOB and BOB-CRA in providing datalink implementation assistance. The following is a summary of the subjects also considered at ASIOACG/1 and the main points arising:

- HF and data link communications: It was recognised that reliable voice/data link communication services were a pre-requisite for the introduction of reduced separation standards in oceanic airspace.

- Mumbai ADS/CPLDC facilities: The Mumbai ADS/CPDLC facilities were co-located with ATC and data link communications could be operated on a "third-party" basis (similar to the existing arrangements for HF communications) subject to the technical capability requirements described above.

- FIT/CRA arrangements for ASIOACG: Where it was intended to introduce ADS/CPLDC systems to support reduced separation standards (e.g. 50/50 and 30/30 based on RNP10 and RNP4 respectively), then it would be necessary to establish a FIT/CRA to enable States to meet the Annex 11 safety monitoring provisions.

- Update from ANSPs on CNS/ATM initiatives: Updates were provided by Australia, India, Oman and Yemen on the status of their CNS/ATM capability.

- Industry affairs and user requirements: The meeting recognised the importance of ICAO Doc 9750 "Global Air Navigation Plan for CNS/ATM Systems" and agreed to adopt a "Capacity Enhancements Table" for ASIOACG.

- ATS route structures, flex tracks and other airspace capacity enhancements: The meeting agreed to support the implementation of the Connector Routes and other initiatives to support Flex Track operations.

- Data link services (ADS-C/CPDLC), FANS1/A Operations Manual (FOM) and HF communications: It was agreed that ASIOACG would adopt the FOM, in conjunction with appropriate ICAO documentation, as the working document for FANS1/A operations within the ASIOACG area of responsibility.

- ATS Coordination – facilities and procedures (including AIDC): OLDI tests were being conducted between Muscat Oman and Bahrain ACCs during June 2006.

- Air Traffic Flow Management (ATFM): Recognizing the importance of effective ATFM, the meeting agreed that ASIOACG should develop ATFM options for the future, which would be conveyed through the ICAO Regional Offices to both APANPIRG and MIDANPIRG.

- Civil/Military coordination and "Due Regard": The meeting agreed that "Due Regard" issues should be referred to the ICAO Civil/Military Coordination Meeting, to be hosted by CAMA in Sana'a (Republic of Yemen) on the 18th and 19th of June 2006.

- ADS-B: ASIOACG/1 was advised by India of their ADS-B trials, which was on test at the Chennai ACC.

ICAO Website for the Flight Safety Information Exchange (FSIX)

9.15 The Secretariat drew the attention of the meeting to the ICAO Flight Safety Information Exchange website (FSIX), which had been developed by ICAO to provide the aviation community with access to safety-related information. The website was now being updated on a regular basis and contains a very significant volume of information provided by both ICAO and Contracting States related to all aspects of aviation safety and related matters. Audit reports from the Universal Safety Oversight Audit Programme (USOAP) were also regularly posted to the site.

9.16 ICAO considers that cooperation between States and information exchange are essential elements for the success of any aviation safety-related activity, in pursuit of the common goal to improve aviation safety. This site at http://www.icao.int/fsix/ is intended as a portal to existing safety related websites as well as a place to exchange information through various newsgroups.

Agenda Item 10: Date and Venue for the BBACG/19 meeting

10.1 The meeting, in recognizing that the work of the ATFM/TF and the FIT-BOB had added additional meeting and resource burdens on those involved in BBACG matters, agreed that the meeting scheduled should be kept to a minimum and where possible, to combine meetings and progress work by correspondence.

10.2 The meeting was informed that ATFM/TF had been scheduled on 30 April – 3 May 2007 at the Regional Office and that further meetings of the ATFM/TF would need to be held during the second half of 2007 in order to monitor the ATFM implementation. Additionally, it was likely that a meeting of FIT-BOB would held in late 2007 to progress the datalink operational trials.

10.3 As the ATFM/TF and the FIT-BOB were undertaking major components of the work of the BBACG, the meeting considered that there was not an urgent need for the BBACG to meet during the next 12 months. Accordingly, the Regional Office would schedule the BBACG/19 meeting during January/February 2008 and advise the meeting arrangements in due course.

Closing of the meeting

10.4 In closing the meeting, Mr. Tiede thanked delegates for their participation in the meeting and for the excellent work achieved. The approval by the Government of India for the CRA funding arrangements was a breakthrough that would allow datalink operations in the Bay of Bengal and Arabian Sea to come to fruition under the guidance of the FIT-BOB and BOB-CRA. Good progress had been made in many of the issues of the ATFM/TF and, although implementation could not be approved this time, completion of the outstanding actions on the list of Action Items would enable a 'Go' decision to be taken at the next meeting in late April to meet a June 2007 implementation. The BBACG had also reviewed a diverse group of ATM, AIS and SAR related matters and Mr. Tiede urged States to take advantage of the model ATM contingency plan documentation to prepare/update individual State plans as soon as possible.

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TERMS OF REFERENCE

Western Pacific/South China Sea RVSM Scrutiny Working Group (WPAC/SCS RSG)

Objective

To identify, study and address problems in the safety, efficiency and harmonization of RVSM operations in the Western Pacific/ South China Sea area.

Terms of Reference

a) To assemble subject matter experts from affected States and international organizations, including those experienced in air traffic control, data analysis and risk modeling;

b) To analyze and evaluate problems in air traffic operations in the RVSM airspace of the WPAC/SCS area regarding RVSM transition activities;

c) To promote the minimization of transition activities and enhance the harmonization of flight level assignment with the adjacent regions where RVSM was implemented;

d) To analyze and evaluate problems in air traffic operations in the RVSM airspace of the WPAC/SCS area regarding large height deviation (LHD) occurrences;

e) To identify any other problems associated with RVSM operations in WPAC/SCS airspace;

f) To recommend remedial actions to improve safety and reduce risk in RVSM operations; to identify beneficial trends in system performance and promote practices that ensure continued safe operations;

g) To report to the ATM/AIS/SAR Subgroup in order to assist in determining the safety, efficiency, and harmonization of RVSM implementation in the WPAC/SCS area; and

h) To keep the Regional Airspace Safety Monitoring Advisory Group of APANPIRG (RASMAG) up to date with developments.

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STATE ATS SAFETY CONTACT OFFICERS

APANPIRG Conclusion 16/62 required the nomination by States of a Contact Officer or position to act as the focal point for ATS safety related activities and in particular for the submission and coordination of ATS incident reports. The ICAO Asia and Pacific Regional Office (Bangkok, Thailand) maintains the following list in this regard.

Attention is drawn to the provisions in the ICAO Air Traffic Services Planning Manual (Doc 9426), Part II, Section 1, Chapter 3 – *ATS Incident Reporting* in relation to the reporting and investigation of ATS incidents.

(Last Updated 26 January 2007)

	Name	Title/Organization	TEL/FAX Number	E-mail
1.	**AUSTRALIA**			
	Mr. Jason Harfield	General Manager, Safety Management Group Airservices Australia PO Box 367 Canberra, ACT 2601 Australia	Tel +61-2-6268-4601 Fax +61-2-6268-5695	jason.harfield@airservicesaustralia.com
2.	**BANGLADESH**			
	Mohammad Kaisar Alam	Director (Flight Safety & Regulations) Civil Aviation Authority, Bangladesh FSR Division CAAB Headquarters, Kurmitola Dhaka – 1229 Bangladesh	Tel + 8802 891 1126 Fax + 8802 891 3322 + 8802 891 4709	dfsrcaab@accesstel.net
3.	**BHUTAN**			

	Name	Title/Organization	TEL/FAX Number	E-mail
4.	**BRUNEI DARUSSALAM**			
	Ali Hj Mohammad Yusof	Operations Officer-Airworthiness Department of Civil Aviation Ministry of Communications Brunei International Airport Bandar Seri Begawan BB2513 Negara Brunei Darussalam	Tel: (673)(2)2330142, 2332741 Fax: (673)(2)2331706, 2345345	alex_keasberry@civil-aviation.gov.bn aliyhms@yahoo.com
5.	**CAMBODIA**			
	Mr. Keo Sivorn	Director of Flight Operations and Air Safety, Directorate General of Civil Aviation State Secretariat of Civil Aviation No. 62, Preah Norodom Blvd, Phnom Penh,Kingdom of Cambodia	Tel 855 12 810 330 Fax 855 23 725 938	k_sivorn@yahoo.com SITA : PNHCAYA AFTN: VDPPYAYC
6.	**CHINA**			
	Mr. Xiao Jing	Deputy Director of Air Traffic Control Division, Air Traffic Management Bureau of CAAC 12# East San-huan Road Middle, Chaoyang District Beijing, 100022, China	Tel : (+86 10) 8778 6812 Fax : (+86 10) 8778 6810	xiaojing@263.net.cn
7.	**COOK ISLANDS**			
	Aukino Tairea	Secretary of Transport Ministry of Transport PO Box 61 Rarotonga, Cook Islands	Tel : 682 28810 Fax : 682 28816	transport@oyster.net.ck
8.	**DPR KOREA**			
	Mr.Kim Ryong Ho	Director, Flight Safety Standard Department GACA Sunan District, Pyongyang, DPR of Korea	Tel 850-2-18111 Ext – 8109 Fax 850-2-3814410 Ext-4625	gaca@silibank.com

	Name	Title/Organization	TEL/FAX Number	E-mail
9.	**FIJI**			
	Mr. Robert Y Fong	Controller Ground Safety Civil Aviation of the Fiji Islands Private Mail Bag NAP 0354 Nadi Airport, Nadi Fiji Islands	Tel 679-672-1555 EXT 3371 Fax 679-672-1500	cgs@caaf.org.fj
10.	**FRENCH POLYNESIA**			
	Mr. Reuter Numa Tahiti Civil Aviation	Quality and Safety executive manager BP H1 98849 Nounea Cedex Direction des Affaires Strate'giques et Technique 50 rue Henry FARMAN 75720 PARIS cedex 15 FRANCE	Tel : 687 26 51 82 Fax : 687 26 52 06	numa.reuter@aviation-eivile.gour.fr ueva.paquier@aviation.eivile.gour.fr
11.	**HONG KONG CHINA**			
	Alva Chi-wing FUNG	Senior Operations Officer Hong Kong,China/ Civil Aviation Department 46/F Queensway Government Offices 66 Queensway Hong Kong, China	Tel 852 2867 4214 Fax 852 2877 8542	acwfung@cad.gov.hk
12.	**INDIA**			
	Mr. Manoj Bokade	Deputy Director of Operations Office of Director General of Civil Aviation, Ministry of Civil Aviation, Government of India, New Delhi 110003	Tel 91-11-24620273, 24610629,24622495 Ext. 428 Fax : 91-11-24633140	N/A

	Name	Title/Organization	TEL/FAX Number	E-mail
13.	**INDONESIA**			
	Mr. Ichwanul Idrus	Director of Flight Safety Directorate of Air Communication JL. MERDEKA BARAT No. 8 Jakarta 10110, Indonesia	Tel 62 21 350 5550, 62 21 350 5006 Fax 62 21 350 5135, 5139, 7144	N/A
14.	**JAPAN**			
	Near Collision Report by PIC	Safety and Security Inspector General Japan Civil Aviation Bureau 2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo, 100-8918 Japan	Tel +81-3-5253-8701 Fax +81-3-3580-5233	N/A
	Accident/Serious Report	Flight Standard Division Japan Civil Aviation Bureau 2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo, 100-8918 Japan	Tel +81-3-5253-8731 Fax +81-3-5253-1661	
	ACAS RA Report	Air Traffic Control Division Japan Civil Aviation Bureau 2-1-3, Kasumigaseki, Chiyoda-ku, Tokyo, 100-8918 Japan	Tel +81-3-5253-8749 Fax +81-3-5253-1664	
15.	**KIRIBATI**			
16.	**LAO PDR**			
17.	**MACAU,CHINA**			

		Name	Title/Organization	TEL/FAX Number	E-mail
18.	**MALAYSIA**				
	1	Accident/Incident Ahmad Nizar Zolfakar	Director ATS Inspectorate DCA Malaysia	Tel 603-8871-4000 Fax 603-8871-4290	nizar@dca.gov.my
	2	Safety related Chew Lam Leong	Assistance Director, Safety Management Unit Air Traffic Services Division Department of Civil Aviation 4th floor , podium block B Lot 4G4 Precint 4 Federal Government administrative Centre 62570 Putrajaya, Malaysia	Tel 603-8871-4210 Fax 603-8871-4290	chew@atsdca.gov.my chewll@dca.gov.my
19.	**MALDIVES**				
		Ahmed Nazim	Director, Standards Maldives/Civil Aviation Department 7th Floor P A Complex Hilaalee Magu, Male' Rep of Maldives	Tel (960) 3342984 Fax (960) 3323039	nazim@aviainfo.gov.mv
20.	**MARSHALL ISLANDS**				
		Mr. Stanley Myazoe	Director, Directorate of Civil Aviation P.O. Box 1114 Majuro, Marshall Islands MH 969690	Tel 011 (692) 625-6179, 455-3330 Fax 011 (692) 625-6170	rmidca@ntamar.net SMS-4553330@cell.ntamar.net
21.	**MICRONESIA**				
22.	**MONGOLIA**				

	Name	Title/Organization	TEL/FAX Number	E-mail
23.	**MYANMAR**			
	Mr. U YOA SHU	Deputy Director (Air Traffic Services) Department of Civil Aviation Yangon International Airport Airport Road, DCA Headquarter Building Yangon, Myanmar	Tel : 951 665838, 665144, 665637 Fax : 951 665124	dca.myanmar@mptmail.net.mm dca.myanmar@mptmail.net.mm(ATB)
24.	**NAURU**			
25.	**NEPAL**			
		Director, ATS Department Civil Aviation Authority of Nepal Head Office, Kathmandu	Tel : 977 1 426 2518 Fax : 977 1 426 2326	cnsatm@caanepal.org.np
26.	**NEW CALEDONIA**			
27.	**NEW ZEALAND**			
	Mr. Peter Davey	Manager, Policy and International Civil aviation Authority of New Zealand 10 Hutt Road Petone P. O. Box 31 441 Lower Hutt New Zealand	Tel : +64 4 560 9400 Fax : +64 4 569 2024	piru@caa.govt.nz

	Name	Title/Organization	TEL/FAX Number	E-mail
28.	**PAKISTAN**			
	Mr. Nusrat Ullah Khan	Director Operations Civil Aviation Authority - Pakistan, HQ Civil Aviation Authority, Terminal 1, Operations Directoriate, JIAP Karachi 75200, Pakistan	Tel : 92-21-9248745 Fax : 92-21-9248744	dops@caapakistan.com.pk
29.	**PALAU**			
	Mr. Cordino Soalablai	Civil Aviation Specialist Koror, Palau/Ministry of Commerce & Trade P.O. Box 1471 Koror, Republic of Palau 96940	Tel : 680 488-2111/587-2115 Fax : 680 488-3207	mincat@palaunet.com c.soalablai@palaunet.com
30.	**PAPUA NEW GUINEA**			
	Mr. Gabriel Salayau	Assistant Manager ATS Operations(SS&F) Papua New Guinea Civil Aviation Authority P.O. Box 684 Boroko Port Morseby, N.C.D Papua New Guinea	Tel : (675) 324 4643 Fax : (675) 325 0749	gsalayau@caa.com.pg
31.	**PHILLIPPINES**			
	Capt. Jose R. Saplan Wilfredo S. Borja	Check Pilot / Chairman, AAIB Air Transportation Office, Philippines Old MIA Road, Pasay City 1301, Philippines Director, Air Traffic Service Air Transportation Office MIA Road, Pasay City 1300, Philippines	Tel : (632) 8799 225 / 218 Fax : (632) 8799 218 Tel : (632) 8799 161 / 259 Fax : (632) 8799 259	saplan6864@yahoo.com

