

**INTERNATIONAL CIVIL AVIATION ORGANIZATION
ASIA AND PACIFIC OFFICE**



**REPORT OF THE SEVENTH MEETING OF THE AIR TRAFFIC FLOW
MANAGEMENT TASK FORCE
(ATFM/TF/7)**

BANGKOK, THAILAND, 31 JULY – 3 AUGUST 2006

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

Approved by the Meeting
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ATFM/TF/7
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1.1 Introduction

1.1.1 The Seventh Meeting of the Air Traffic Flow Management Task Force (ATFM/TF/7) was held at the ICAO Asia and Pacific Regional Office, Bangkok, Thailand on 31 July to 3 August 2006.

1.1.2 The purpose of the meeting was to conduct a review of the ATFM operational trial in the Bay of Bengal and Pakistan areas using the automated Bay of Bengal Cooperative ATFM Advisory System (BOBCAT) developed by Aeronautical Radio of Thailand Limited (AEROTHAI). The ghosting phase of the trial had commenced on 29 June 2006, with progression to the operational phase occurring on 24 July 2006.

1.2 Officers, Secretariat and Participants

1.2.1 The meeting was opened by Mr. Andrew Tiede, Regional Officer ATM, on behalf of Mr. L. B. Shah, Regional Director, ICAO Asia and Pacific Regional Office.

1.2.2 Task Force Chairman, Mr. Ron Rigney, ATM International Liaison Manager, Airservices Australia presided over the meeting. Mr. Tiede acted as the Secretary of the meeting, assisted by Mr. Polawat Chootai, Regional Officer ATM.

1.2.3 Thirty-seven (37) participants from Afghanistan, Australia, Bangladesh, Hong Kong China, India, Indonesia, Malaysia, Singapore, Thailand, Viet Nam, IATA and IFALPA attended the meeting. A list of participants is in **Appendix A**.

1.3 Opening of the Meeting

1.3.1 Mr. Andrew Tiede, on behalf of Mr. Lalit B. Shah, Regional Director, ICAO Asia and Pacific Regional Office welcomed the participants to Bangkok.

1.3.2 In opening the meeting, Mr. Tiede thanked States and international organizations for their commitment in moving the work of the Task Force forward. The commencement of the operational phase of the ATFM trial a few days ago had been a major milestone in terms of attempting to find solutions to the problems of flow management in the Bay of Bengal. In particular, it demonstrated that the many disparate members of the Task Force had been able to work together in addressing many complex and demanding issues. Mr. Tiede urged all participants to continue working in this fashion as without a collaborative approach to decision making nothing useful would be achieved.

1.3.3 Mr. Tiede also noted that there were a number of critical matters to be addressed by the meeting. These included a comprehensive review of the ghosting and operational phases of the trial, the remediation of problems and issues identified by the trial thus far, a decision as to the cessation or continuation of the operational trial and the matter of a replacement Chairman for the Task Force. Mr. Tiede wished all participants a successful and constructive meeting.

Chairman's Opening Remarks

1.3.4 In his opening remarks Mr. Ron Rigney welcomed the participants to the seventh meeting of the ATFM/TF and provided an overview of activities and related events which had taken place since the ATFM/TF/6 meeting. These included the Special ATS Coordination Meeting (SCM) for the "Go/No Go Decision" which was held at AEROTHAI Headquarters during June 2006 and the follow-up teleconferences by members of the ATFM Core Team, during July 2006.

1.3.5 In reviewing the first few days of the BOBCAT operational trial, Mr. Rigney indicated that there were some key issues that needed to be resolved as a matter of priority and that the ATFM/TF/7 meeting would provide an ideal opportunity for solutions to be developed and implemented.

1.3.6 Mr. Rigney also confirmed that he would be retiring as Chairman of the ATFM/TF at the conclusion of this meeting on 3rd August 2006 and that this advice had been previously notified to the members of the ATFM/TF Core Team during the SCM “Go/No Go Decision” on 14th June 2006. Mr. Rigney indicated that he would make further comment in regard to his 18-month period as Chairman of the ATFM/TF during his closing remarks.

1.4 **Documentation and Working Language**

1.4.1 The meeting was conducted in English. All meeting documentation was in English.

1.4.2 Nine (9) working papers, two (2) information papers and 4 flimsies were presented to the meeting. A list of the papers is at **Appendix B**.

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Agenda Item 1: Adoption of Agenda

1.1 The meeting adopted the following agenda:

Agenda Item 1:	Adoption of Agenda
Agenda item 2:	Data Analysis
Agenda item 3:	Operational issues
Agenda item 4:	Safety and Airspace Monitoring issues
Agenda item 5:	Implementation Management Considerations
Agenda Item 6:	Future Direction and Arrangements
Agenda Item 7:	Any other business
Agenda Item 8:	Date and venue for the next meeting

Agenda Item 2: Data Analysis

2.1 The meeting recalled that at the Go/No Go meeting held in Bangkok on 14 – 16 June 2006, it was agreed that the ghosting phase of the trial would commence on 29 June 2006. Progression from the ghosting phase to the operational use of BOBCAT would take place once satisfactory ghosting performance was confirmed by the Core Team of the ATFM/TF. At that stage this was anticipated to occur on or after 6 July 2006 and would require a trigger NOTAM to activate the full operational trial.

2.2 Subsequently, following a teleconference of the ATFM Core Team held on 4th July 2006, the Ghosting Phase was extended to 23 July. The operational phase of the trial of the BOBCAT ATFM system commenced on Monday 24th July 2006, pursuant to further teleconference discussion on 19th July 2006. A NOTAM to extend the Ghosting period was issued along with a Trigger NOTAM advising the new date for the Operational Trial.

Data analysis of traffic entering the Kabul FIR

2.3 The meeting was presented with data from Thailand which was received from Lahore and Kabul ACCs, as well as data extracted from the BOBCAT system regarding Allocated Wheels-Up Time (AWUT) given by BOBCAT, Estimated Elapsed Times (EET) entered by dispatchers into the system and the Estimated Time Over (ETO) the respective entry points into the Kabul FIR.