	Name	Title/Organization	TEL/FAX Number	E-mail
32.	**REP. OF KOREA**			
	Mr. Choi Hoo Yung Assistant Director, Flight Standards Division	Flight Standards Division Civil Aviation Safety Authority 274 Gwahe-dong Gangseo-gu Seoul Republic of Korea	Fax : 82-2-6342-7249 Tel : 82-2-2662-2169	hooychoi@moct.go.kr
33.	**SAMOA**			
34.	**SOLOMON ISLANDS**			
	George Satu	Principal Flight Standard Officer Solomon Island Civil Aviation Division P.O. Box G8 Honiasa , Solomon Islands	Tel : 677 36567/36563 Fax : 677 36220	
35.	**SINGAPORE**			
	Heng Cher Sian Edmund	Project Officer (Airspace) Civil Aviation Authority of Singapore P.O. Box 1 Singapore Changi Airport Singapore 918141	Tel : 65-6541-2457 Fax : 65-6545-6516	edmund.heng@caas.gov.sq
	Dieu Eng Kwee	ATC Manager (Standard) Civil Aviation Authority of Singapore P.O. Box 1 Singapore 91814	Tel (65) 6541 2456 Fax (65) 6545 6516	dieu_eng_kwee@caas.gov.sq

	Name	Title/Organization	TEL/FAX Number	E-mail
36.	**SRI LANKA**			
	Atula Jayawicjrama	Deputy Director, Aerodromes and Navigation Services Sri Lanka Civil Aviation Authority No. 64, Supreme Building Galle Road Colombo - 3 Sri Lanka	Tel 94-11-243 6324, 077 359 6210 Fax 94-11-244 0231	atulacaa@sitnet.lk
37.	**THAILAND**			
	1. Mr Aphinun Vannangkura	Safety Director Aeronautical Radio of Thaialand LTD	Tel 662 287 8294 Fax 662 287 8609	aerosafety@aerothai.co.th
	2. Mr. Vutichai Singhamany	Director of Flight Standards Bureau Department of Civil Aviation Flight Standards Bureau 71 Ngarmduplee. RamaIV Rd. Tung Mahamek, Sathorn Bangkok, 10120	Tel : 662 287 4061 Fax : 662 286 2913	svutichai@aviation.go.th
	3. Mr. Choochart Mainoy	Air Traffic Services Advisor Airport Standards and Air Navigation Facilitating Division	Tel : 662 286 8159 Fax : 662 286 8159	cmainoy@hotmail.com

	Name	Title/Organization	TEL/FAX Number	E-mail
38.	**TONGA**			
	Viliami Ma'ake	Director of Civil Aviation Ministry of Civil Aviation P.O. Box 845 Salote Road Fasi Ministry of Civil Aviation, Tonga	Tel : + 676-24144 / 23401 Fax : + 676 24145 / 24296	vmaake@mca.gov.to
39.	**UNITED STATES**			
40.	**VANUATU**			
	Max Foon	Assistant Director – Flight Standard Private Mail Bag 9068 Port Vila Republic of Vanuatu	Tel : (678) 22819/23301 Fax: (678) 23783	civav@vanuatu.com.vu
41.	**VIET NAM**			

DRAFT

CONTINGENCY PLAN

JAKARTA FIR – PART I

Version 1.4

PREPARED BY

Indonesian Contingency Plan Project Team

AIR TRAFFIC SERVICES DIVISION
DIRECTORATE GENERAL OF AIR COMMUNICATIONS, INDONESIA

TABLE OF CONTENTS

FOREWORD

This is the first edition of the Indonesian Air Traffic Management (ATM) Contingency Plan for Air Traffic Services (ATS) for the Upper Airspace of the Jakarta Flight Information Region (FIR). The Contingency Plan will come into effect as determined by the Director General of the Directorate General Air Communications (DGAC), who is the authority for civil aviation operations in Indonesia.

This Contingency Plan (the Plan) is presented in two Parts: Part I for the Jakarta FIR, and Part II for the Ujung Pandang FIR. Part I of the Plan provides for the contingency arrangements to be introduced to permit the continuance of international flights to transit the Jakarta FIR, in the event that the air traffic and support services normally undertaken by the Jakarta Area Control Centre (ACC) should become partially or totally unavailable due to any occurrence that restricts flight operations. Similarly, Part II provides for the contingency procedures for the Makassar ACC. In the event of both ACCs becoming inoperative, Parts I and II will be activated catering for the worst case scenario of a total disruption in ATS for the Upper Airspace of the Jakarta and Ujung Pandang FIRs.

The Indonesian territory, which comprises an archipelago of some 17,500 islands extending about 5000 kms mainly in an east/west direction, is located in a major earthquake zone with many active volcanoes. A major earthquake could strike at any time causing serious damage to civil aviation and air navigation services, facilities and infrastructure. With two major ACCs located at Jakarta for the west region and Makassar for eastern region, it is considered highly unlikely that both facilitates would be out of service simultaneously. However, in the event that one ACC becomes inoperable, and ATS became unavailable, it would take several days to relocate and operate ATS from the remaining ACC and restore a more normal level of service. During this interim period, flight operations in Indonesia would be severely restricted.

This Plan has been developed in close co-operation and collaboration with the civil aviation authorities responsible for the adjacent FIRs and representatives of the users of the airspace. The Indonesian military authorities also have been consulted and recognize the requirement for the Plan and the civil aviation procedures that apply thereto.

The Plan will be activated by promulgation of a NOTAM issued by the Indonesian International NOTAM Office (INO) as far in advance as is practicable. However, when such prior notification is impracticable for any reason, the Plan will be put into effect on notification by the designated authority, as authorized by the DGAC. It is expected that the civil aviation authorities concerned, and the airline operators will fully cooperate to implement the Plan as soon as possible.

This Plan has been prepared in coordination with the International Civil Aviation Organization (ICAO) to meet the requirements in ICAO Annex 11 ─ *Air Traffic Services* to provide for the safe and orderly continuation of international flights through Indonesian airspace.

Any proposed amendments to this plan shall be forwarded to:

Director General
Directorate General of Air Communications
Jl. Medan Merdeka Barat No. 8
Gedung Karya Lt. 5
Jakarta, 10110, Indonesia
Tel: (62-21) 3505137
Fax: (62-21) 3505139
Email: dirjenud@indosat.net.id

RECORD OF AMENDMENTS

Amendment Number	Effective Date	Date Entered	Entered By	Paragraph/ Reference

PART I

ATM CONTINGENCY PLAN FOR INTERNATIONAL FLIGHTS TO TRANSIT THE UPPER AIRSPACE OF THE JAKARTA FIR

Effective: day/month/year/time(UTC)

1. OBJECTIVE

1.1 The Air Traffic Management (ATM) Contingency Plan, Part I contains arrangements to ensure the continued safety of air navigation in the event of partial or total disruption of air traffic services in the Jakarta FIR in accordance with ICAO Annex 11 ─ *Air Traffic Services*, Chapter 2, paragraph 2.29. The Contingency Plan provides the ATS procedures and contingency route structure using existing airways in most cases that will allow aircraft operators to transit the Jakarta FIR.

1.2 This Contingency Plan does not address arrangements for aircraft arriving and departing at Indonesian airports or for domestic flight operations within the territory of Indonesia.

2. STATES AND FIRS AFFECTED

2.1 In the event that the Director General, DGAC activates this Contingency Plan, the civil aviation authorities of the adjacent FIRs will be notified in accordance with the Letter of Agreement (LOA) established between the States concerned. The adjacent States, FIRs and ACCs directly affected by this Contingency Plan are as follows:

a) Australia

Melbourne FIR (ACC)
Brisbane FIR (ACC)

b) India

Chennai FIR (ACC)

c) Malaysia

Kota Kinabalu FIR (ACC)
Kuala Lumpur FIR (ACC)

d) Singapore

Singapore FIR (ACC)

e) Sri Lanka

Colombo FIR (ACC)

f) United States of America

Oakland FIR (ACC)

2.2 The contact details of the civil aviation authorities and organizations concerned are contained in **Appendix 1A.** These details should be kept up to date and relevant information provided to the DGAC as soon as practicable**.**

3. MANAGEMENT OF THE CONTINGENCY PLAN

3.1 The contingency measures set out in this Plan are applicable in cases of foreseeable events caused by unexpected interruptions in ATS caused by natural occurrences or other circumstances, which, in one way or another, may impair or totally disrupt the provision of ATS and/or of the related support services in the Jakarta FIR.

3.2 The following arrangements have been put in place to ensure that the management of the Contingency Plan provides for international flights to proceed in a safe and orderly fashion through the Upper Airspace of the Jakarta FIR.

Central Coordinating Committee

3.3 As soon as practicable in advance of, or after a contingency event has occurred, the Director General, DGAC shall convene the Central Coordinating Committee (CCC) comprised of representatives from:

1) Directorate General Air Communication

2) PT (Persero) Angkasa Pura I (ATS provider for the Ujung Pandang FIR and operator of major airports in the eastern region)

3) PT (Persero) Angkasa Pura II (ATS provider for the Jakarta FIR and operator of major airports in the western region)

4) Indonesian military authority

5) National Security Council / State Security Committee

6) Representative from the airlines committee

7) Meteorological service

8) Other participants as required

3.4 The CCC shall oversee the conduct of the Contingency Plan and in the event that the Jakarta ACC premises are out of service for an extended period, make arrangements for and facilitate the temporary relocation of the Jakarta ACC at the Makassar ACC and the restoration of ATS services. The terms of reference for the CCC will be determined by the DGAC.

3.5 Contact details of the members of the CCC are provided in **Appendix 1B**.

ATM Operational Contingency Group

3.6 The ATM Operational Contingency Group (AOCG) will be convened by the CCC with a primary responsibility to oversee the day to day operations under the contingency arrangements, and coordinate operational ATS activities, 24 hours a day, throughout the contingency period. The terms of reference of the AOCG will be determined by the CCC. The AOCG will include specialized personnel from the following disciplines:

- Air traffic services (ATS)
- Aeronautical telecommunication (COM)
- Aeronautical meteorology (MET)
- Aeronautical information services (AIS)
- ATS equipment maintenance service provider

The mission of the AOCG shall include taking the following action:

i) review and update of the Contingency Plan as required;

ii) keep up to date at all times of the contingency situation;

iii) organize contingency teams in each of the specialized areas;

iv) keep in contact with and update the ICAO Asia and Pacific Regional Office, operators and the IATA Regional Office;

v) exchange up-to-date information with the adjacent ATS authorities concerned to coordinate contingency activities;

vi) notify the designated organizations in Indonesia of the contingency situation sufficiently in advance and/or as soon as possible thereafter; and

vii) issue NOTAMs according to the corresponding contingency situation, this plan or as otherwise needed (example NOTAMS are provided in **Appendix 1C**). If the situation is foreseeable sufficiently in advance, a NOTAM will be issued 48 hours in advance.

4. CONTINGENCY ROUTE STRUCTURE

4.1 In the event of disruption of the ATC services provided by Jakarta ACC, contingency routes will be introduced to ensure safety of flight and to facilitate limited flight operations commensurate with the prevailing conditions. Existing ATS routes form the basis of the contingency routes to be used, and a flight level assignment scheme introduced to minimize potential points of conflict and to limit the number of aircraft operating simultaneously in the system under reduced air traffic services.

4.2 The contingency route structure for international flights is detailed in **Appendix 1D.** Additional contingency routes will be introduced as and when circumstances require, such as in the case of volcanic ash clouds forming.

4.3 In regard to domestic operations, if circumstances dictate, all flights shall be temporarily suspended until a full assessment of the prevailing conditions has been determined and sufficient air traffic services restored. A decision to curtail or restart domestic operations will be made by the CCC.

4.4 Aircraft on long-haul international flights and special operations (e.g. Search and Rescue (SAR), State aircraft, humanitarian flights, etc), shall be afforded priority for levels at FL290 and above. For flight planning purposes, domestic and regional operators should plan on the basis that FL290 and above may not be available.

4.5 International operators affected by the suspension of all operations from Indonesian airports will be notified by the relevant airport authority when operations may be resumed, and flight planning information will be made available pertaining to that airport. International flights who have received such approval may be required to flight plan via domestic routes to join international contingency routes.

4.6 International operators may elect to avoid the Indonesian airspace and route to the west around the Jakarta FIR via the Melbourne and Colombo FIRs to the Chennai and Kaula Lumpur FIRs and vice versa. Also, operators may avoid the Ujung Pandang FIR to the east routing via the Brisbane and Oakland FIRs to the Manila and Kota Kinabalu FIRs and vice versa. The contingency routes to be used in this scenario will be provided by the ATS authorities concerned.

5. AIR TRAFFIC MANAGEMENT AND CONTINGENCY PROCEDURES

Reduced ATS and provision of flight information services (FIS)

5.1 During the contingency critical period, ATS including ATC may not be available, particularly with regard to availability of communications and radar services. In cases where service are not available, a NOTAM will be issued providing the relevant information, including an expected date and time of resumption of service. The contingency plan provides for limited flight information and alerting services to be provided by adjacent ACCs.

5.2 The Indonesian airspace will be divided into two parts, North and South along latitude 05 00 00S then along the existing FIR boundary of the Jakarta and Makassar FIRs. FIS and flight monitoring will be provided by the designated ATS authorities for the adjacent FIRs on the contingency routes that enter their respective FIRs. A chart depicting the airspace arrangement is provided in **Appendix 1E**.

5.3 The primary means of communication will be by VHF or HF radio except for aircraft operating automatic dependent surveillance (ADS) and controller/pilot data link communication (CPDLC) systems. When CPDLC has been authorized for use by the relevant ATC authority, this will become the primary means of communication with HF as secondary. In the case of ADS automatic position reporting, this replaces voice position reporting and CPDLC or HF will become the secondary means. Details of the communication requirements are provided in **Appendix 1F.**

ATS Responsibilities

5.4 During the early stages of a contingency event, ATC may be overloaded and tactical action taken to reroute aircraft on alternative routes not included in this Plan.

5.5 In the event that ATS cannot be provided in the Jakarta FIR a NOTAM shall be issued indicating the following:

a) time and date of the beginning of the contingency measures;

b) airspace available for landing and overflying traffic and airspace to be avoided;

c) details of the facilities and services available or not available and any limits on ATS provision (e.g. ACC, APPROACH, TOWER and FIS), including an expected date of restoration of services if available;

d) information on the provisions made for alternative services;

e) any changes to the ATS contingency routes contained in this Plan;

f) any special procedures to be followed by neighbouring ATS units not covered by this Plan;

g) any special procedures to be followed by pilots; and

h) any other details with respect to the disruption and actions being taken that aircraft operators may find useful.

5.6 In the event that the Indonesian International NOTAM Office is unable to issue the NOTAM, the (alternate) International NOTAM Office at Singapore and/or Brisbane will take action to issue the NOTAM of closure airspace upon notification by the DGAC or its designated authority, e.g. the ICAO Asia and Pacific Regional Office.

Aircraft Separation

5.7 Aircraft separation criteria will be applied in accordance with the *Procedures for Air Navigation Services-Air Traffic Management* (PANS-ATM, Doc 4444) and the *Regional Supplementary Procedures* (Doc 7030).

5.8 The longitudinal separation will be 15 minutes. However, this may be reduced to 10 minutes in conjunction with application of the Mach number technique in light of developments and as authorized by the DGAC by the appropriate LOA.

5.9 The route structure provides for lateral separation of 100 NM and in cases where this is less, and for crossing routes, a minimum vertical separation of 2000 ft will be applied.

5.10 In the event that Indonesian ATC services are terminated, RVSM operations will be suspended and 2000 ft vertical separation minimum provided within Indonesian airspace using the RVSM flight levels contained in the table of cruising levels in ICAO Annex 2, Appendix 3. Details of the flight level assignment on the contingency routes are contained in Appendix 1D.

Flight level restrictions

5.11 Where possible, aircraft on long-haul international flights shall be given priority with respect to cruising levels.

Airspace Classifications

5.12 If ATC services become unavailable during the interruption of air traffic services, and depending on the level of service and anticipated outage of facilities, airspace classifications may be changed to reflect the reduced level of services. Changes to airspace classification will be notified by NOTAM.

Aircraft position reporting

5.13 Pilots will continue to make routine position reports in line with normal ATC reporting procedures.

VFR operations

5.14 VFR flights shall not operate in the Jakarta FIR if there are extensive disruptions to ATC facilities, except in special cases such as State aircraft, Medivac flights, and any other essential flights authorized by the DGAC.

Procedures for ATS Units

5.15 The ATS units providing ATC services will follow their unit emergency operating procedures and activate the appropriate level of contingency procedures in line with the operational Letter of Agreement. These procedures include the following:

a) the Jakarta ACC on determining that ATS may be reduced due to a contingency event, will inform pilots by the controller responsible of the emergency condition and advise if it is likely that the ACC will be evacuated and ATS suspended. In the event of it becoming necessary to evacuate the ACC building, the unit evacuation procedures will be activated, and time permitting, controllers will make an emergency evacuation transmission on the radio frequency in use providing pilots with alternate means of communication;

b) during the period the contingency procedures are in effect, flight plan messages must continue to be transmitted by operators to the Jakarta ACC and to the Makassar ACC via the AFTN using normal procedures;

Note: Depending on the phase of emergency and circumstances, the Indonesian INO may be suspended and alternative AFTN service introduced, e.g. at the Jakarta Airport Tower and Makassar ACC. Also, the INO of adjacent ATS authorities may be used to issue Indonesian NOTAMs.

c) on notification by DGAC, Indonesia, the ATS authorities operating the ACCs of the adjacent FIRs, viz. Brisbane, Chennai, Colombo, Kota Kinabalu, Kuala Lumpur, Melbourne, Oakland, Manila and Singapore will activate the contingency procedures in accordance with their respective operational Letter of Agreement;

d) prior to entry to the Jakarta FIR under the contingency arrangement, prior authorization must be obtained by operators to overfly the Jakarta FIR, and ATC approval granted by the adjacent ATC authority (ACC);

e) the adjacent ACC responsible for aircraft entering for transit of the Jakarta FIR must communicate via ATS coordination circuits, and not less than 30 minutes beforehand, the estimated time over the reporting point for entry into the next FIR after the Jakarta FIR;

f) the ACC responsible for aircraft entering the Jakarta FIR will instruct pilots to maintain the last flight level assigned and speed (MACH number if applicable) while overflying the Jakarta FIR;

g) the ACC responsible will not authorize any change in flight level or speed (MACH number, if applicable) later than 10 minutes before the aircraft enters the Jakarta FIR, except in the case specified in h) below;

h) to facilitate arrival and departures at Singapore on the following route sectors, aircraft may climb and descend under the control of Singapore ACC in line with normal operating procedures:

- R469 - From Pekan Baru (PKU) to TAROS;
- G579 - From Palembang (PLB) to PARDI; and
- B470 - From ANITO to Pangkal Pinang (PKP)

i) the ACC responsible prior to aircraft entering the Jakarta FIR will inform aircraft that they must communicate with the next (downstream) ATC unit 10 minutes before the estimated time of entry into the next FIR; and

j) operators may also chose to avoid the Indonesia airspace, and the controlling authorities of the FIRs concerned will provide alternative contingency routes as appropriate and these will be published by NOTAM.

Transition to contingency scheme

5.16 During times of uncertainty when airspace closures seem possible, aircraft operators should be prepared for a possible change in routing while en-route, familiarization of the alternative routes outlined in this Contingency Plan, as well as those which may be promulgated by a State (s) via NOTAM or AIP.

5.17 In the event of airspace closure that has not been promulgated, ATC should, if possible, broadcast to all aircraft in their airspace, what airspace is being closed and to stand by for further instructions.

5.18 ATS providers should recognize that when closures of airspace or airports are promulgated, individual airlines might have different company requirements as to their alternative routings. ATC should be alert to respond to any request by aircraft and react commensurate with safety.

Transfer of control and coordination

5.19 The transfer of control and communication should be at the common FIR boundary between ATS units unless there is mutual agreement between adjacent ATS units and authorization given to use alternative transfer of control points. These will be specified in the respective LOAs.

5.20 The ATS providers concerned should review the effectiveness of current coordination requirements and procedures in light of contingency operations or short notice of airspace closure, and make any necessary adjustments to the Contingency Plan and LOAs.

6. PILOTS AND OPERATOR PROCEDURES

Filing of flight plans

6.1 Flight planning requirements for the Jakarta FIR are to be followed in respect to normal flight planning requirements contained in the Indonesia Aeronautical Information Publication (AIP) and as detailed at **Appendix 1G.**

Overflight approval

6.2 Aircraft operators must obtain overflight approval from the DGAC, Indonesia prior to operating flights through the Jakarta FIR. During the period of activation of this Contingency Plan,

when ATS is not being provided by Indonesia, the adjacent ATS authority will approve aircraft to enter the Jakarta FIR on the basis that operators have obtained prior approval, and the responsibility remains with the operator to ensure such approval has been obtained.

Pilot operating procedures

6.3 Aircraft overflying the Jakarta FIR shall follow the following procedures:

a) all aircraft proceeding along the ATS routes established in this Contingency Plan will comply with the instrument flight rules (IFR) and will be assigned a flight level in accordance with the flight level allocation scheme applicable to the route(s) being flown as specified in **Appendix 1D**;

b) flights are to light plan using the Contingency Routes specified in **Appendix 1D**, according to their airport of origin and destination;

c) aircraft are to operate as close as possible to the centre line of the assigned contingency route;

d) pilots are to keep a continuous watch on the specified contingency frequency as specified in **Appendix 1F** and transmit the aircraft's position in line with normal ATC position reporting procedures;

e) keep navigation and anti-collision lights on while overflying the Jakarta FIR;

f) pilots are to maintain during their entire flight time within Jakarta FIR, the flight level last assigned by the last ACC responsible prior to the aircraft entering the Jakarta FIR, and under no circumstances change this level and Mach Number, except in cases of emergency and for flight safety reasons. In addition, the last SSR transponder assigned shall be maintained or, if no transponder has been assigned, transmit on SSR code 2000;

g) aircraft are to reach the flight level last assigned by the responsible ACC at least 10 minutes before entering the Jakarta FIR or as otherwise instructed by the ATC unit in accordance with the LOA with Indonesia;

h) pilots are to include in their last position report prior to entering the Jakarta FIR, the estimated time over the entry point of the Jakarta FIR and the estimated time of arrival over the relevant exit point of the Jakarta FIR;

i) pilots are to contact the next adjacent ACC as soon as possible, and at the latest, ten (10) minutes before the estimated time of arrival over the relevant exit point of Jakarta FIR;

j) pilots are to strictly adhere to the ICAO Traffic Information Broadcasts by Aircraft (TIBA) (reproduced in **Appendix 1H)**, and maintain a continuous listening watch on the international air to air VHF frequency 123.45 MHz, as well as on the specified VHF and HF frequencies listed in Appendix 1F. When necessitated by emergency conditions, pilots are to transmit blind on these frequencies, their current circumstances and the commencement and completion of any climb and descent or deviation from the cleared contingency route;

k) whenever emergencies and/or flight safety reasons make it impossible to maintain the flight level assigned for transit of Jakarta FIR, pilots are to climb or descend well to the right of the centerline of the contingency route, and if deviating outside the Jakarta FIR, to inform immediately the ACC responsible for that airspace. Pilots are to make blind broadcast on the IFBP VHF frequency 123.45 MHz of the relevant emergency level change message (comprising the aircraft call sign, the aircraft position, the flight levels being vacated and crossed, etc);

l) pilots are to maintain own longitudinal separation of 15 minutes from preceding aircraft at the same cruising level; and

m) not all operational circumstances can be addressed by this Contingency Plan and pilots are to maintain a high level of alertness when operating in the contingency airspace and take appropriate action to ensure safety of flight.

Interception of civil aircraft

6.4 Pilots need to be aware that in light of current international circumstances, a contingency routing requiring aircraft to operate off normal traffic flows, could result in an intercept by military aircraft. Aircraft operators must therefore be familiar with international intercept procedures contained in ICAO Annex 2 –*Rules of the Air*, paragraph 3.8 and Appendix 2, Sections 2 and 3.

6.5 The Indonesian military authority in the interest of national security and safety may intercept civil aircraft over the territory of Indonesia in the event that a flight may not be known to and identified by the military authority. In such cases, the ICAO intercept procedures contained in Annex 11, Attachment C (reproduced in **Appendix I**) will be followed by the military authority, and pilots are to comply with instructions given by the pilot of the intercepting aircraft. In such circumstances, the pilot of the aircraft being intercepted shall broadcast information on the situation.

6.6 If circumstances lead to the closure of the Indonesian airspace and no contingency routes are available through the Jakarta and Ujung Pandang FIRs, aircraft will be required to route around the Indonesian airspace. As much warning as possible will be provided by the appropriate ATS authorities in the event of the complete closure of Indonesian airspace.

6.7 Pilots need to continuously guard the VHF emergency frequency 121.5 MHz and should operate their transponder at all times during flight, regardless of whether the aircraft is within or outside airspace where secondary surveillance radar (SSR) is used for ATS purposes. Transponders should be set on a discrete code assigned by ATC or select code 2000 if ATC has not assigned a code.

7. COMMUNICATION PROCEDURES

Degradation of Communication - Pilot Radio Procedures

7.1 When operating within the contingency airspace of the Jakarta FIR, pilots should use normal radio communication procedures where ATS services are available. These will be in accordance with the communication procedures in this Plan or as otherwise notified by NOTAM.

7.2 If communications are lost unexpectedly on the normal ATS frequencies, pilots should try the next applicable frequency, e.g. if en-route contact is lost then try the next appropriate frequency, that is, the next normal handover frequency. Pilots should also consider attempting to contact ATC on the last frequency where two-way communication had been established. In the

absence of no communication with ATC, the pilot should continue to make routine position reports on the assigned frequency, and also broadcast positions in accordance with the ICAO TIBA.

Communication frequencies

7.3 A list of frequencies to be used for the contingency routes and the ATS units providing FIS and air-ground communication monitoring for the Jakarta FIR is detailed at **Appendix 1F.**

8. AERONAUTICAL SUPPORT SERVICES

Aeronautical Information Services (AIS)

8.1 A NOTAM contingency plan will be developed to ensure continuation of the NOTAM service for the Jakarta FIR in support of contingency operations. The NOTAMs will establish the actions to be take in order to reduce the impact of the failures in the air traffic services. The NOTAMs will also establish the necessary coordination and operational procedures that would be established before, during and after any Contingency phase.

8.2 It is not anticipated that there would any major disruption to the NOTAM service for the Jakarta FIR, as NOTAM services could be readily provided by neighboring AIS authorities.

Meteorological Services (MET)

8.3 The Indonesian Meteorological Service (Badan Meteorologi & Geofisika – BMG) is the designated meteorological authority of Indonesia. BMG is also the provider of meteorological services for the international and domestic air navigation. In order to comply with the ICAO requirements on aeronautical meteorology specified in Annex 3, Meteorological Service for International Air Navigation and the ASIA/PAC Air Navigation Plan – Doc 9673, BMG should ensure regular provision of the following products and services:

a) aerodrome observations and reports – local MET REPORT and SPECIAL, as well as WMO-coded METAR and SPECI; METAR and SPECI should be provided for all international aerodromes listed in the AOP Table of ASIA/PAC Basic ANP and FASID Table MET 1A;
b) terminal aerodrome forecast - TAF as per the requirements indicated in FASID Table MET 1A;
c) SIGMET for the two Indonesian FIRs – Jakarta and Ujung Pandang; SIGMET should be issued by the meteorological watch offices (MWO) designated in FASID Table MET 1B – WIII and WAAA;
d) information for the ATS units (TWR, APP, ACC) as agreed between the meteorological authority and the ATS units concerned;
e) Flight briefing and documentation as per Annex 3, Chapter 9.

8.4 It is expected that the Indonesia MET services would continue to be available in the event of an ATS contingency situation. However, should ATS services for the Jakarta FIR be withdrawn, timely MET information may not be immediately available to pilots in flight. Alternative means of obtaining up to date MET information concerning the Jakarta FIR will be provided to the extent possible through the adjacent ATS authorities. In addition, alternative means of OPMET information transmission to the regional OPMET data bank Singapore and both WAFCs (London and Washington), which offers available contingency for the global dissemination of OPMET information will be attempted, e.g. making use of the communication networks of communication service providers (ARINC and SITA).

9. SEARCH AND RESCUE

Notification and Coordination

9.1 ACCs involved in this Contingency Plan are required to assist as necessary to ensure that the proper Search and Rescue (SAR) authorities are provided with the information necessary to support downed aircraft or aircraft with an in-flight emergency in respect to the Jakarta FIR.

9.2 The SAR authority responsible for the Jakarta FIR is the Jakarta Rescue Coordination Centre (RCC)

IDD	62-21-550211 AND 5507152
Fax	62-21- 5501512
AFTN	WIIIYKYX

9.3 Each ACC shall assist as necessary in the dissemination of INCERF, ALERFA and DETYRESFA in respect to incidents in the Jakarta FIR.

9.4 In the event that the Jakarta ACC is not available, the responsibility for coordinating with the Jakarta RCC for aircraft emergencies and incidents involving the Jakarta FIR will be undertaken by the Makassar ACC. The CCC will take appropriate steps to ensure that SAR information is made available to the Jakarta RCC. The AOCG will also oversee SAR coordination and disseminate relevant contact information.