2.4 The purpose of this analysis was to compare live data of Actual Time Over (ATO) and flight level from Lahore and Kabul ACCs at Kabul entry points with the BOBCAT allocation. The data for the period 24 to 27 July 2006 is shown at **Appendices C to F** of this Report.

2.5 The meeting noted that the data mentioned in Lahore/Kabul FIR figures also included aircraft who did not submit a slot request under the BOBCAT system and in some cases did not submit a flight plan/departure message to the ATFMU, as was originally agreed at previous Task Force meetings and also included in the ATFM Handbook and the ANSP Training Guidelines. As these aircraft could have a serious affect on the BOBCAT slot allocations by taking a slot assigned to

another aircraft, the airlines and States concerned were urged to take appropriate action as soon as possible to mitigate this issue.

2.6 During the analysis of the Lahore/Kabul data, the meeting noted the following observations:

- a) The Kabul entry times, flight levels and routing for each flight are with 0-2 minutes from Lahore and Kabul ACC on nearly all occasions. The data also showed that, on most occasions, aircraft had successfully made their Kabul entry window allocated by BOBCAT. Airlines concerned should be congratulated on this achievement, taking into account that these aircraft had traveled up to 5 ½ hours prior to entering the Kabul FIR;
- b) When an aircraft who had not entered the BOBCAT system and had taken a slot allocated to another aircraft, there was a trend which indicated that following aircraft at the same level and entry route into Kabul FIR had each lost time at the entry point by about 10 minutes; Notwithstanding these variances, where an aircraft who did not submit a slot request through the BOBCAT system and therefore did not receive a slot allocation, this was successfully managed by enroute ACCs on most occasions;
- c) On some occasions, aircraft were not at their allocated level entering the Kabul FIR. Further examination seemed to indicate that once again, an aircraft without a slot allocation may have caused this anomaly;
- d) The meeting also observed that some ANSPs had not always taken due regard in ensuring that aircraft depart their respective airports during the period of AWUT +5 minutes. On occasions this departure time has been in variance with the AWUT up to 30 minutes from the allocated wheels-up time and is another possible cause for other aircraft using their AWUT being affected. This issue has shown some improvement after discussions by the ATFMU with some of the ANSPs concerned.

2.7 The meeting, noting the matters mentioned above, requested ANSPs to ensure that, except when a pilot advises that they can either makeup or lose time to arrive at the Kabul FIR within their entry time window, aircraft are managed to depart the respective airport on their allocated wheels-up time +5 minutes, or arrangements are made in advance between the ACC and the ATFMU to offer an acceptable alternative.

2.8 Attention was also drawn to the provisions in the AIP Supplement and trigger NOTAM requiring that aircraft without an allocated slot be accommodated only after flights with slots had been processed and therefore should expect delays for requested routes and levels. Cooperation was sought from ANSPs in strictly applying these provisions.

2.9 The meeting recognized the onerous nature of data collection and requested that Thailand keep the need for daily data updates under review, with the objective of reducing the volume of data required from States as soon as possible.

2.10 The meeting was pleased to note that, in general terms, the time accuracy of flights crossing the Kabul entry fixes was within 2 or 3 minutes of the allocated BOBCAT fix time. This was testament to the high performance of flight crews involved and was anticipated to allow the reduction of the flow buffer time from 5 minutes to 2 minutes in due course. Thailand and affected States with aerodrome operations were asked to review the matter in order to allow the reduction of the Flow

buffer as soon as possible. The meeting agreed that any reduction of flow buffer would occur incrementally, with a period of operations between each reduction in order that the impact of each reduction could be studied.

2.11 In noting that they supported the continuation of the operational trial, IFALPA considered that the reduction of the flow buffer below 5 minutes would have to be carefully managed. IFALPA suggested that this would be best achieved during the winter period when flights had a much lower chance of needing to divert off track because of adverse weather conditions over the Bay of Bengal and India. During the summer monsoon period, chances of diversion were much higher and IFALPA considered that having aircraft too tightly metered would potentially complicate the situation.

BOBCAT system development and improvements

2.12 Thailand updated the meeting in relation to recent developments and enhancements to the BOBCAT system. The following performance enhancement of the BOBCAT slot allocation mechanism had been achieved:

- a) Time taken to process slot allocation at cutoff time has been reduced to an average of less than 5 minutes. This varies depending on the amount of slot request options submitted;
- b) Average response time for viewing free slots that are available in the system has been reduced from 30 seconds to 15 second; and,
- c) Average time to allocate slot after cutoff time has been reduced to 10 seconds.

2.13 A number of significant changes had been developed and included in the BOBCAT System as Version 1.02, effective from 16 June 2006. These included, but were not limited to, the following:

- a) Slot Request information in all slot request pages can now be sorted by order of ETD, callsign, etc, enabling dispatchers responsible for multiple flights to keep track of slot requests more easily;
- b) During the time the BOBCAT system is processing slot allocation for the current day, a message would appear on the slot request page to advise that the system was now allocating slots. This message will change to notify that slot allocation is completed once all slot allocation is processed so that dispatchers can be re-directed to the proper slot allocation page;
- c) Mach number input is removed from user interface in accordance with the request from ATFM/TF/6 meeting;
- d) Updates to slot allocation results are shown with yellow blinking dots symbol denoting slot allocation results update next to aircraft call signs. This would enable appropriate actions to be taken by ANSPs in distributing slot allocation results within their organization, while enabling dispatchers to note updates to slot allocation results as well as the possibility of better slots becoming available.

- e) Each computer showing BOBCAT slot allocation results will highlight changes made by dispatchers. This highlight would remain active until the individual viewing slot allocation results page acknowledges the changes. This may prompt ANSPs to re-sort their traffic flow information after changes have been made.
- f) Slot Allocation results shown on the “Flight Allocation” page would be divided into different tables in the following order:
 - 1. Flights with Slot Allocation;
 - 2. Flights without Slot Allocation; and,
 - 3. Flights that cancelled Slot Allocation;
- g) In order to assist airlines in obtaining their preferred slot allocation, Slot Allocation results shown in “Waypoint Allocation” page would be divided into different tables in the following order:
 - 1. Current Slot Allocation at selected waypoints; and,
 - 2. Previously Used Slot Allocation at selected waypoints;
- h) Slot selection process for aircraft transiting DI to enter Kabul FIR at waypoint PAVLO/SITAX is streamlined;
- i) BOBCAT Forms available in Adobe Acrobat format on which information can be electronically filled in to improve ease-of-use; and
- j) BOBCAT Help Pages and Concept of Operations would be updated to reflect changes in BOBCAT Version 1.02.