CONTACT DETAILS OF ADJACENT STATES AND INTERNATIONAL ORGANIZATIONS PARTICIPATING IN THE INDONESIAN CONTINGENCY PLAN

NO	ADDRESS	TEL NO.	FAX. NO.	E-MAIL	AFTN
	Australia				
1	Airservices Australia				
2	Brisbane ACC				
3	Melbourne ACC				
	India				
4	Director of Civil Aviation				
5	Airports Authority of India				
6	Chennai ACC				
	Malaysia				
7	Director of Civil Aviation				
8	Kuala Lumpur ACC				
	Philippines				
9	Air Transportation Office				
10	Manila ACC				

	Singapore				
11	Director of Civil Aviation				
12	Singapore ACC				
	Sri Lanka				
13	Director of Civil Aviation				
14	Colombo ACC				
	United States of America				
15	Federal Aviation Administration				
16	Oakland ACC				
	ICAO				
17	Mr. Lalit B Shah Regional Director Asia/Pacific Regional Office 252/1 Vibhavadi Rangsit Rd, Chatuchak, Bangkok, 10110, Thailand	61 2 5378189 Ext 37	61 2 537 8199	icao_bkk@bangkok.icao.int	
18	Mr. Andrew Tiede Regional Officer ATM Asia/Pacific Regional Office 252/1 Vibhavadi Rangsit Rd, Chatuchak, Bangkok, 10110, Thailand	61 2 5378189 Ext 152	61 2 537 8199 Mob: 61	atiede@bangkok.icao.int	
	IATA				
19	Singapore Office				
	IFALPA				
20	Southeast Asia Regional Director				

CENTRAL COORDINATING GROUP

1. Director General
   Directorate General Air Communication
   JL. Medan Merdeka Barat No.8
   Gedung karya Dephub
   Jakarta, Indonesia, 10110

   Tel: 62 811 9
   Fax: 6-03-88891541
   AFTN:
   E-mail:

2. Director Operations
   PT Angkasa Pura II

   Tel:
   Fax:
   AFTN:

3. Director Operations
   PT Angkasa Pura I

   Tel:
   Fax:
   AFTN:

4. Indonesian Meteorological Service
   Tel:
   Fax:
   E-mail:

JAKARTA FIR OPERATIONAL CONTINGENCY UNIT

1. Directorate General Air Communication

   Director Aviation Safety (Chairperson)

   Tel:
   Fax:
   AFTN:
   E-mail:

   Deputy Director of Systems and Procedures Air Navigation

   Tel:
   Fax:
   AFTN:
   E-mail:

   Deputy Director of ATS

   Manager Aeronautical Information Service

   Tel:
   Fax:
   AFTN:
   E-mail:

2. PT Angkasa Pura II

   ATS
   Tel:
   Fax:
   AFTN:
   E-mail:

   ATS Regional Coordinator Jakarta ACC

   Tel:
   Fax:
   AFTN:
   E-mail:

   ATS Manager

   Tel:
   Fax:
   AFTN:
   E-mail:

Manager Aeronautical Information Service

Tel:
Fax:
AFTN:
E-mail:

Airport Management Soekarno Hatta International Airport

Tel:
Fax:
AFTN:
E-mail:

3. PT Angkasa Pura I

Deputy Director Operations

Tel:
Fax:
E-mail:

4. Meteorological Service

Tel:
Fax:
E-mail:

SAMPLE NOTAMS

a) **Avoidance of airspace**

NOTAM…….DUE TO DISRUPTION OF ATS IN THE JAKARTA AND UJUNG PANDANG FIRS ALL ACFT ARE ADVISED TO AVOID THE FIRS**.**

b) Airspace available Limited ATS

NOTAM ……DUE TO ANTICIPATED DISRUPTION OF ATS IN THE JAKARTA FIR ALL ACFT ARE ADVISED THAT THERE WILL BE LIMITED ATS. PILOTS MAY EXPERIENCE DLA AND OVERFLIGHTS MAY CONSIDER AVOIDING THE AIRSPACE.

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c) **Contingency plan activated**

NOTAM …….DUE TO DISRUPTION OF ATS IN JAKARTA AND UJUNG PANDANG FIRs ALL ACT ARE ADVISED THAT THE INDONESIAN INTERNATIONAL CONTINGENCY PLAN FOR ACFT INTENDING TO OVERFLY THESE FIRS IS IN EFFECT. FLIGHT PLANNING MUST BE IN ACCORDANCE WITH THE CONTINGENCY ROUTES LISTED AND FL ASSIGNMENT. PILOTS MUST STRICKLY ADHERE TO THE CONTINGENCY PROCEDURES. ONLY APPROVED INTERNATIONAL FLIGHTS ARE PERMITTED TO OVERFLY INDONESIAN AIRSPACE.

d) **Non adherence to the Contingency Plan**

NOTAM ……..OPERATORS NOT ABLE TO ADHERE TO THE CONTINGENCY PLAN SHALL AVOID THE JAKARTA AND UJUNG PANDANG FIRS.

INTERNATIONAL ROUTE STRUCTURE AND COMMUNICATIONS FOR TRANSIT OF THE JAKARTA FIR WHEN NO ATS AVAILABLE IN INDONESIAN AIRSPACE

VHF Air to Air Frequency 123.45MHz

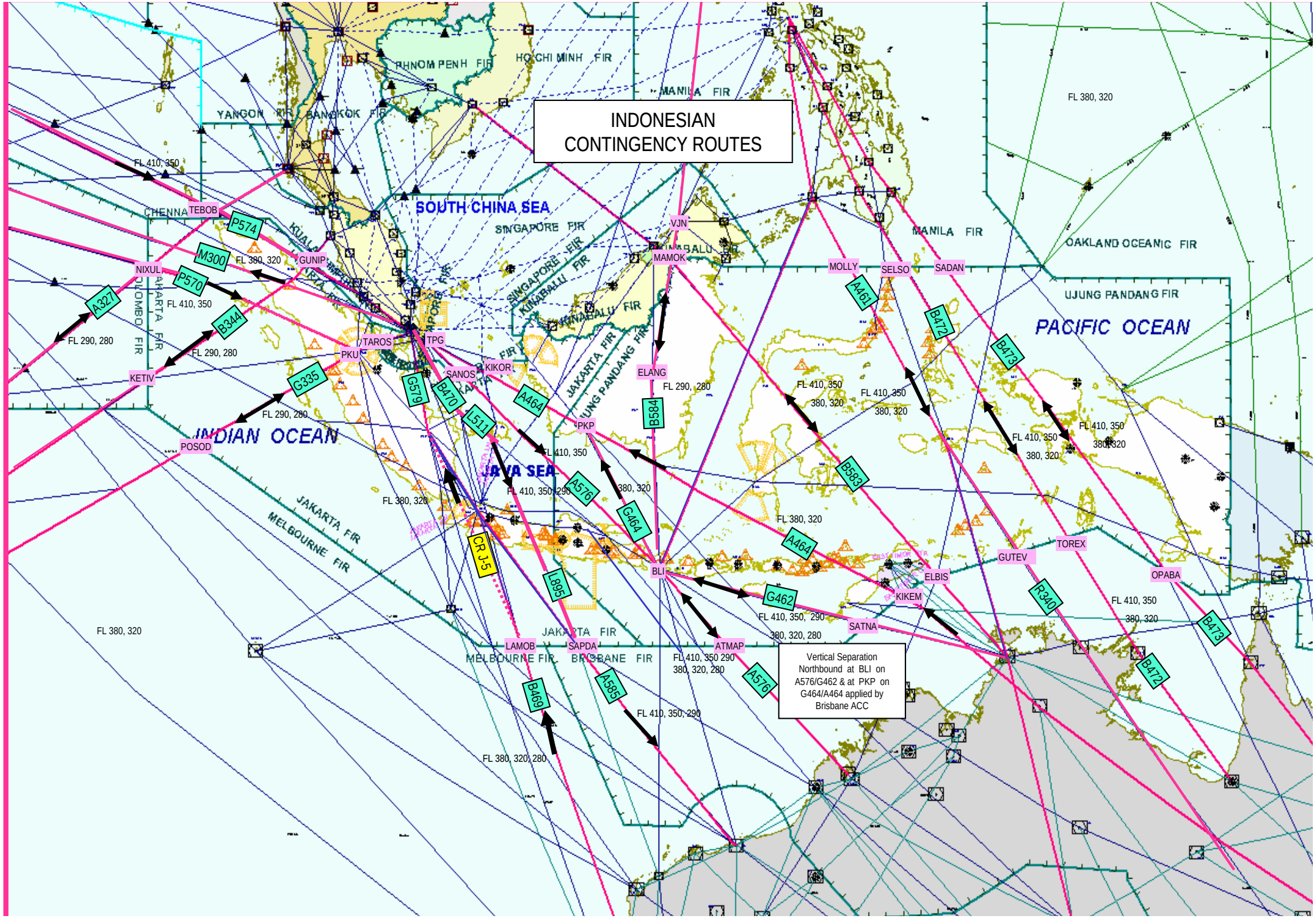
Contingency Routes Jakarta (CRJ)	ATS Route	Direction	FL Assignment	ACCs	COM (Frequency Details in Appendix X)
CRJ-1	A464 Darwin-KIKEM-KIKOR-TPG-SINJON	Northbound (One-way)	380, 320	Brisbane Singapore	HF, ADS, CPDLC HF, VHF, ADS, CPDLC
CRJ-2	A576-G462 SINJON-TPG-SANOS-BLI-SATNA-Darwin	Southbound (One-way to BLI then two-way)	410, 350 410, 350, 290 380, 320	Singapore Brisbane	HF, VHF, ADS, CPDLC HF, ADS, CPDLC
CRJ-3	A576 SINJON-TPG-SANOS-BLI-ATMAP-Alice Springs	Southbound (One-way to BLI then two-way)	410, 350 410, 350, 290 380, 320, 280	Singapore Brisbane	HF, VHF, ADS, CPDLC HF, ADS, CPDLC
CRJ-4	B470-L511/L895-A585 SINJON-S00 02.4 E104 042.1-ANITO-PKP(L511/L895)-MIMIX(L895)-SAPDA	Southbound (One-way)	410, 350, 290	Singapore Brisbane	HF, VHF, ADS, CPDLC HF, ADS, CPDLC
CRJ-5[2]	B469-G579 LAMOB-DCT-PLB(G579)-PARDI-S00 16.1 E104 09.3-SINJON	Northbound (One-way)	380, 320, 280	Brisbane Singapore	HF, ADS, CPDLC HF, VHF, ADS, CPDLC
CRJ-6	R469-B335 SINGAPORE-SAMKO-TAROS-PKU(B335)-POSOD	Two-way	290 280	Singapore Melbourne+	HF, VHF, ADS, CPDLC HF, ADS, CPDLC

CONTINGENCY ROUTES JAKARTA (CRJ)	ATS ROUTES	DIRECTION	FL ASSIGNMENT	ACCS PROVIDING FIS	COM (DETAILS OF FREQUENCIES ARE IN APPENDIX X)
CRJ-7	B344-G468 VPG-GOTLA-MDN(B334)-KETIV-ELATI	Two-way	290 280	Kuala Lumpur Colombo+	VHF HF, ADS, CPDLC
CRJ-8	A327 VIROT-PAMTO	Two-way	290 280	Kuala Lumpur Colombo+	VHF HF, ADS, CPDLC
CRJ-9	P570-R469 PAMTO-MABIX-PKU(R469)-TARO-SINJON	Eastbound (One-way)	410, 350	Colombo+ Kuala Lumpur Singapore+	HF, ADS, CPDLC VHF VHF
CRJ-10	A576-M300 SINJON-DUMOK(M300)-SALAX-TOPIN	Westbound (One-way)	380, 320	Singapore+ Kuala Lumpur	VHF VHF
CRJ-11	P574-R461 ANSAX-PUGER(R461)-VKL	Eastbound (One-way)	410, 350	Chennai+ Kuala Lumpur	HF, ADS, CPDLC VHF

+ ACCs not providing FIS in the Jakarta FIR for these routes

Note 1: In the event that the Jakarta and Makassar ACCs are out of service and no ATS available for the Jakarta and Ujung Pandang FIRs, flight information service (FIS) for the upper airspace will be delegated to the designated ATS authority specified above with the airspace divided north/south at latitude 05 00 00S then along the existing Jakarta FIR boundary. FIS will be provided by the adjacent ACCs in accordance with the LOAs with Indonesia.

Note 2: On the CRJ-5 sector LAMOB-PLB a direct track is established between the positions.


INDONESIAN
CONTINGENCY ROUTES
PHNOM PENH FIR
HO CHI MINH FIR
MANILA FIR
YANGON FIR
BANGKOK FIR
SOUTH CHINA SEA
SINGAPORE FIR
KUALA LUMPUR FIR
KINABALU FIR
JAKARTA FIR
UJUNG PANDANG FIR
OAKLAND OCEANIC FIR
PACIFIC OCEAN
INDIAN OCEAN
JAVA SEA
MELBOURNE FIR
BRISBANE FIR
CHENNAI
COLOMBO FIR
FL 380, 320
FL 410, 350
FL 290, 280
FL 410, 350, 290
FL 380, 320, 280
TEBOB
P574
M300
GUNIP
NIXUL
P570
A327
B344
KETIV
POSOD
TAROS
PKU
TPG
SANOS
KIKOR
G335
G579
B470
L511
A464
PKP
B584
ELANG
VJN
MAMOK
MOLLY
SELSO
SADAN
A461
B472
B473
B583
TOREX
GUTEV
ELBIS
KIKEM
OPABA
R340
G462
SATNA
BLI
ATMAP
A576
G464
CR J-5
L895
LAMOB
SAPDA
A585
B469
Vertical Separation
Northbound at BLI on
A576/G462 & at PKP on
G464/A464 applied by
Brisbane ACC

CONTINGENCY FREQUENCIES FOR CONTROL AND/ OR FLIGHT MONITORING SERVICES

CONTINGENCY ROUTE JAKARTA (CRJ)	ATS ROUTE	ACC	COM
CRJ-1	A464	Brisbane Singapore	HF, VHF, ADS/CPDLC: Logon YBBB HF SEA-3, VHF: Primary 134.4 Mhz/ Secondary 128.1 Mhz, ADS/CPDLC: Logon WSJC
CRJ-2	A576-G462	Singapore Brisbane	HF SEA-3, VHF: Primary 134.4 Mhz/ Secondary 128.1 Mhz, ADS/CPDLC: Logon WSJC HF, ADS and CPDLC: Logon YBBB
CRJ-3	A576	Singapore Brisbane	HF-SEA-3, VHF: Primary 134.4 Mhz/ Secondary 128.1 Mhz, ADS/CPDLC: Logon WSJC HF, ADS/CPDLC: Logon YBBB
CRJ-4	B470-L511/L895-A585	Singapore Brisbane	HF SEA-3, Primary 134.4 Mhz/Secondary 128.1 Mhz, ADS/CPDLC: Logon WSJC HF, ADS/CPDLC: Logon YBBB
CRJ-5	B469-G579	Brisbane Singapore	HF, ADS and CPDLC: Logon YBBB HF-SEA-3, VHF: Primary 134.4 Mhz/ Secondary 128.1 Mhz, ADS/CPDLC: Logon WSJC
CRJ-6	R469-B335	Singapore Melbourne*	HF SEA-3, VHF: Primary 133.25 Mhz/ Secondary 135.8 Mhz. HF, ADS/CPDLC: Logon YMMM
CRJ-7	B334-G468	Kuala Lumpur Colombo*	VHF HF
CRJ-8	A327	Kuala Lumpur Colombo*	VHF HF
CRJ-9	P570/R469	Colombo* Kuala Lumpur	HF HF, VHF

CONTINGENCY ROUTE JAKARTA (CRJ)	ATS ROUTE	ACC	COM
CRJ-10	A576-M300	Kuala Lumpur Colombo*	VHF HF
CRJ-11	P574-R461	Chennai* Kuala Lumpur	HF, ADS, CPDLC VHF

* Next ACC not providing FIS in the Jakarta FIR for these routes

The adjacent ATS provider HF primary and secondary are interchangeable subject to climatic conditions. When CPDLC is being used, this will be the primary means of communication and HF will be secondary. When ADS is being used for automatic position reporting, pilots are not required to report position on CPDLC or HF unless requested by ATC. The frequencies to be used are contained in Appendix xx

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FLIGHT PLANNING REQUIREMENT

Airline operators are expected to familiarize themselves with the Regional Contingency Plan as well as Contingency Plans of Jakarta FIR and the activation times. For aircraft intending to operate in areas during periods when the contingency plans are activated, the operators shall plan the flight to conform with the activation times of the Contingency Plans. Airline operators shall ensure that flights are established on contingency routes prior to entering an area which is under Contingency Plan procedure.

The flight planning requirements during the contingency period will be in accordance to ICAO Annex 2 Chapter 3 and Doc 4444 Part II. Additional information, will, however, be required, to indicate that the flight will operate in airspace where the contingency plan is active. This information is to be indicated in the 'RMK/' field of item 18 of the ICAO flight plan, for example 'RMK/Contingency routes WIIIA/VTS' **or** WAAAA/VTS in the event that Makassar ACC has taken over the air traffic services for Jakarta ACC. (Remarks/aircraft will be operating on contingency routes in the Jakarta and Ujung Pandang FIRs),

Repetitive Flight Plans (RPLs/Bulk Stored) will not be accepted during the time that the contingency plan is activated. Airline operators are required to file flight plans in accordance with the contingency flight planning procedures. Flight plans should be filed at least 12 hours in advance in order to allow sufficient time for manual processing.

ICAO TRAFFIC INFORMATION BROADCASTS BY AIRCRAFT (TIBA) PROCEDURES

Changes to In-Flight Procedures

Introduction of ICAO TIBA Procedures

TIBA Procedures.

1. Special procedures have been developed for pilot use in active contingency zones if communications are significantly degraded or unavailable. These TIBA procedures supercede and take the place of lost communication procedures that are outlined in Annex 2 to the Chicago Convention (Para 3.6.5.2.2 a) and PANS-RAC (DOC 4444, Part III, para. 17) and will enable traffic information broadcasts by aircraft (TIBA) to be made as well as providing collision hazard information. When aircraft will enter designated airspace in which it is known in advance that normal communication is not available, pilots should maintain a listening watch on the TIBA frequency 10 minutes prior to entering that airspace.

Times of Broadcast.

2. When a loss of normal communications requires TIBA procedures to be implemented, pilots shall make broadcasts **in English** on 126.9 MHz as follows:

   a) At the time the loss of normal communications is recognized;

   b) 10 minutes before entering a designated airspace when it is known in advance that normal communications will not be available within that airspace or, for a pilot taking off from an aerodrome located within the lateral limits of the designated airspace, as soon as appropriate after take-off;

   c) 10 minutes prior to crossing a reporting point;

   d) 10 minutes prior to crossing or joining an ATS route;

   e) at 20-minute intervals between distant reporting points;

   f) 2 to 5 minutes, where possible, before a change in flight level;

   g) at the time of a change in flight level; and

   h) at any other time considered necessary by the pilot.

   Note: Normal position reporting procedures should be continued at all times, regardless of any action taken to initiate or acknowledge a traffic information broadcast.

Broadcast Format.

3. TIBA broadcasts should be made using the following phraseology:

a) **For other than those indicating changes in flight level:**

ALL STATIONS (call sign) FLIGHT LEVEL (number) [or CLIMBING TO FLIGHT LEVEL (number)] (direction) (ATS route) [or DIRECT FROM (position) TO (position) POSITION] (position) AT (time) ESTIMATING (next reporting point, or the point of crossing or joining a designated ATS route) AT (time) (call sign) FLIGHT LEVEL (number) (direction)

Example: "ALL STATIONS WINDAR 671 FLIGHT LEVEL 380 NORTHWEST BOUND A464 POSITION 80 MILES SOUTH EAST OF KEVOK AT 2358 ESTIMATING KOBAS AT 0020 WINDAR 671 FLIGHT LEVEL 380 NORTHWEST BOUND OUT"

Note: For broadcasts made when the aircraft is not near an ATS significant point, the position should be given as accurately as possible and in any case to the nearest 30 minutes of latitude and longitude.

b) **Before a change in flight level:**

ALL STATIONS (call sign) (direction) (ATS route) [or DIRECT FROM (position) TO (position)] LEAVING FLIGHT LEVEL (number) FOR FLIGHT LEVEL (number) AT (position and time)

c) At the time of a change in flight level:

ALL STATIONS (call sign) (direction) (ATS route) [or DIRECT FROM (position) TO (position)] LEAVING FLIGHT LEVEL (number) NOW FOR FLIGHT LEVEL (number)

followed by:

ALL STATIONS (call sign) MAINTAINING FLIGHT LEVEL (number)

d) When reporting a temporary flight level change to avoid an imminent collision risk:

ALL STATIONS (call sign) LEAVING FLIGHT LEVEL (number) NOW FOR FLIGHT LEVEL (number)

followed as soon as practicable by:

ALL STATIONS (call sign) RETURNING TO FLIGHT LEVEL (number) NOW

4. TIBA broadcasts should not be acknowledged unless a potential collision risk is perceived.

Cruising level changes.

5. Cruising level changes should not be made within the designated airspace, unless considered necessary by pilots to avoid traffic conflicts, to climb to minimum en route or safe altitudes, to overcome operational limitations, to avoid adverse weather, or in response to an operational emergency.

6. When cruising level changes are unavoidable, all available aircraft lighting which would improve the visual detection of the aircraft should be displayed while changing levels.

Collision avoidance.

7. If, on receipt of a traffic information broadcast from another aircraft, a pilot decides that immediate action is necessary to avoid an imminent collision risk, and this cannot be achieved in accordance with the right-of-way provisions of Annex 2 to the Chicago Convention, the pilot should:

   a) unless an alternative manoeuvre appears more appropriate, immediately descend 150 m (500 ft), or 300 m (1 000 ft) if above FL 290 in an area where a vertical separation minimum of 600 m (2 000 ft) is applied;

   b) display all available aircraft lighting which would improve the visual detection of the aircraft;

   c) as soon as possible, reply to the broadcast advising action being taken;

   d) notify the action taken on the appropriate ATS frequency; and

   e) as soon as practicable, resume normal flight level, notifying the action on the appropriate ATS frequency.

Operation of Transponders.

8. When implementing TIBA procedures, pilots shall operate aircraft transponders on Modes A and C at all times. In the absence of alternative instructions from the appropriate ATS unit, aircraft not assigned a discrete code should squawk code 2000.

Operation of TCAS.

9. Unless otherwise directed by an appropriate authority, pilots should operate TCAS in TA/RA Mode at maximum range setting during the cruise phase of flight and at a range setting appropriate to the traffic situation when in the departure or terminal phases of flight.

Special Operations

10. Specific aircraft may need to be involved in special operations during the period when a FIR is an activated contingency zone. These aircraft may therefore be unable to utilize the contingency route structure for a significant period of their flights. Aircraft that will be classified as special operations are as follows:

    a) Special operations of State aircraft

b) Aircraft in emergency situations or operating with significant reduction in operating efficiency

c) Mercy flights and aircraft engaged in search and rescue, medical evacuation, and coastal surveillance operations.

Activation and Cancellation of TIBA Procedures

11. This procedure shall be included in State AIP Supplements or NOTAM on TIBA procedures and will be cancelled by NOTAM.

Contingency Scheme

ICAO INTERCEPTION PROCEDURES

Article 3 *bis**

a) The contracting States recognize that every State must refrain from resorting to the use of weapons against civil aircraft in flight and that, in case of interception, the lives of persons on board and the safety of aircraft must not be endangered. This provision shall not be interpreted as modifying in any way the rights and obligations of States set forth in the Charter of the United Nations.

(Extract from ICAO Annex 2 — *Rules of the Air*)

3.8 Interception

Note.— The word "interception" in this context does not include intercept and escort service provided, on request, to an aircraft in distress, in accordance with Volumes II and III of the International Aeronautical and Maritime Search and Rescue Manual *(Doc 9731).*

3.8.1 Interception of civil aircraft shall be governed by appropriate regulations and administrative directives issued by Contracting States in compliance with the Convention on International Civil Aviation, and in particular Article 3(d) under which Contracting States undertake, when issuing regulations for their State aircraft, to have due regard for the safety of navigation of civil aircraft. Accordingly, in drafting appropriate regulations and administrative directives due regard shall be had to the provisions of Appendix 1, Section 2 and Appendix 2, Section 1.

Note.— Recognizing that it is essential for the safety of flight that any visual signals employed in the event of an interception which should be undertaken only as a last resort be correctly employed and understood by civil and military aircraft throughout the world, the Council of the International Civil Aviation Organization, when adopting the visual signals in Appendix 1 to this Annex, urged Contracting States to ensure that they be strictly adhered to by their State aircraft. As interceptions of civil aircraft are, in all cases, potentially hazardous, the Council has also formulated special recommendations which Contracting States are urged to apply in a uniform manner. These special recommendations are contained in Attachment A.

3.8.2 The pilot-in-command of a civil aircraft, when intercepted, shall comply with the Standards in Appendix 2, Sections 2 and 3, interpreting and responding to visual signals as specified in Appendix 1, Section 2.

Note.— See also 2.1.1 and 3.4.

* On 10 May 1984 the Assembly amended the Convention by adopting the Protocol introducing Article 3 ***bis*. Under Article 94 *a)* of the Convention, the amendment came into force on 1 October 1998 in respect of States which have ratified it.**

INTERCEPTION OF CIVIL AIRCRAFT

(Appendix 2 of ICAO Annex 2 — *Rules of the Air*)

(Note.— See Chapter 3, 3.8 of the Annex)

1. Principles to be observed by States

1.1 To achieve the uniformity in regulations which is necessary for the safety of navigation of civil aircraft due regard shall be had by Contracting States to the following principles when developing regulations and administrative directives:

a) interception of civil aircraft will be undertaken only as a last resort;

b) if undertaken, an interception will be limited to determining the identity of the aircraft, unless it is necessary to return the aircraft to its planned track, direct it beyond the boundaries of national airspace, guide it away from a prohibited, restricted or danger area or instruct it to effect a landing at a designated aerodrome;

c) practice interception of civil aircraft will not be undertaken;

d) navigational guidance and related information will be given to an intercepted aircraft by radiotelephony, whenever radio contact can be established; and

e) in the case where an intercepted civil aircraft is required to land in the territory overflown, the aerodrome designated for the landing is to be suitable for the safe landing of the aircraft type concerned.

Note.— In the unanimous adoption by the 25th Session (Extraordinary) of the ICAO Assembly on 10 May 1984 of Article 3 bis *to the Convention on International Civil Aviation, the Contracting States have recognized that "every State must refrain from resorting to the use of weapons against civil aircraft in flight."*

1.2 Contracting States shall publish a standard method that has been established for the manoeuvring of aircraft intercepting a civil aircraft. Such method shall be designed to avoid any hazard for the intercepted aircraft.

Note.— Special recommendations regarding a method for the manoeuvring are contained in Attachment A, Section 3.

1.3 Contracting States shall ensure that provision is made for the use of secondary surveillance radar, where available, to identify civil aircraft in areas where they may be subject to interception.

2. Action by intercepted aircraft

2.1 An aircraft which is intercepted by another aircraft shall immediately:

a) follow the instructions given by the intercepting aircraft, interpreting and responding to visual signals in accordance with the specifications in Appendix 1;

b) notify, if possible, the appropriate air traffic services unit;

c) attempt to establish radiocommunication with the intercepting aircraft or with the appropriate intercept control unit, by making a general call on the emergency frequency 121.5 MHz, giving the identity of the intercepted aircraft and the nature of the flight; and if no contact has been established and if practicable, repeating this call on the emergency frequency 243 MHz;

d) if equipped with SSR transponder, select Mode A, Code 7700, unless otherwise instructed by the appropriate air traffic services unit.

2.2 If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by visual signals, the intercepted aircraft shall request immediate clarification while continuing to comply with the visual instructions given by the intercepting aircraft.

2.3 If any instructions received by radio from any sources conflict with those given by the intercepting aircraft by radio, the intercepted aircraft shall request immediate clarification while continuing to comply with the radio instructions given by the intercepting aircraft.

3. Radiocommunication during interception

If radio contact is established during interception but communication in a common language is not possible, attempts shall be made to convey instructions, acknowledgement of instructions and essential information by using the phrases and pronunciations in Table 2.1 and transmitting each phrase twice:

Table 2.1

Phrases for use by INTERCEPTING aircraft			*Phrases for use by INTERCEPTED aircraft*		
Phrase	*Pronunciation*1	Meaning	Phrase	Pronunciation1	Meaning
CALL SIGN	KOL SA-IN	What is your call sign?	CALL SIGN (call sign)2	KOL SA-IN (call sign)	My call sign is (call sign)
FOLLOW	FOL-LO	Follow me	WILCO	VILL-KO	Understood Will comply
DESCEND	DEE-SEND	Descend for landing	CAN NOT	KANN NOTT	Unable to comply
YOU LAND	YOU LAAND	Land at this aerodrome	REPEAT	REE-PEET	Repeat your instruction
PROCEED	PRO-SEED	You may proceed	AM LOST	AM LOSST	Position unknown
			MAYDAY	MAYDAY	I am in distress
			HIJACK3	HI-JACK	I have been hijacked
			LAND (place name)	LAAND (place name)	I request to land at (place name)
			DESCEND	DEE-SEND	I require descent

1.In the second column, syllables to be emphasized are underlined.

2.The call sign required to be given is that used in radiotelephony communications with air traffic services units and corresponding to the aircraft identification in the flight plan.

3.Circumstances may not always permit, nor make desirable, the use of the phrase "HIJACK".