Implementation of GPS Clock Synchronization

2.14 The meeting recalled that recent BOBCAT Concept of Operations documents mentioned planned linkage between the BOBCAT servers with GPS clock system for time synchronization to be completed before the commencement of Ghosting and Operational Trials. The linkage to GPS clock system for time synchronization was completed on 22 June 2006.

Improvements proposed to be incorporated into the BOBCAT System as Version 1.03

2.15 The meeting was informed by Thailand of the following enhancements to the BOBCAT system that have been developed since the Special ATS Coordination Meeting in June 2006 and were ready for incorporation into the System as BOBCAT Version 1.03 when agreed to by the meeting.

Slot Allocation Mechanism – Priority Ordering

2.16 The meeting was reminded that, according to the BOBCAT Concept of Operations document, BOBCAT allocates slot during the cutoff time according to the following priority order:

- a) Flight Level Priority;
- b) Route Sector Preference;

- c) Flight Level Profile;
- d) ETO at Kabul FIR Entry Waypoint; and,
- e) Random Scoring

2.17 Through discussions with airlines as well as discussion at the SCM Singapore, held on 17-18 July 2006, it was apparent that the current priority system used for initial slot allocation at cutoff time may not provide slot allocation with minimal delay.

2.18 As an example, Thailand illustrated the following two aircraft within a multiple-aircraft slot allocation scenario with the following assumption:

- a) All aircraft request slot at Waypoint ASLUM;
- b) An aircraft has been allocated slot at FL350 at 2105UTC with some delay;
- c) No aircraft has been allocated slot at FL310; and,
- d) Spacing between aircraft at Waypoint ASLUM is 15 minutes;

2.19 Consider Aircraft A with the following preferences:

Route Sector	Level Profile	Waypoint	FL	ETO	MAD
1	1	ASLUM	350	21:00	15
	2	ASLUM	310	21:00	15

2.20 Consider Aircraft B with the following preferences:

Route Sector	Level Profile	Waypoint	FL	ETO	MAD
1	1	ASLUM	310	21:06	15
	2	ASLUM	350	21:06	15

2.21 In the case of the original slot allocation priorities, BOBCAT considers slot allocation in the following order:

- a) Aircraft A (Route Sector 1; Level Profile 1)
- b) Aircraft B (Route Sector 1; Level Profile 1)
- c) Aircraft A (Route Sector 1; Level Profile 2)
- d) Aircraft B (Route Sector 1; Level Profile 2)

2.22 The following slot allocation would therefore be:

Aircraft	Waypoint	FL	ETO	Delay
X	ASLUM	350	21:05	15
B	ASLUM	310	21:06	0

2.23 The meeting noted that from the example above, Aircraft A would end up without a slot because the current slot allocation mechanism gives first level profile of Aircraft B higher priority.

2.24 Alternatively, if the priority was to be re-ordered into:

- a) Flight Level Priority;
- b) Route Sector Preference;
- c) ETO at Kabul FIR Entry Waypoint;

- d) Flight Level Profile; and,
- e) Random Scoring

2.25 BOBCAT would consider slot allocation in the following order:

- a) Aircraft A (Route Sector 1; Level Profile 1)
- b) Aircraft A (Route Sector 1; Level Profile 2)
- c) Aircraft B (Route Sector 1; Level Profile 1)
- d) Aircraft B (Route Sector 1; Level Profile 2)

2.26 The following slot allocation would therefore be:

Aircraft	Waypoint	FL	ETO	Delay
X	ASLUM	350	21:05	15
A	ASLUM	310	21:00	0
B	ASLUM	310	21:15	9

2.27 The meeting also noted that, by considering all level profile options of flights with earlier ETO to Kabul prior to considering level profile options of flights with later ETO, total system delay could be reduced, thus increasing efficiency of the overall slot allocation.

Slot Allocation Mechanism – ETO consideration

2.28 The meeting recalled that, according to the BOBCAT Concept of Operations document, BOBCAT takes ETO at Kabul FIR entry waypoint as the decision waypoint to determine order of aircraft considered by BOBCAT for slot allocation at cutoff time.

2.29 Due to aircraft spacing requirements from Pakistan, the system also considers slot allocation at waypoint DI, which is applicable for aircraft planning to enter the Kabul FIR via SITAX (A466) and PAVLO (N644) respectively.

2.30 The meeting further noted that since the DI-SITAX distance is shorter than DI-PAVLO, using Kabul entry waypoints (SITAX and PAVLO) as decision waypoint to determine order of aircraft may not be appropriate. In order to examine such issue, two aircraft scenario was presented.

2.31 Consider Aircraft C requesting slot via DI-SITAX:

Waypoint	FL	ETO	MAD
DI	350	21:00	15
SITAX	350	21:11	15

2.32 Consider Aircraft D requesting slot via DI-PAVLO:

Waypoint	FL	ETO	MAD
DI	350	20:59	15
PAVLO	350	21:12	15

2.33 ETO at SITAX for Aircraft C is earlier than ETO at PAVLO for Aircraft D. At the same time, aircraft D reaches waypoint DI before aircraft C. The current slot allocation system would allocate the following slots at DI:

Aircraft	ETO-DI	Delay
C	21:00	0
D	21:10	11

2.34 Being aware of the possibility of such an issue, BOBCAT slot allocation mechanism could be modified so that DI would be the decision waypoint to determine aircraft allocation ordering. In making this change, aircraft C would be allocated slot after aircraft D due to later ETO at DI, resulting in the following slot allocation at DI:

Aircraft	ETO-DI	Delay
D	20:59	0
C	21:09	9

2.35 The meeting was informed that, by making DI the decision waypoint for slot allocation during cutoff time, total system delay would be reduced, in this case from 11 minutes to 9 minutes.