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BBACG — TASK LIST

(last updated 26 Jan 2007)

No.	Contributing Task	ICAO Strategic Objectives	Associated GPI	Task/Strategy	Benefits	Deliverables	Target Date	Leader & Supporting members	Remarks
18/1.	Flexible use of FL ~~300~~ 320 on Bay of Bengal Routes	D- Efficiency. Enhance the efficiency of aviation operations	GPI -7 Dynamic and flexible ATS route management	India, Malaysia. Singapore and Thailand to establish a common flight plan database for the peak westbound traffic flow in order to tactically manage the availability of ~~FL300~~ FL320.	Enhance the west bound flow of air traffic during peak hours	Letter of Agreement and Operation Procedure	Jan 2007	Thailand India, Malaysia, Singapore, Regional Office	Addressed by ATFM/TF via a number of TF and SCM meetings during 2006. FL330 changed to FL320 by ATFM/TF to facilitate ATFM operational trial Work in progress
18/2.	Chennai/Colombo FIR boundary harmonization	D- Efficiency. Enhance the efficiency of aviation operations	GPI-7 Dynamic and flexible ATS route management	Chennai/Colombo FIR boundary India and Sri Lanka will advise ICAO of the result of a bi-lateral meeting regarding: the withdrawal of delegation of airspace in the western portion of Chennai FIR; and the realignment of the FIR boundary between the Colombo and Chennai FIRs so that all the domestic airspace of Sri Lanka is encompassed by the Colombo FIR.	Safety enhancement through reduced ATC coordination workload and better frequencies management	Letter of Agreement, Operation Procedures and AIP Supplement	Jan 2007	India, Sri Lanka Regional Office	India informed BBACG/18 that this matter now under consideration by the Govt of India,. Will update by BBACG/19
~~18/3.~~	~~Adoption of Model National ATM Contingency Plan~~	~~A-~~ ~~Safety. Enhance global civil aviation safety~~	~~GPI ……~~	~~The national ATM Contingency Plans of Jakarta and Ujung Pandang FIRs, which were prepared as a result of the 2006 ICAO Special Implementation Project be adopted as a model for Asia/Pacific States in the preparation of national ATM contingency plans.~~	~~The model ATM contingency plan would serve as a useful model for other States~~	~~National contingency plan~~	~~May 2007~~ ~~Completed~~	~~Regional Office~~ ~~All States~~	~~SIP completed mid 2006, model Contingency plan adopted by APANPIRG/17 Conclusion 17/11 and made available to~~

No.	Contributing Task	ICAO Strategic Objectives	Associated GPI	Task/Strategy	Benefits	Deliverables	Target Date	Leader & Supporting members	Remarks
					~~of the region in preparing contingency plans~~				~~States~~
18/4.	Contingency Planning	A- Safety. Enhance global civil aviation safety	GPI-8 Collaborative airspace design and management	States in co-ordination with its neighbouring States, develop a contingency plan or plans for their airspace, taking into account Conclusion 17/11 Adoption of Model National ATM Contingency Plan	The contingency plan between neighbouring States will allow partial flow of air traffic under specified conditions through the effected State	Regional contingency plan	Aug 2007	All States in the region Regional Office	
18/5.	Review and establish requirements for setting up the SMA for the Bay of Bengal horizontal safety management	A- Safety. Enhance global civil aviation safety	GPI-5 Performance based navigation	Regional Office to inform States of the establishment of the SMA in regard to Thailand providing services.	Progressing the establishment of 50 NM/50 NM separation utilizing ADS/CPDLC	Guidance Material	Jan 2007	Regional Office, MAAR BOB States, IATA, IFALPA, FAA	APANPIRG Decision 17/47 establishes task force to implement Regional Airspace Safety Monitoring Committees
~~18/6.~~	~~Collect traffic movement data for the Bay of Bengal routes~~	~~A-~~ ~~Safety. Enhance global civil aviation safety~~	~~GPI-2- Reduced vertical separation minima~~	~~Regional Office informed States via State Letter Ref.: T3/10.0, T3/10.1.17 – AP117/05 (ATM) dated 21 November 2005~~	~~The data received shall ensure proper calculation of TLS by MAAR~~	~~December Traffic Sample Data~~	~~End of Jan every year~~ ~~Closed~~	~~MAAR~~ ~~Regional Office, BOB States~~	~~State Letter AP105/06 issued November 2006 re-collection of TSD, reinforces annual December data collection~~
18/7.	Specify RVSM airspace as Class A	A- Safety. Enhance global civil aviation safety	GPI-4 - Alignment of upper airspace classification	States to review airspace classification for RVSM airspace and apply Class A as appropriate.	To enhance the RVSM operational safety	AIP Supplement in regard to revised air space classification	Aug 2007	States Regional Office	India to email Regional Office by 5 Feb 07 with update

No.	Contributing Task	ICAO Strategic Objectives	Associated GPI	Task/Strategy	Benefits	Deliverables	Target Date	Leader & Supporting members	Remarks
18/8.	Lowering MEA on G792 from FL310 to FL300 to be in alignment with P628 in India	D – Efficiency. Enhance the efficiency of aviation operations	GPI-6 Air traffic flow management	Regional Office coordinated with Afghanistan and Pakistan to harmonize the MEA on G792 to be not above FL 300	Full capacity of ATS route between India and Afghanistan can be achieved	State Letter	Jan 2007	Regional Office, Afghanistan, Pakistan ICAO Middle East Office	
18/9.	Search and Rescue Agreements between States	A – Safety. Enhance global civil aviation safety	GPI-1 Flexible use of airspace	a) States, in conjunction with their neighbouring State (s), will develop Search and Rescue Agreements, for the purpose of providing a more efficient response to a search and rescue action and increase the possibility of a successful search and rescue mission; States conduct joint training and exercises, as appropriate, to maximize proficiency; b) a State, together with a neighbouring State, establish common SAR procedures, where practicable; and c) a State, together with a neighbouring State, establish common SAR procedures, where practicable	More efficient response, increase the possibility of a successful regional search and rescue mission	Letter of Agreement, Operation Procedures and AIP Supplement	On Going	Regional Office All States	
18/10.	Operate A466 and N644 as separate routes	D – Efficiency. Enhance the efficiency of aviation operations	GPI-1 Flexible use of airspace	Pakistan to review ATC practices and advise Regional Office of any changes.	Increased airspace capacity	AIP Supp	On Going	Pakistan Regional Office Regional Office to coordinate with all parties concerned.	Pakistan to email Regional Office by 5 Feb 07 with update

No.	Contributing Task	ICAO Strategic Objectives	Associated GPI	Task/Strategy	Benefits	Deliverables	Target Date	Leader & Supporting members	Remarks
18/11.	Extend operating hours of G792 to H24.	D-Efficiency. Enhance the efficiency of aviation operations	GPI-1 Flexible use of airspace	Coordinate with CFACC, Afghanistan and ICAO MID Office	Increased airspace capacity	Letter of Agreement, AIP Supp	On Going	Regional Office CFACC, Afghanistan and ICAO MID Office	Preferred outcome is G792 H24 whilst retaining B466 H24. Concern by Afghanistan about merging, Pakistan radar can resolve before entry Kabul.
18/12	Develop a westbound Air Traffic Flow Management Plan (ATFMP)	D-Efficiency. Enhance the efficiency of aviation operations	GPI-6 Air traffic flow management				On Going	All concerned States, IFATCA, IFALPA, IATA Regional Office	ATFM operational trial commenced 24 July 2006 under auspices of ATFM/TF
18/13	Conduct regular review of ATS Route Catalogue to implement routes in a timely manner	D-Efficiency. Enhance the efficiency of aviation operations	GPI-8 Collaborative airspace design and management	**Conclusion 16/10 Review of ATS Route Catalogue by States** *That, the States concerned study the routes in the Asia/Pacific ATS Route Catalogue in respect to the feasibility of the route requirements, in order to consider their implementation with appropriate priorities, and to raise route implementation proposals at relevant ATS Coordination Meetings in the Asia/Pacific Region.*		Regular implementation of ATS routes in accordance with priorities	On going	All States, IATA, Regional Office	
18/14	Implementation of AUSOTS feeder routes	D-Efficiency. Enhance the efficiency of aviation operations	GPI-8 Collaborative airspace design and management	Regional Office to coordinate with Sri Lanka to enable implementation of AUSOTS feeder routes through Chennai and Colombo FIRs as described in BBACG/18 working paper 13	Fuel/Time Saving, Increased airspace capacity	Implementation of Colombo FIR component of AUSOTS feeder routes	On going	Regional Office Sri Lanka, Australia, India, Indonesia	

No.	Contributing Task	ICAO Strategic Objectives	Associated GPI	Task/Strategy	Benefits	Deliverables	Target Date	Leader & Supporting members	Remarks
18/15				Include ICAO Strategic Objective and Global Plan Initiative on each working/information paper.			On going	Regional Office, States, International Organizations	

International Civil Aviation Organization | Organisation de l'aviation civile internationale | Organización de Aviación Civil Internacional | Международная организация гражданской авиации | منظمة الطيران المدني الدولي | 国际民用航空组织

Ref.: T3/4.4 – AP099/06 (ATM) 10 October 2006

Subject: Wake turbulence aspects of Airbus A380-800 aircraft

Action Required:Note the guidance in the Attachment

Sir/Madam,

1. I wish to refer to guidance issued in November 2005 by this office Ref: T3/4.4 – AP111/05 (ATM) on the subject of Airbus A380 wake vortex aspects. You will recall that an ad hoc group of experts under the auspices of the United States Federal Aviation Administration, the European Organisation for the Safety of Air Navigation (Eurocontrol), the Joint Aviation Authorities and the manufacturer were studying the wake vortex aspects of this new aircraft. As their work was still in progress, and data collection, processing and analysis were still ongoing, the recommendations made at that time were necessarily conservative.

2. The ad hoc group has now recommended more specific guidance, based on the completed flight test programme. Accordingly, revised guidance related to wake turbulence aspects of the Airbus A380-800 aircraft is attached. I strongly encourage you to implement this revised guidance as soon as possible. All guidance previously issued on the subject of Airbus A380 wake vortex aspects is hereby superseded.

3. It is anticipated that the group will undertake additional studies with a view to further refinement of this guidance on the basis of operational experience. A review of the current wake turbulence categorization scheme by the ad hoc group is also foreseen. A proposal for amendment of the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) will follow in due course and, in accordance with the established procedure, States and international organizations will be consulted.

Accept, Sir/Madam, the assurances of my highest consideration.

L.B. Shah
Regional Director

Attachment:
Guidance on A380-800 Wake Vortex Aspects

Asia and Pacific Office
252/1 Vibhavadi Rangsit Road
Ladyao, Chatuchak
Bangkok 10900
Thailand

Postal Address:
P.O. Box 11
Samyaek Ladprao
Bangkok 10901
Thailand

Tel.: +66 (2) 537-8189
Fax: +66 (2) 537-8199

E-mail: icao_apac@bangkok.icao.int
AFTN: VTBBICOX

ATTACHMENT to T3/4.4 – AP099/06 (ATM)

GUIDANCE ON A380-800 WAKE VORTEX ASPECTS

1. INTRODUCTION

This guidance is based on the current outcome of work by an ad hoc group of experts under the auspices of the United States Federal Aviation Administration, the European Organisation for the Safety of Air Navigation (Eurocontrol), the Joint Aviation Authorities and the manufacturer. Work is continuing, and it is anticipated that the group will undertake additional studies with a view to further refinement of this guidance on the basis of operational experience. A review by the ad hoc group of the current wake turbulence categorization scheme is also foreseen.

The Airbus A380-800, with a maximum take-off mass in the order of 560 000 kg, will be the largest passenger aircraft ever to enter into revenue service. The aircraft is in the HEAVY wake turbulence category and the *Procedures for Air Navigation Services — Air Traffic Management* (PANS-ATM, Doc 4444) apply. However, as vortices generated by the A380-800 are more substantial than for other aircraft in the HEAVY wake turbulence category, this guidance recommends an increase in relation to the wake turbulence separation minima published in the PANS-ATM. This is intended to ensure that aircraft operating near an A380-800 do not encounter wake vortices of a greater magnitude than are generated by other aircraft in the HEAVY wake turbulence category. States are strongly encouraged to implement this guidance pending an amendment to the PANS-ATM.

Note. — For ease of reference, related PANS-ATM provisions are indicated below.

2. INDICATION OF AIRCRAFT TYPE
(PANS-ATM 4.9.2 and Appendix 2)

2.1 For A380-800 aircraft the letter "J" should be entered into the space allocated to wake turbulence under Item 9 of the ICAO flight plan.

2.2 For A380-800 aircraft the expression "SUPER" should be included immediately after the aircraft call sign in the initial radiotelephony contact between such aircraft and ATS units.

3. NON-RADAR WAKE TURBULENCE LONGITUDINAL SEPARATION MINIMA
(PANS-ATM 5.8.2, 5.8.3, 5.8.4 and 5.8.5)

3.1 Arriving aircraft

The following non-radar separation minima should be applied to aircraft landing behind an A380-800 aircraft:

a) MEDIUM aircraft behind an A380-800 aircraft — 3 minutes;

b) LIGHT aircraft behind an A380-800 aircraft — 4 minutes.

3.2 Departing aircraft

3.2.1 A minimum separation of 3 minutes should be applied for a LIGHT or MEDIUM aircraft and 2 minutes for a non-A380-800 HEAVY aircraft taking off behind an A380-800 aircraft when the aircraft are using:

a) the same runway;

b) parallel runways separated by less than 760 m (2 500 ft);

c) crossing runways if the projected flight path of the second aircraft will cross the projected flight path of the first aircraft at the same altitude or less than 300 m (1 000 ft) below;

d) parallel runways separated by 760 m (2 500 ft) or more, if the projected flight path of the second aircraft will cross the projected flight path of the first aircraft at the same altitude or less than 300 m (1 000 ft) below.

3.2.2 A separation minimum of 4 minutes should be applied for a LIGHT or MEDIUM aircraft when taking off behind an A380-800 aircraft from:

a) an intermediate part of the same runway; or

b) an intermediate part of a parallel runway separated by less than 760 m (2 500 ft).

3.3 Displaced landing threshold

A separation minimum of 3 minutes should be applied between a LIGHT or MEDIUM aircraft and an A380-800 aircraft when operating on a runway with a displaced landing threshold when:

a) a departing LIGHT or MEDIUM aircraft follows an A380-800 aircraft arrival; or

b) an arriving LIGHT or MEDIUM aircraft follows an A380-800 aircraft departure if the projected flight paths are expected to cross.

3.4 Opposite direction

A separation minimum of 3 minutes should be applied between a LIGHT or MEDIUM aircraft and an A380-800 aircraft when the A380-800 aircraft is making a low or missed approach and the LIGHT or MEDIUM aircraft is:

a) utilizing an opposite-direction runway for take-off; or

b) landing on the same runway in the opposite direction, or on a parallel opposite-direction runway separated by less than 760 m (2 500 ft).

4. RADAR WAKE TURBULENCE SEPARATION MINIMA
(PANS-ATM 8.7.4.4 and 8.7.4.4.1)

4.1 The following wake turbulence radar separation minima should be applied to aircraft in the approach and departure phases of flight in the circumstances given in 4.2.

Preceding aircraft	*Succeeding aircraft*	*Wake turbulence radar separation minima*
A380-800	A380-800	7.4 km (4.0 NM)
A380-800	Non-A380-800 HEAVY	11.1 km (6.0 NM)
A380-800	MEDIUM	14.8 km (8.0 NM)
A380-800	LIGHT	18.5 km (10.0 NM)

Note. — Although no wake constraint for the A380-800 as a succeeding aircraft was recommended by the ad hoc group, the guidance above indicates a wake turbulence separation minimum of 7.4 km (4.0 NM) between two A380-800 aircraft, as this is the minimum between two HEAVY aircraft prescribed by the PANS-ATM. The recommendation of the ad hoc group will be taken into account during the development of a proposal for amendment to the PANS-ATM.

4.2 The minima set out in 4.1 should be applied when:

a) an aircraft is operating directly behind an A380-800 aircraft at the same altitude or less than 300 m (1 000 ft) below; or

b) both aircraft are using the same runway, or parallel runways separated by less than 760 m; or

c) an aircraft is crossing behind an A380-800 aircraft, at the same altitude or less than 300 m (1 000 ft) below.

— END —

International Civil Aviation Organization | Organisation de l'aviation civile internationale | Organización de Aviación Civil Internacional | Международная организация гражданской авиации | منظمة الطيران المدني الدولي | 国际民用航空组织

Ref.: T3/14.5, T3/11.6 – AP113/06 (ATM) 11 December 2006

Subject: Pacific Area Search and Rescue Workshop (Bangkok, Thailand, 26 February to 2 March 2007)

Action required: To reply by **31 January 2007**

Sir/Madam,

I have the honour to extend a warm invitation to your State SAR representatives to attend the Pacific Area Search and Rescue Workshop which will be held at the ICAO Regional Office in Bangkok, Thailand, from 26 February to 2 March 2007.

The SAR Workshop has been convened pursuant to the initiatives of APANPIRG/16 (August 2005) under Conclusion 16/23, as follows:

> ***Conclusion 16/23 – Special Implementation Project International Seminar and SAREX***
>
> *That, ICAO consider a proposal for an Asia/Pacific Special Implementation Project to be established with the primary objective to improve search and rescue services, coordination and cooperation between island States of the Pacific.*

Special Implementation Projects (SIPs) are intended to assist States in overcoming problems of implementation which may have significant adverse effects on the safety, regularity or efficiency of civil aviation. Accordingly, in its review of Conclusion 16/23, the ICAO Council has determined that a Pacific Area Search and Rescue SIP shall be conducted in the first quarter of 2007, in order to enhance SAR services in the region.