Slot Request Pages

2.36 Mach number input re-enabled in the user interface in Slot Request pages to enable possible future application of aircraft spacing at Entry Waypoints into the Bay of Bengal with default of Mach 0.84.

Slot Allocation Pages

2.37 In order to enable possible future application of aircraft spacing at waypoints such as Bay of Bengal Entry Waypoints based on Mach number, the input is re-enabled in the “View Free Slot” page as well as in “Slot Allocation” page with default of Mach 0.84.

Slot Selection After Cutoff Time Pages

2.38 Communications with airlines indicated that there was no mechanism to modify ETD as an input in the context of “Slot Selection After Cutoff Time” page, which may confuse some airlines with respect to the size of delays aircraft were experiencing. In order to alleviate potential confusions, the “Slot Selection After Cutoff Time” page has been modified to enable airline dispatchers to change ETD to their own choice.

2.39 In the case where ETO at waypoints indicated in Available Slots diagram chosen by the aircraft causes the aircraft to have an ETD prior to the ETD input, the ETD figure would be adjusted to reflect slot selection.

2.40 In order to facilitate possible implementation of speed-based spacing within the system based on Mach number, the input is re-enabled in the “Slot Selection After Cutoff Time” pages with default Mach Number of 0.84.

Documents Section

2.41 BOBCAT Help Pages and Concept of Operations would be updated to reflect changes in BOBCAT Version 1.03.

Proposed BOBCAT Feature Improvement Plans for BOBCAT Version 1.04

2.42 The meeting was also informed that the current BOBCAT system depended on airline dispatchers monitoring BOBCAT after slot allocation in order to select the best slots for their aircraft. Through communications with airlines as well as information presented in the IATA Working Paper, it was recognized that such this may unnecessarily increase workload of the dispatchers and that constant monitoring may not be feasible in some cases.

2.43 In addition, the meeting recognized that at a certain point in time, airlines would have to submit their flight plan for the aircraft and prepare their operation around a particular slot allocation.

2.44 In order to mitigate dispatcher workload as well as reducing delays for aircraft, the following development was proposed:

- a) Once an aircraft has either cancelled or modified their slot, BOBCAT would look for aircraft who have been allocated slots behind the particular aircraft and have been allocated slots with delays;
- b) BOBCAT would then attempt to reduce delays allocated to applicable aircraft and send slot allocation results to the airline dispatch office;
- c) If an airline does not want BOBCAT to improve its aircraft's slot prior to agreed slot allocation modification cutoff time, the airline could also use "Flight Detail" page to "fix" his aircraft's slot and disable automatic slot adjustment by BOBCAT.

2.45 The meeting thanked Thailand for the suggested improvements to the BOBCAT system which were the result of change requests from ANSP's and airlines, as well as for the extensive work carried out by the BOBCAT Development Team. Nevertheless, IATA requested that Version 1.03 not be loaded into BOBCAT at this time until IATA had further studied the proposed changes.

2.46 Participants were encouraged to continue to develop proposals for software enhancements that could be prepared 'off-line' and, after review and approval by the ATFM/TF, introduced into the next software version upgrade

Agenda Item 3: Operational Issues**Operational Trial Feedback - Afghanistan**

3.1 The meeting was pleased to welcome the Kabul ACC Manager to the meeting and appreciated the comprehensive update about the circumstances in Afghanistan that was provided to the meeting.

3.2 The Kabul ACC Manager informed the meeting that Kabul ACC in its present state was initiated from a safety concept by the CENTAF Command in Afghanistan. After the initial development team came on board in 2004, the groundwork and appropriate LOAs were researched and put in place. The ACC High Sector became active in May of 2005 and subsequently the complete Kabul ACC structure was commissioned on 11 July, 2005.

3.3 The Kabul ACC was designed to serve a dual purpose. It has a commission to assist with de-confliction of military missions and the establishment of Civil Aviation ATC for Afghanistan. In that light, twenty-six Management and controller staff were assembled and licensed in the ACC. The airspace design was unique and had many areas that were restricted by military missions. Taking all of this into consideration, the ACC passed the 100,000 traffic count in March of 2006 working all traffic procedurally. Approximately 6,000 of these operations were on the High Sector comprising overflight traffic; this traffic was now metered under the ATFM operational trial. Military restrictions still affect the airspace and its usage and these restrictions can change on a few minutes notice.

3.4 Kabul ACC staff found that traffic handling on many days was complex and busy, especially from midnight until four in the morning on the High Sector. Much of the stress was precipitated by the lack of recognized ATS separation standards between aircraft at the eastern boundary of Kabul FIR boundary. This situation was further complicated by poor radio and landline communications. At the implementation of the ACC, there was only 40% radio coverage for the country. The landlines only worked part of the time to Lahore and Karachi and most of the coordination with these ACCs was accomplished over HF radio by their Afghanistan counterparts. Recognized ATS separation according to ICAO standards was severely lacking.

3.5 Afghanistan reported that it had only been in the last 10 months that radios had improved and the landline situation had been acceptable. Landline communications with Tehran and Dushanbe had been added that allowed coordination of traffic. While Tehran uses the equipment regularly, Dushanbe rarely uses it at all. There is still no landline coordination with Turkmanabad or Termez ACCs on our Northern and Northwestern boundaries.

3.6 All traffic in the Kabul FIR is controlled by Procedural Control standards. Since the commissioning of the ACC and associated implementation of ATS separation services in Kabul FIR, westbound overflight traffic handed-off to Kabul ACC at the eastern Kabul FIR boundary had shown improvement in terms of the application of recognized ATS separation standards, to the point where, on hand-off, about 72% of traffic was separated in accordance with ICAO PANS ATM requirements. Notably, since inception of the operational phase of the ATFM trial, approximately 95% of traffic received on hand-off at the eastern boundary of the Kabul FIR was separated by ATS units preceding Kabul FIR in accordance with PANS-ATM requirements.