In acknowledging the many and complex logistical issues to be addressed in attempting to conduct such an event on-site in the Pacific area, the Regional Office has elected to host this Workshop at the ICAO Regional Office premises in Bangkok, Thailand. Accordingly, the SIP will take the format of a special 5 day Search and Rescue Workshop, to be conducted at the Kotaite Wing of the ICAO Asia/Pacific Regional Office from 26 February to 2 March, 2007. Although the focus remains very much on the involvement of Pacific States, holding the workshop at the Regional Office facilitates the wider involvement of States regionally and enables full access to the resources of the ICAO Regional Office.

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Asia and Pacific Office
252/1 Vibhavadi Rangsit Road
Ladyao, Chatuchak
Bangkok 10900
Thailand

Postal Address:
P.O. Box 11
Samyaek Ladprao
Bangkok 10901
Thailand

Tel.: +66 (2) 537-8189
Fax: +66 (2) 537-8199

E-mail: icao_apac@bangkok.icao.int
AFTN: VTBBICOX

This will be a special event in as much as full advantage will be taken of the participation of leading SAR experts throughout the region and further afield. The workshop will be jointly facilitated by Mr. Brian Day and Mr. David Edwards. Mr. Day, until January 2007, was the Air Traffic Management Technical Officer at ICAO Headquarters in Montreal with Secretariat responsibility for ICAO SAR policy and procedures. Mr. David Edwards is the senior civilian SAR manager at the SAR Office of the United States Coast Guard, Washington, D.C. Additional outstanding contributors to the Workshop will be Ms. Cheryl Bertoia, the Deputy Head of the COSPAS-SARSAT Secretariat, Montreal as well as senior SAR officers from AusSAR (the Australian SAR provider) and the Civil Aviation Authority of Singapore.

The SAR Workshop will adopt a regional perspective and focus on optimal SAR organization, access to global support services, joint aviation/maritime service provision and effective management practices Management principles will also feature predominantly. Some sessions will concentrate on those aspects of Human Factors, Safety Management Systems and Threat and Error Management that are immediately relevant to SAR service provision. As a central feature of the SAR Workshop, a desk top SAR exercise focused on an area of the Pacific will be conducted to which all delegates will be expected to contribute and during which input will be made by regional SAR providers. Findings will be made and recommendations formulated for regional consideration.

This is an outstanding opportunity for regional SAR authorities to broaden their understanding of joint aviation/maritime SAR service provision and of practical regional initiatives that are proven to be cost-beneficial. In this regard the experiences of AusSAR, and the United States Coast Guard and United States Air Force, in providing joint aviation/maritime SAR services from single national rescue coordination centres at Canberra and Honolulu respectively, will be extremely informative. Participants may expect ample opportunity to raise questions and participate in identifying solutions to regional problems.

This workshop is considered especially suitable for attendance by senior staff with responsibilities for both SAR policy and procedures. Kindly note that registration procedures will commence on Monday, 26 February, 2007 at 0830 am. The Workshop sessions will commence on Monday, 26 February 2007 at 0900 am and are expected to conclude early in the afternoon of Friday, 2 March 2007. A detailed agenda will be distributed at the time of registration.

Enclosed herewith are the Nomination/Registration Form (**Attachment A**) and the Meeting Bulletin (**Attachment B**).

I am requesting that you kindly provide, at your earliest convenience and no later than **31 January 2007**, the name(s) of the delegate(s) from your State that will be attending the meetings.

Accept, Sir/Madam, the assurances of my highest consideration.

L. B. Shah
Regional Director

Enclosures:

A – Nomination/Registration Form
B – Meeting Bulletin

APPENDIX A – IRCM/2 ACTION PLAN

(paragraph 1.4 refers)

IRCM/2 Action #	Strategic Objectives	Agreed Actions	Paragraph reference	To be initiated by	Target date
IRCM/2-01	D	Update at ATMGE/RDGE/5 (October 2006) concerning implementation of RVSM in Turkmenistan	2.1	EUR/NAT	05 Oct 2006
IRCM/2-02	D	Meeting of States (MID/EUR) Concerning implementation of RVSM in Ashkhabad FIR (Turkmenistan)	2.2	EUR/NAT in coordination with MID	Dec 2006
IRCM/2-03	A, D	Contact NATO on civil/military cooperation in Afghanistan	2.4	EUR/NAT	26 Sep 2006
IRCM/2-04	D	Lowering of MEA on P628/G792 in Pakistan FIRs	3.1	APAC	Dec 2006
IRCM/2-05	D	Lowering of MEA on G792 in Kabul FIR	3.1	MID	Dec 2006
IRCM/2-06	D	Review routes in APAC ATS Route Catalogue relevant to respective regions	3.2	EUR/NAT MID	Oct 2006
IRCM/2-07	D	Provide specific information on routes to be coordinated in interface regions	3.3	APAC EUR/NAT MID	On going
IRCM/2-08	D	Coordinate route proposals from Kazakhstan with China	3.4, 3.5	APAC	Dec 2006
IRCM/2-09	D	Coordinate route proposal from Azerbaijan and Turkey with Iran	3.6, 3.7	MID	Feb 2007
IRCM/2-10	D	Submit proposal for restructuring of Regional ANPs to D/ANB	3.8	EUR/NAT	Sep 2006
IRCM/2-11	D	Discuss inter-regional coordination of SSR code allocation at the MIDANPIRG 8th ATM/SAR/AIS sub-group meeting (Oman, November 2006) EUROCONTROL to be invited to attend this meeting.	4.1, 4.2	MID in coordination with EUR/NAT	Nov 2006 TBD
IRCM/2-12	D	Provide statistics and examples concerning missing FPLs and missing letter 'W' in field 10	5.1	MID	Feb 2007
IRCM/2-13	A	Discuss possible establishment of a Regional Safety Management System in the NAT Region at NAT IMG in November 2006 Keep other Offices informed of outcome.	6.3	EUR/NAT	Nov 2006 Dec 2006
IRCM/2-14	D	Request that workshops on Business Planning, Global ANP and GPIs be urgently organised	7.1	EUR/NAT	Sep 2006
IRCM/2-15	D	Coordinate with EUR/NAT and EUROCONTROL to commence use of ICARD 5LNC database	8.1	APAC	Sep 2006
IRCM/2-16	D	Provide full assistance and training on use of ICARD 5LNC database	8.1	EUR/NAT	Oct 2006
IRCM/2-17	D	Establish specific requirements for database tool for allocation of ATS route designators	8.2	EUR/NAT in coordination with APAC and MID	Oct 2006
IRCM/2-18	D	Coordinate timely arrangements for convening of TRASAS/1	9.1	EUR/NAT APAC	First quarter 2007
IRCM/2-19	D	Coordinate and finalise re-organisation of MID/ASIA SUPPs and realignment of areas of application	10.2	EUR/NAT in coordination with APAC and MID	First quarter 2007

IRCM/2 Action #	Strategic Objectives	Agreed Actions	Paragraph reference	To be initiated by	Target date
IRCM/2-20	A	Host first RMA Meeting in first quarter 2007 to finalise RMA Handbook and address ALLPIRG Conclusion 5/12	11.2	EUR/NAT	First quarter 2007
IRCM/2-21	A	Inform D/ANB of need for development of global requirements for future performance monitoring in order to support regional or sub-regional Safety Management Systems	11.3	EUR/NAT	Sep 2006
IRCM/2-22	D	Provide details of data link activities and coordinate APAC representation at the DLSG/3 meeting	12.2	APAC in coordination with EUR/NAT	Dec 2006
IRCM/2-23	A, D	Address issue of incomplete implementation of WGS-84 at PIRGS	14.1	APAC EUR/NAT MID	2007 Dec 2006 Feb 2007
IRCM/2-24	A	Coordinate information from Russian Federation concerning monitoring of active volcanoes in the interface with the APAC Region (Kamchatka, Kurile Islands, Sakhalinskand Sakhalinsk)	15.2	EUR/NAT in coordination with APAC	Sep 2006
IRCM/2-25	D	Organise next meeting of SWACG in 2007	17.2	MID in coordination with APAC	2007
IRCM/2-26	D	Provide documentation pertaining to the preparations for the 2004 Olympic Games held in Athens, Greece to APAC office	19.1	EUR/NAT	Sep 2006

– END –

ATTACHMENTS

LIST OF PARTICIPANTS

STATE/NAME	DESIGNATION/ADDRESS	CONTACT DETAILS
AUSTRALIA		
Mr. Greg Mc Donald *(ATFM/TF/9, BBACG/18)*	Operational Specialist Airservices Australia P.O. Box 1093, Tullamarine VIC 3043 Building 4, Tower Road Tullamarine VIC 3043 Australia	Tel: +61 3 9339-2516 Mobile: +61 409 443 957 Fax: +61 3 9339-2442 E-mail: greg.mcdonald@airservicesaustralia.com
BANGLADESH		
Mr. Mohammad Kaisar Alam *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Director (Flight Safety & Regulations) Civil Aviation Authority of Bangladesh Headquarters Office Kurmitola Dhaka 1229 Bangladesh	Tel: +880-2-8911126 Fax: +880-2-8913322, 8914709 E-mail: dfsrcaab@accesstel.net
Mr. Saleh Ahmed Khan *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Deputy Director (CEMSU) Civil Aviation Authority of Bangladesh Cemsu, CAAB Kurmitola Dhaka 1229 Bangladesh	Tel: +880-2-8915291 Fax: +880-2-8913322 E-mail: dfsrcaab@accesstel.net Nipon1608@yahoo.com
Mr. Md. Nazrul Islam *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	PS to Secretary Ministry of Civil Aviation & Tourism Dhaka Bangladesh	Tel: +880-2-7166485 Fax: +880-2-7169206 E-mail: anzum96@yahoo.com
INDIA		
Mr. V. Somasundaram *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	General Manager (ATM) Airports Authority of India Rajiv Gandhi Bhavan New Delhi India	Tel: +91-11-2465 2648 Fax: +91-11-2461 1078 E-mail: gmatmchqnad@aai.aero
Mr. M. Sarangapani *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Joint General Manager (ATM) Airports Authority of India ATS Complex Chennai Airport, Chennai 600-027 India	Tel: +91-44-2256 1538 Fax: +91-44-2256 1740 E-mail: sarankan@rediffmail.com
INDONESIA		
Mr. Sigit Djumatno *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Directorate of Aviation Safety Officer Directorate General of Civil Aviation (DGCA) Gedung Karya, Lt. 23 Jl. Medan Merdeka No. 8 Jakarta 10110, Indonesia	Tel: +62-21-3507569/3506451 Fax: +62-21-3507569 E-mail: sigit_dj@plasa.com sigitdj@telkom.net

STATE/NAME	DESIGNATION/ADDRESS	CONTACT DETAILS
Mr. A.N. Aulia *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Directorate of Electronic & Electricity Facility, DGCA of Indonesia Karya Building 23 Fl., Jl. Medan Merdeka Barat No. 8 Jakarta Pusat 10110 Indonesia	Tel: +62-21-3507569 Fax: +62-21-34832663 E-mail: auliahmad@telkom.net
Mr. Teguh Widodo *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Assistant Deputy ATS PT. Angkasa Pura I Kota Baru Bandar Kemayoran Blok B 2 Kav. 2 Jakarta 10610 Indonesia	Tel: +62-21 6541961 Fax: +62-21-65866838 E-mail: atc@angkasapura1.co.id
Mr. Parto Sudewo *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Regional Coordinator MAATS Ujung Pandang PT. Angkasa Pura I Makassar Advances ATS Hasanuddin Airport Mandai Makassar 90552 Indonesia	Tel: +62-411 510123 Fax: +62-411 553183 E-mail: parto_sudewo@ujungpandang.com
Mr. Gatot Haryanto *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	PT. (Persero) Angkasa Pura II Gedung 600 Lt. 3 Soekarno-Hatta International Airport Jakarta Indonesia	Tel: +62-21-5506178 Fax: +62-21-5501135 E-mail: gatot.haryanto@angkasapura2.co.id
Mr. Victor Situmorang *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	PT. (Persero) Angkasa Pura II Gedung 611 Soekarno-Hatta International Airport Jakarta Indonesia	Tel: +62-21-5506130 Fax: +62-21-5501135 E-mail: vsm.situmorang@angkasapura2.co.id
Mr. Rudi Widioko *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Airport and Airspace Technology PT. Garuda Indonesia Garuda Operations Center Soekarno-Hatta Airport Indonesia	Tel: +62-21-5501521 Fax: +62-21-5501528 E-mail: r.widioko@garuda-indonesia.com
Mr. Hideo Watanabe *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	JICA Expert on CNS/ATM Directorate General of Civil Aviation Karya Building 23rd Floor Jl. Medan Merdeka Barat 8 Jakarta 10110 Indonesia	Tel: +62-21-350 5191 Fax: +62-21-350 5191 E-mail: hideowsj@jt9.so-net.ne.jp
MALAYSIA		
Mr. Tay Sween Boon *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Deputy Director of KL ATCC Air Traffic Control Centre Department of Civil Aviation Sultan Abdul Aziz Shah Airport 47200 Subang, Selangor Malaysia	Tel: 603-7847 3573 Fax: 603-7847 3572 E-mail: taysboon@gmail.com

STATE/NAME	DESIGNATION/ADDRESS	CONTACT DETAILS
Mr. Richard Tan Hock Chye *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Assistant Director of KL ATCC Department of Civil Aviation Sultan Abdul Aziz Shah Airport 47200 Subang, Selangor Malaysia	Tel: 603-7847 3573 Fax: 603-7847 3572 E-mail: imbmrich@gmail.com
Mr. Bryan Lai Nyit Sen *(ATFM/TF/9, BBACG/18)*	Flight Ops Executive (Flight Dispatch) Malaysian Airlines Flight Operations Division 2nd Floor, East Wing Flight Management Building 64000 Sepang International Airport Malaysia	Tel: 603-87775767 Fax: 603-87771244 E-mail: bryanlai@mas.com.my
NEPAL		
Mr. Harihar Mandal *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Senior Officer, TIACAO Civil Aviation Authority of Nepal Head Office, Babar Mahal Kathmandu Nepal	Tel: 977-1-4262326 Fax: 977-1-4262516 E-mail: cnsatm@mos.com.np
Mr. Ashok Kumar Subedi *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Senior Officer Civil Aviation Authority of Nepal Head Office, Babar Mahal Kathmandu Nepal	Tel: 977-1-4262326 Fax: 977-1-4262516 E-mail: aksubedi@gmail.com
PAKISTAN		
Mr. Azkar-ul-Haq *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	SATCO Officer-in-charge Radar Facility Civil Aviation Authority Jinnah International Airport Terminal-1, Karachi 75200 Pakistan	Tel: 92-21-9248756 Fax: 92-21-9248758 E-mail: gmats@caapakistan.com
SINGAPORE		
Mr. Kuah Kong Beng *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Chief Air Traffic Control Officer Civil Aviation Authority of Singapore Singapore Changi Airport P.O. Box 1 Singapore 918141	Tel: 65 6541 2405 Fax: 65 6545 6516 E-mail: kuah_kong_beng@caas.gov.sg
Mr. Hermizan Mohamed Jumari *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Project Officer (Air Traffic Management) Civil Aviation Authority of Singapore Singapore Changi Airport P.O. Box 1 Singapore 918141	Tel: 65 6541 2464 Fax: 65 6545 6516 E-mail: hermizan_jumari@caas.gov.sg
Mr. Heng Cher Sian Edmund *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Project Officer (Air Traffic Management) Civil Aviation Authority of Singapore Singapore Changi Airport P.O. Box 1 Singapore 918141	Tel: 65 6541 2457 Fax: 65 6545 6516 E-mail: edmund_heng@caas.gov.sg