3.7 Needless to say, the dramatic increase in the application of recognized separation standards had acted to ensure a higher level of safety for overflight traffic as well as making it much easier for Kabul ACC to provide improved ATS services to the users of the Afghanistan airspace, particularly with destinations to the west. Although Kabul ACC would clearly prefer that all westbound overflight traffic was separated on inbound hand-off to Kabul, the implementation of the ATFM operational trial had assisted a dramatic improvement in this respect, providing a notable and essential transition towards positive air traffic control.

3.8 Although Kabul should still be considered in its infancy as an ACC, their growth and ability to assimilate more and more traffic was evident. The traffic had been validated in this period of time and shows 40 to 50 operations during the critical hours between midnight and four o'clock am daily. However, during the "season" when unfavorable winds diminish, Kabul ACC will average 50-60 operations during this same period. Traffic forecasts for the next two years indicate a growth to 65-80 operations during the same four hours. The transition of these initial growth steps will most likely lead to RVSM implementation sometime in 2008.

3.9 In the opinion of the Afghanistan ANSP, even in its early stages the ATFM operational trial has had a direct and measurable safety benefit by increasing the numbers of overflights that are separated in accordance with PANS-ATM provisions. Additionally, the ATFM operational trial has made the management of existing traffic levels more efficient and will enhance

the capability of Afghanistan to manage the increased traffic growth forecast in the near future. The ATFM operational trial has already made a vital difference to Afghanistan ATC and, as it is further refined, is anticipated to provide additional improvements in assisting aircraft separation by providing effective metering at the Kabul FIR boundary.

3.10 Afghanistan recognized the hard and complex work undertaken by affected Asia/Pacific States in attempting to provide effective traffic metering into Kabul and thanked all participants in the ATFM/TF for the very successful results demonstrated so far. Afghanistan had been honoured to be invited by ICAO to attend the ATFM/TF/7 meeting and was pleased to provide input and validation of the ATFM operational trial, as well as information concerning the Kabul ACC and its mission.

Operational Trial Feedback - India

3.11 India informed the meeting that on an average 40 to 45 aircraft operated during the window period of operational trial, of which approximately 25% was traffic originating from Delhi.

3.12 Notably, less than 40% of the operators participated in the slot request submission process on the first day and there was no participation on the second day. It may be possible that allocation of F280 for Delhi and the Lahore Departures may be one irritant to operators in participating in the trials. In real terms, available traffic capacity west of Delhi was such that these flights are assured that they would get their requested levels or at least F280.

3.13 Delhi ACC was able to accommodate all flights tactically without affecting the flow of over flying traffic. Some of the flights preferred to depart prior to AWUT to avoid ground delay and also few flights departed later than the AWUT due to operational reasons. However all flights including those of non-participating airlines were able to be allocated optimum levels by Indian ATC.

3.14 It was also noted that some operators chose to cancel the allocated slots and operated without slots. These flights also were allocated optimum levels in Indian FIRs without affecting the main flow. The fact that airspace capacity was available west of Delhi meant that optimum levels were available even though a slot request had not been submitted. In India's view this could be one of the reasons for many of the non-participations.

3.15 The main flow of traffic from Bangkok was via L509/N644/A466, WMKK via L759/L750 and WSSS via P628/G792. These flights were predominantly allocated FL 310 and FL 350 and hardly any flight from these airports was allocated FL 280 or FL 390, the reason apparently was due to availability of slots in the higher levels in almost every route.

3.16 India reported that there was no significant change in the number of aircraft movements or level occupancy after the commencement of operational trial, as compared to the pre-operational trial period. Additionally, no flights from Pakistan airports had participated in the operational trials, however it was likely that this was because no flights from Pakistan were scheduled during the daily trial period

3.17 India has enhanced the airspace capacity by implementing new route segments GAYA- ASARI north of Delhi, KAKID to BUTOP, ASOPO- RK (PAK) and also enhanced the area of radar surveillance over KKJ and ASOPO. Consequent to the above implementations the traffic flow in Indian FIRs has significantly improved with optimum level assignment to all aircraft.

3.18 Operational trial data indicates that the peak time occupancy is still less than 50% in most of the routes in Indian FIRs except for A466/N644 combined which accounted for about 60%. A comparative analysis of the traffic flow during ghosting period and operational trial is presented as **Appendix G** to this report.

3.19 In respect to the adoption of an amended FLAS arrangement in the eastern Bay of Bengal a few days before the trial and subsequent reversion after a single night of operation, India noted that hasty and sudden changes in co-ordination procedures and FLAS affecting multiple FIRs should not be implemented as safety issues and human factors are involved in such changes.

3.20 India also noted that as of the present, in their view departures from Delhi were not benefiting from the slot allocation process. Even though Delhi departures account for 25% of the total flow of traffic into Kabul FIR, only F280 is allocated as priority level; no level option is given to Delhi departures. Subsequently, India requested the meeting to consider providing Delhi departures due priority for all levels at par with other departures from airports east of Indian FIR, keeping in mind the current/forecast increase in traffic growth

Operational Feedback – Malaysia

3.21 Malaysia informed the meeting that although the implementation of the ATFM operational trial had been reasonably smooth, there was some anxiety among the controllers in adapting to the new environment during the transition period of using the new Flight Level Allocation Scheme (FLAS) arrangement for the crossing between 1500 to 2000UTC and parallel routes between 1530 to 1930 UTC over Bay of Bengal area. The new FLAS arrangements had been agreed during the Core Team teleconference that took place on 19 July 2006.

3.22 During the teleconference meeting on 25 July 2006 afternoon, the ATFM Task Force agreed to revert immediately to the previous FLAS arrangement for the crossing (FL300) and parallel routes (FL280, FL320 and FL340) beginning 25 July 2006.

3.23 Malaysia presented data in the table below (**Table 1**), showing the number of flights departing from Kuala Lumpur and Singapore participating in BOBCAT from 24th to 29th July 2006. During the ghosting period preceding the operational phase, the maximum number of flight movements for a particular night was 23. Many of the flights were observed to have flight planned on southern routes due to the prevailing wind conditions.