STATE/NAME	DESIGNATION/ADDRESS	CONTACT DETAILS
Mr. Wee Aik San Andrew *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Chief, Singapore Air Traffic Control Centre Civil Aviation Authority of Singapore Singapore Changi Airport P.O. Box 1 Singapore 918141	Tel: 65 6541 2430 Fax: 65 6545 6252 E-mail: andrew_wee@caas.gov.sg
THAILAND		
Flg.Off. Nakorn Yoonpand *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Air Traffic Control Expert Department of Civil Aviation 71 Soi Ngarmduplee, Rama IV Road Tungmahamek, Sathorn Bangkok 10120, Thailand	Tel: 66-2-287 0320 ext 1165 Fax: 66-2-286 2909
Ms. Chuleeporn Leemanan *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Air Transport Technical Officer Department of Civil Aviation 71 Soi Ngarmduplee, Rama IV Road Tungmahamek, Sathorn Bangkok 10120, Thailand	Tel: 66-2-286 8159 Fax: 66-2-286 8159 E-mail: chuleeporn@aviation.go.th
Mr. Theppiboon Jinaporn *(FIT-BOB/8)*	ATC Instructor Civil Aviation Training Centre 1032/355 Paholyothin Rd Jatujak, Bangkok 10900 Thailand	Tel: 66-2-2726029 Fax: 66-2-2725288 E-mail : tjatc@hotmail.com
Mr. Chintawat Phetriang *(ATFM/TF/9, BBACG/18)*	ATC Instructor Civil Aviation Training Centre 1032/355 Paholyothin Rd Jatujak, Bangkok 10900 Thailand	Tel: 66-2-2726029 Fax: 66-2-2725288 E-mail : chintawat_jp@hotmail.com
Mr. Nopadol Sangngurn *(ATFM/TF/9)*	Executive Expert Aeronautical Radio of Thailand Ltd. 102 Ngamduplee Tungmahamek, Sathorn Bangkok 10120, Thailand	Tel: +66-2-285 9054 Fax: +66-2-285 9488 E-mail: nopadol@aerothai.co.th
Mr. Choosit Kuptaviwat *(FIT-BOB/8)*	Director, Air Traffic Services Engineering Planning and Standards Department Aeronautical Radio of Thailand Ltd. 102 Ngamduplee Tungmahamek, Sathorn Bangkok 10120, Thailand	Tel: 66-2-287 8391 Fax: 66-2-287 8620 E-mail:
Mr. Tinnagorn Choowong *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Air Traffic Control Manager Aeronautical Radio of Thailand Ltd. 102 Ngamduplee Thungmahamek Bangkok 10120, Thailand	Tel: 66-2-287 8780 Fax: 66-2-287 8244 E-mail: tinnagorn.ch@aerothai.co.th

STATE/NAME	DESIGNATION/ADDRESS	CONTACT DETAILS
Mr. Jirasak Netiprawat *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Air Traffic Control Manager, BKK ATFMU En-route Air Traffic Management Department Aeronautical Radio of Thailand Ltd. 102 Ngamduplee Thungmahamek Bangkok 10120, Thailand	Tel: 66-2-287 8025 Fax: 66-2-287 8026 E-mail: jirasak.ne@aerothai.co.th
Mr. John E. Richardson *(ATFM/TF/9 & BBACG/18)*	Air Traffic Control Manager Aeronautical Radio of Thailand Ltd. 102 Ngamduplee Thungmahamek Bangkok 10120, Thailand	Tel: 66-2-287 8025 Fax: 66-2-287 8026 E-mail: jricho282@gmail.com
Mr. Piyawut Tantimekabut *(ATFM/TF/9 & BBACG/18)*	Systems Engineer Aeronautical Radio of Thailand Ltd. 102 Ngamduplee Thungmahamek Bangkok 10120, Thailand	Tel: 66-2-287 8025 Fax: 66-2-287 8026 E-mail:
Dr. Paisit Herabat *(FIT-BOB/8)*	Engineering Manager, Systems Engineering Aeronautical Radio of Thailand Ltd. 102 Soi Ngarmduplee Tungmahamek, Sathorn Bangkok 10120, Thailand	Tel: +66-2-285 9191 Fax: +66-2-285 9716 E-mail: paisit@aerothai.co.th
Ms. Saifon Obromsook *(ATFM/TF/9 & BBACG/18)*	Senior Systems Engineer Aeronautical Radio of Thailand Ltd. 102 Ngamduplee Tungmahamek, Sathorn Bangkok 10120, Thailand	Tel: 66-2-287 8291 Fax: 66-2-285 9716 E-mail: fon@aerothai.co.th
Mr. Tanongsak Charoenpornkitwatana *(FIT-BOB/8)*	Aircraft Engineer Avionics System Group, Technical Dept. Thai Airways International Public Co., Limited 89 Vibhavadee Rangsit Road, Chatuchak, Bangkok 10900 Thailand	Tel: 66-2-1376209 Fax: 66-2-1376940 E-mail: tanongsak.c@thaiairways.com
Capt. Chumpol Soodla *(BBACG/18)*	Flight Operations Department Thai Airways International Public Co., Limited 89 Vibhavadee Rangsit Road, Chatuchak, Bangkok 10900 Thailand	Tel: 66-2-545-2666 Fax: 66-2-545 3849 E-mail: choompol.s@thaiairways.com
Capt. Apiluk Permpol *(BBACG/18)*	Captain Thai Airways International Public Co., Ltd. 89 Vibhavadi Rangsit Rd Bangkok 10900 Thailand	Tel: +66-2-545 2665 Fax: +66-2-545 3849 E-mail: apiluk.p@thaiairways.com

STATE/NAME	DESIGNATION/ADDRESS	CONTACT DETAILS
UNITED STATES		
Mr. Dan Hanlon *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	ATO Representative, Asia Pacific Region US Federal Aviation Administration American Embassy Singapore 27 Napier Road Singapore 258508	Tel: 65-6543 1466 E-mail: dan.hanlon@faa.gov
Mr. Allan Storm *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	HQ AF/A30-AI (Intl. Civil/Military Aviation Issues) DoD Policy Board on Federal Aviation 1480 Air Force Pentagon, Room 4D1062 Washington, D.C. 20330 U.S.A.	Tel: 1-703-693-0050 E-mail: allan.storm@pentagon.af.mil
Mr. Brad Cornell *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	787 Crew Operations Boeing P.O. Box 3707 MC 07-25 Seattle, WA 98124-2207 U.S.A.	Tel: 1-425-280 5603 E-mail: Bradley.D.Cornell@Boeing.Com
Mr. Dung Nguyen *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Flight Management Systems Flight Plan/Datalink Boeing P.O. Box 3707 MC 02-MC Seattle, WA 98124-2207 U.S.A.	Tel: +1-425-717 7052 Fax: +1-425-294 1076 E-mail: dung.q.nguyen@boeing.com
IATA		
Mr. Soon Boon Hai *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Assistant Director – Safety, Operations & Infrastructure – Asia/Pacific International Air Transport Association 77 Robinson Road #05-00 SIA Building Singapore 068896	Tel: 65-62397267 Fax: 65-65366267 E-mail: soonbh@iata.org
Mr. Owen Dell *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Manager, International Operations Cathay Pacific Airways Ltd International Affairs Department International Operations 9th Floor, Central Tower, Cathay Pacific City 8 Scenic Road Hong Kong International Airport Lantau Island Hong Kong, China	Tel: +852-2747 8829 Fax: +852-2141 8829 E-mail: owen_dell@cathaypacific.com
Capt. Aric Oh *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Deputy Chief Pilot (Technical) Singapore Airlines Flight Operations Technical (SIN-STC 04-C) SIA Training Centre 04-C 720 Upper Changi Road East Singapore 486852	Tel: +65-6540-3694 Fax: +65-6542 9564 E-mail: aric_oh@singaporeair.com.sg

STATE/NAME	DESIGNATION/ADDRESS	CONTACT DETAILS
Mr. Grant Wilson *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Aeronautical Services & ATM Flight Operations Support, 2nd Floor EMIRATES P.O. Box 686 Dubai United Arab Emirates	Tel: 971-4-703-6466 Fax: 971-4-703-6318 E-mail: grant.wilson@emirates.com
Mr. Ron Rigney *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Manager Regulatory & Industry Affairs Qantas Airways Limited QCC/3 203 Coward Street Mascot 2020 Australia	Tel: 61-2-9691 1195 Mobile: 61-409-633 743 Fax: 61-2-9691 1605 E-mail: ronrigney@qantas.com.au
IFALPA		
Capt. Itt Sirisawat *(FIT-BOB/8)*	IFALPA Thai Pilot Association Office 3rd Floor, 5th Building Thai Airways Head Office 89 Vibhavadi Rangsit Road Bangkok	Tel: +66-81-8259998 Fax: +66-2-5130030 E-mail: s_itt@yahoo.com
Capt. Korn Mansumitchai *(ATFM/TF/9, BBACG/18)*	IFALPA 484 Rachadanivet Soi 12 Samsennok, Huaykwang Bangkok 10320	Tel: +66-2-2743673 Fax: +66-2-5130030 E-mail: captainkorn@gmail.com
SITA		
Mr. Philip Koh Cheng Chye *(FIT-BOB/8)*	CNS AIRCOM Manager, South-East Asia and Pacific SITA 11, Loyang Way Singapore 508723	Tel: +65 8163 3696 Fax: +65 6548 2606 E-mail: philip.koh@sita.aero
ARINC		
Mr. Sarawut (Shane) Assawachaichit *(FIT-BOB/8, ATFM/TF/9, BBACG/18)*	Programme Manager Globalink Services ARINC Incorporation 102 Soi Ngarmduplee, Rama IV Road Tungmahamek, Sathorn Bangkok 10120, Thailand	Tel: +66-2-285 9435-6 Fax: +66-2-285 9437 E-mail: SASSAWAC@arinc.com
ICAO		
Mr. Andrew Tiede	Regional Officer ATM ICAO Asia and Pacific Office 252/1 Vibhavadi Rangsit Rd Chatuchak, Bangkok 10900 Thailand	Tel: 66-2-5378189 Fax: 66-2-5378199 AFTN: VTBBICOX E-mail: atiede@bangkok.icao.int icao_apac@bangkok.icao.int
Mr. Polawat Chootai	Regional Officer ATM ICAO Asia and Pacific Office 252/1 Vibhavadi Rangsit Rd Chatuchak, Bangkok 10900 Thailand	Tel: 66-2-5378189 Fax: 66-2-5378199 AFTN: VTBBICOX E-mail: pchootai@bangkok.icao.int icao_apac@bangkok.icao.int

LIST OF WORKING AND INFORMATION PAPERS − FIT-BOB/8

WORKING PAPERS

WP/No.	Agenda Item	Title	Presented by
1	1	Provisional Agenda	Secretariat
2	7	Guidance Material – Data Link Ground Equipment	Secretariat
3	8	Update FIT-BOB Task List	Secretariat
4	5	ADS/CPDLC Equipage and Participation of States in Operational Trials of ADS/CPDLC	Secretariat
5	5	Data Link Implementation Table	Secretariat
6	6	Provision of Safety Monitoring Services in Asia and Pacific	Secretariat
7	3	Update on ADS/CPDLC Operations in Chennai and Kolkata FIRs	India
8	4	Update on ADS/CPDLC Operations in Mumbai FIR	India
9	6	Update on Establishment of CRA	India

INFORMATION PAPERS

IP/No.	Agenda Item	Title	Presented by
1	1	List of Working and Information Papers	Secretariat
2	7	FANS 1/A Operations Manual Version 4	Secretariat
3	7	Guidance Material for the End-to-End Monitoring of Data Link Systems	Secretariat
4	5	ADS/CPDLC Implementation in Indonesia	Indonesia

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LIST OF WORKING PAPERS (WPs) AND INFORMATION PAPERS (IPs) − ATFM/TF/9

WORKING PAPERS

NUMBER	AGENDA	TITLE	PRESENTED BY
WP/1	1	Provisional Agenda	Secretariat
WP/2	3	ATFM/TF Work Programme	Secretariat
WP/3	3	Review of AIP Supplement – Operational Trial	Secretariat
WP/4	2	Air Traffic Flow Management Operational Trial – Update in Kuala Lumpur FIR	Malaysia
WP/5	2	Observations from Data Collection	Thailand
WP/6	3	ATFM Users Handbook	Thailand
WP/7		*Intentionally left blank*	
WP/8		*Intentionally left blank*	
WP/9	3	Establishment of Bypass ATS Route	Secretariat

INFORMATION PAPERS

NUMBER	AGENDA	TITLE	PRESENTED BY
IP/1	-	List of Working Papers (WPs) and Information Papers (IPs)	Secretariat
IP/2	4	Outcomes from the 43rd DGCA Conference	Secretariat
IP/3	2	Operational Trial Data Set – One week Nov 06, Dec 06, Jan 07	Secretariat

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LIST OF WORKING PAPERS (WPs) AND INFORMATION PAPERS (IPs) − BBACG/18

WORKING PAPERS

NUMBER	AGENDA	WORKING PAPERS	PRESENTED BY
WP/1	1	Provisional Agenda for BBACG/18	Secretariat
WP/2	2	WPAC/SCS RVSM Scrutiny Group	Secretariat
WP/3	5	Review of the Asia and Pacific ATS Route Catalogue	Secretariat
WP/4	2	Annex 15 Provisions in relation to AIRAC	Secretariat
WP/5	2	Conclusions and Decisions of APANPIRG/17	Secretariat
WP/6	6	Review of State Contingency Planning Requirements	Secretariat
WP/7	3	Traffic Sample Data (TSD) State Letter	Secretariat
WP/8	8	Work Plan from BBACG/17	Secretariat
WP/9	9	State Focal Point for Safety Related Activities	Secretariat
WP/10	9	Study of Preparedness of States to implement Safety Management Systems	Secretariat
WP/11	3	Review of the Sixth Meeting of the Regional Airspace Safety Monitoring Advisory Group (RASMAG/6)	Secretariat
WP/12	5	Implementation of Conditional Routes (CDRs)	Secretariat
WP/13	5	Published Transitions for Efficient Access to AUSOTS Flex Tracks	Australia

INFORMATION PAPERS

NUMBER	AGENDA	INFORMATION PAPERS	PRESENTED BY
IP/1	-	List of Working Papers (WPs) and Information Papers (IPs)	Secretariat
IP/2	9	ICAO Language Proficiency Provisions	Secretariat
IP/3	9	Airbus A380 Wake Vortex – Revised Guidance Material	Secretariat
IP/4	9	Search and Rescue Workshop	Secretariat
IP/5	9	Report of Second Inter-Regional Coordination Meeting	Secretariat
IP/6	9	Report of the First Meeting of the Arabian Sea/Indian Ocean ATS Coordination Group (ASIOACG/1)	Secretariat
IP/7	9	ICAO website of the Flight Safety Information Exchange	Secretariat

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