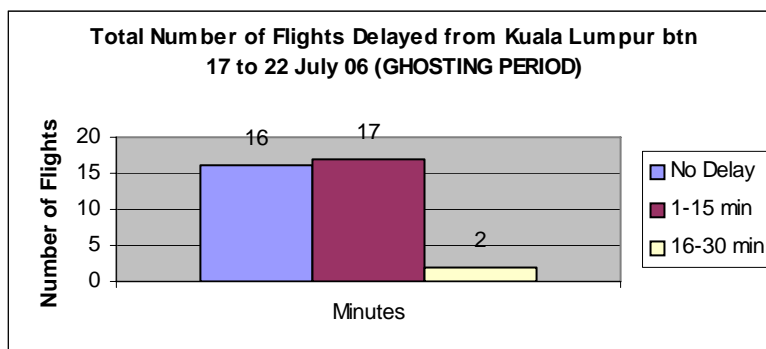
Date	WMKK	WSSS	TOTAL NO. OF FLIGHTS
24/7/06	5	8	13
25/7/06	4	6	10
26/7/06	3	6	9
27/7/06	1	7	8
28/7/06	4	9	13
29/7/06	6	11	17

TABLE 1 - Total number of flights departing from Kuala Lumpur and Singapore

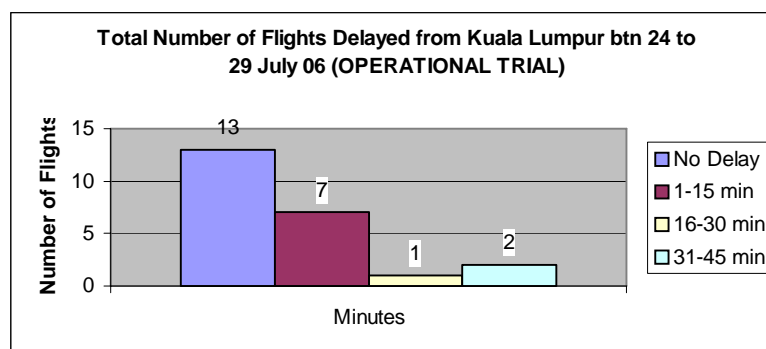
3.24 From the date of commencement of the ATFM operational trial till 29 July 2006, all flights departing from Kuala Lumpur departed within the AWUT.

3.25 Malaysia also provided details in terms of a Comparison of delay between Ghosting Period vs Operational Trial for Kuala Lumpur Departures, as follows:

Ghosting Period – There were 35 flights participating in the BOBCAT from 17 to 22 July 2006. Out of these 45% had no delay, 49% were delayed between 1-15 minutes, and 6% were delayed between 16-30 minutes.



Operational Trial - There were 23 flights participating in the BOBCAT from 24 to 29 July 2006. Out of these 57% had no delay, 30% were delayed between 1-15 minutes, 4% were delayed between 16-30 minutes and 9% had significant delays.



3.26 During the five occasions when flights that were unable to meet AWUT or request earlier departures, KL ACC encountered no difficulty in coordinating for new AWUT with Bangkok ATFMU.

3.27 In the lead up to the operational phase of the trial Malaysia had, on several occasions, raised the issue of traffic bunching during meetings of the ATFM/TF and also in the recent SCM ATFM in Singapore held between 17 to 18 July 2006 due to the following scenarios:

- a) Different EETs between B744s, B763 and B772,
- b) Traffic on L759 branching off at KKJ to SAMAR/DI and traffic on P628 branching to ROSIE at RK, and
- c) Flights allocated FL280 and FL390 at Kabul FIR.

3.28 Malaysia informed the meeting that on the 26 July 2006, there was a bunching of traffic occurrence in Kuala Lumpur FIR. The flight affected was SIA026, and delaying action was required in order that the aircraft lose 9 minutes to meet longitudinal time separation at IGREX (WMFC/VOMF FIR boundary). Details of the circumstances of this flight are included in **Appendix H**.

3.29 After the delaying action, SIA026 reported the revised estimated time at ASLUM of 2159 UTC from original slot time 2146UTC at FL350. Chennai ACC and Bangkok ATFMU were informed of the revised slot time at ASLUM.

3.30 In order to alleviate the occurrence of traffic bunching on P628, Malaysia proposed the following solutions:

- a) An additional viable flight level for the parallel routes or;
- b) The use of one ODD level for the westbound crossing routes, or
- c) reintroducing Waypoint 1 at VPL

3.31 Malaysia also highlighted the increased workload at KL ATCC, as another template to manually identify potential bunching at VPL was required while, at the same time, still maintaining the current template to “release” levels to Singapore ATCC when no departures were anticipated from KLIA.

Operational Trial Feedback - Singapore

3.32 Singapore provided the following observations and recommendations on the operational trial in relation to the initial period 24 July to 27 July 2006.

- a) Operators were cancelling their slots after 1300UTC and some operators less than an hour before departure. ANSP’s workload has increased due to the constant monitoring of the slot allocation page;
 - i) Operators should not accept the allocated slot only to cancel such slots one hour before ETD.
- b) Slot wastage when operators cancelled their slots and subsequent flights affected by the cancelled flights were not notified of the available slot with less delay;
 - i) Could the BOBCAT System generate a notification to the operators in regard to the availability of a less delay slot.
- c) From 24 to 27 July, ATFMU was able to assign new slot within a short time when coordinated by Singapore for flights that could not meet their Kabul entry time;
- d) Most pilots arranged to depart close to their AWUTs;
- e) The operational trial has not shown significant delays to Singapore departures;
- f) On 24 Jul, BAW16 was given a delay of 22 minutes and the spacing between the preceding traffic was 61 minutes. THA920 was given a delay of 25 minutes and the spacing between the preceding traffic was 45 minutes. THA960 was given a delay of 10 minutes and the spacing between the preceding traffic was 20 minutes;
- g) On 25 Jul, SIA328 was given a delay of 4 minutes and the spacing between the preceding traffic was 21 minutes. SIA026 was given a delay of 5 minutes and the spacing between the preceding traffic was 20 minutes;
- h) On 26 Jul, MAS16 was given a delay of 14 minutes when there was no preceding traffic ahead;

- i) On 27 Jul, SIA346 was given a delay of 3 minutes when the spacing between the preceding traffic was 30 minutes. RBA33 was given a delay 13 minutes when there was no preceding traffic ahead. KLM878 was given a delay of 7 minutes when there was no preceding traffic ahead. THA944 was given a delay of 13 minutes when the spacing between the preceding traffic was 34 minutes. DLH761 was given a delay of 20 minutes when the spacing between the preceding traffic was 45 minutes. QFA1 was given a delay of 9 minutes when the spacing between the preceding traffic was 30 minutes;
- i. Can the BOBCAT System have a separate spreadsheet to explain all the situations when the spacing between 2 aircraft is more than the agreed parameters so as to avoid constant queries from ANSPs and Operators?
- j) Aerodrome Controllers were able to send departures close to their AWUTs except on occasions when there were 3 or more flights having the same or close AWUTs. One flight was delayed as a result and a new slot had to be obtained from AFTMU.

Investigation of matters raised by Singapore

3.33 Following investigation by the ATFMU of the delay matters raised by Singapore (above), delays to aircraft can be categorized into either (a) missed AWUT; or, (b) allocated slot following another aircraft which changed slot allocation for various reasons. A summary of explanations for all queried aircraft appears below:

Occurrences on 24th July 2006:

- BAW16
 - 1200UTC: Allocated slot with 22 minutes of delay following AFR257
 - 1220UTC: AFR257 changed slot; no action on BAW16 to mitigate 22 minutes of delay.
- THA920
 - Missed AWUT of 1715UTC. At 1738UTC, allocated new slot of 1740UTC, resulting in 25 minutes of delay.
- THA960
 - Missed AWUT of 1825UTC. At 1833UTC allocated new slot of 1835UTC, resulting in 10 minutes of delay.

Occurrences on 25th July 2006:

- SIA328
 - 1200UTC: Allocated slot with 4 minutes delay following SIA346
 - 1221UTC: SIA346 changed slot; no action on SIA328 to mitigate 4 minutes of delay.
- SIA026
 - At 1605UTC, advised would miss AWUT of 1613UTC. Allocated new slot of 1618UTC, resulting in 5 minutes of delay.

Occurrences on 26th July 2006:

- MAS16
 - 1200UTC: Allocated slot with 14 minutes delay behind DLH783
 - 1224UTC: DLH783 changed slot; no action on MAS16 to mitigate 14 minutes of delay.

Occurrences on 27th July 2006:

- SIA346
 - 1200UTC: Allocated slot with 3 minutes of delay behind MAS02
 - 1608UTC: MAS02 changed slot; no action on SIA346 to mitigate 3 minutes of delay.
- RBA33
 - 1200UTC: Allocated slot with 13 minutes of delay following KLM878
 - 1722UTC: KLM878 changed slot; no action on RBA33 to mitigate 13 minutes of delay.
- THA944
 - 1200UTC: Allocated slot with 13 minutes of delay following CPA293
 - 1645UTC: CPA293 changed slot; no action on THA944 to mitigate 13 minutes of delay.
- DLH761
 - At 2108UTC, advised would miss AWUT of 2113UTC. Allocated new slot of 2133UTC, resulting in 20 minutes of delay.
- QFA1
 - 1200UTC: Allocated slot with 9 minutes of delay following SIA324
 - 1229UTC: SIA324 cancelled slot; no action on QFA1 to mitigate 9 minutes of delay.
- KLM878
 - KLM 878 from VTBD to EHAM given AWUT 1625 no delay, FL350 via PAVLO.
 - KLM878 Dep. At 1625 and after departure revised aircraft ETO PAVLO from 2019 to 2036. Aircraft advised by Bangkok ACC that ATFMU would confirm slot allocation based on new ETO.
 - ATFMU advised that FL310 was only available on this new ETO. Aircraft then advised via Yangon ACC a further revised ETO PAVLO of 2026. Further calculations by ATFMU indicated that FL310 would still be required. Yangon advised and KLM878 informed.

Operational Trial Feedback – Thailand

3.34 Thailand reported that overall the implementation of ATFM operational trial in the period between 24 – 27 July 2006 had been handled smoothly. However, there were several observations made.

- a) On the first day of Operational trial (24 July 2006), when it was decided by ANSPs concerned to introduce the revised FLAS, there were 5 flights on the crossing routes (L301 and P762) which were assigned FL260 even though

coordination procedures had been arranged with neighboring FIRs to use higher levels where possible;

- b) On 25 July 2006, after the revised FLAS was reverted to the previous procedures, traffic flow on the crossing routes resumed to normal operations;
- c) Most of the aircraft departing VTBD plan on L507. There were times during the operational trial when this caused occasional bunching of aircraft on this route however tactical management of these situations overcame any problems;
- d) The numbers of flights participating in the ATFM operational trial varied between 10 – 17 flights per night; and
- e) Most of the flights departing either on time or within AWUT buffer time. Two flights departed 7 minutes before their AWUT and another departed 1 minute after the AWUT plus buffer. On these occasions the pilot advised that the aircraft would adjust its profile to meet its allocated entry time into the Kabul FIR.

3.35 From a Bangkok ACC and Tower operational point of view delays were similar to those which occurred prior to the operational trial. However, Thailand considered that from an efficiency and cost basis to airlines, these delays took place on the parking bay with engines off, rather than on the taxiways with engines running. This was also less of an impact on environmental issues, and it also causes less congestion which could lead to delays on the maneuvering area for those Europe flights during ATFM operations. ATC operational workload had increased during the initial phase of the operational trial, however with familiarization with the ATFM procedures, this workload should not be a factor.

3.36 Over-flight traffic from Singapore and Malaysia entering the Bangkok FIR on L759 and M770 was less than expected, possibly due to the amount of aircraft proceeding via more southerly routes due to favourable winds. When the winds return to favour routes through the Kabul FIR, a more flexible approach by using all parallel routes should be considered by ANSPs concerned

Operational Trial Feedback - IATA

Overview

3.37 IATA presented the meeting with its review of the ATFM operational trials from the airspace users' perspective and highlighted a number of shortcomings which had surfaced during the first six days of the trials. Specifically, IATA had identified a number of serious issues which had impacted on the success of the operational trials to date. These included:

- a) The impact of crossing traffic on P762, and L301 on westbound traffic;
- b) The impact of bunching traffic on westbound routes and the inability of ATC to apply tactical solutions;
- c) Impact of non - participating traffic;
- d) Impact of aircraft missing AWUTs;

- e) Importance of ANSPs understanding their role in giving effect to the slots allocated by the ATFM system;
- f) Unused slots resulting from slot cancellations are wasted unless they are caught by dispatchers after they fall vacant, i.e., the machine does not make any adjustments to improve slots which are already allocated; and
- g) Priority in slot allocations.

Record of occurrences during the initial stage of the operational trials (24/7 – 30/7)

3.38 IATA confirmed that the number of flights interfacing with the BOBCAT system had varied daily, from 24 to 43 flights, due in part to some flights electing to remain clear of the Kabul FIR because of seasonal wind conditions and because of some flights failing to apply for slots even though they were operating in the area affected by ATFM. It should be noted that the actual numbers could peak at between 50-55 aircraft. IATA reported the following numbers as per the table below.

Date	24/7	25/7	26/7	27/7	28/7	29/7	30/7
No of flights	32	24	28	30	34	43	39

Occurrences on 24th July 2006:

3.39 Despite the agreement reached by the relevant ANSPs to improve ATC coordination in order to address the bunching issues raised by Malaysia prior to the decision to commence the operational trials, the first day (24th July) of the trials showed the relegation of 5 crossing flights on P762 and L301 to FL260. This resulted in the decision taken by the ATFM Core Team the following day to revert to the pre-operational trial ATC coordination arrangement. However, this left unresolved the issue of bunching which Malaysia had previously highlighted.

Occurrence on 26th July:

3.40 As a result of the unresolved bunching problem in the Kuala Lumpur FIR, there was an occurrence reported on the third day (26th July) of the trials, when long haul flight from Singapore to Europe was forced to orbit for 12 minutes after having flown less than one hour of a 12 hour flight. It was subsequently reported that the orbit was required to provide the minimum longitudinal time separation.

Occurrence on 27th July:

3.41 An occurrence was reported which indicated that one flight operating from Singapore was re-routed within the Pakistan airspace, from L750 across to G792. IATA stressed that this was an event that the ATFM system was designed to obviate. According to information received, this was after the flight had missed its AWUT because of Singapore apron congestion, and the aircraft was in receipt of a re-allocated AWUT.

Occurrence on 28th July:

3.42 According to reports received by IATA, long-haul flight which had departed Singapore was subsequently held for 5 minutes at LARIK on the eastern coast of India by Kolkatta ATC before being allowed to proceed. India clarified that due to level restrictions on P628 an aircraft unable to climb to FL320 or above (aircraft performance or traffic disposition) would have to either

reroute or accept delay before proceeding further. India will issue a NOTAM promulgating the flight planning requirements in this respect.

Additional information in regard to reported occurrences

3.43 The representative for one of the IATA member airlines indicated that aircraft departing Singapore and Kuala Lumpur on long haul 12 to 14 hour flights which are required to orbit or hold shortly after departure risk not making their destinations (and would be required to divert to en-route alternates), or arrive at destinations with less than the required minimum fuel. This posed safety and efficiency problems for the airlines.

3.44 The meeting was also informed that to avoid orbiting in the Kuala Lumpur airspace, some airlines had taken upon themselves to work around the system and to route-segregate their flights, with the resultant economic penalties. The meeting was informed by one airline operating out of Singapore that this could cost their airline from USD\$400 to \$USD3500 per flight.

3.45 The meeting was further informed that in the unfortunate event of an en-route diversion, the costs to the airline could be between USD \$70,000 to USD\$310,000 depending on the aircraft type and whether it is a technical diversion call or a full diversion with crew change and arrangements for passengers stay and onward travel.

IATA position in regard to BOBCAT operations to date

3.46 According to IATA, all of the above-mentioned occurrences were clear indications that many elements of the overall ATFM system, and BOBCAT machine, were not functioning as envisaged and that the impact on airline operations was extremely serious.

3.47 IATA informed the meeting that unless immediate solutions could be found to resolve the issues, which had manifest themselves through the occurrences which had been recorded to date (highlighted above), then IATA was of the view that the continuation of the operational trials could not be supported and that the immediate suspension of the BOBCAT operational trial would be required.

3.48 IATA proposed solutions for consideration by the meeting, as follows:

Crossing Tracks

3.49 IATA noted that L301, P762, and to a lesser extent, A327, carried crossing traffic which impacted the usable levels on the westbound flows. The usable levels for the majority of flights are FL280, 300, and FL320. On some occasions, FL 340 is attainable by flights which are not weight constrained. It had been suggested that equitable sharing of levels could alleviate the situation, and that this could be achieved through improved ATC coordination procedures among the ACCs concerned. However IATA stressed that it was important to examine the peculiar set of circumstances in the area.

3.50 The meeting was informed that the crossing track separation applicable is 15 minutes before or after the crossing point as these tracks cross outside radar coverage. Furthermore, the crossing points are in different FIRs. For example, M770 crosses P762 and L301 in Yangon FIR, but L759 and P628 both cross P762 in Chennai FIR, and L301 in Kolkatta FIR. A number of crossing points are less than 15 minutes from the FIR boundary of the receiving FIR, which means that the separation has to be applied by the transferring ATC unit before entry into the receiving FIR. This means that the application of crossing track separation for westbound flights between L301/M770 and L301/L759 has to occur within the Yangon FIR. Similarly, the application of crossing track separation

for westbound flights between P762/M770, and P762/L759 has to occur within Yangon FIR. Given the current state of air/ground and ground /ground communications in the area, IATA found it difficult to see how much a solution based on improved ATC coordination could achieve.

3.51 Recognizing the extreme difficulty for ATC to tactically provide separation among the crossing points and considering the number of FIRs involved and communication problems, IATA proposed the implementation of a special flight level allocation scheme for crossing traffic, with restricted operational hours and on unidirectional routes. The proposal would de-conflict the crossing flights on P762 and L301 with westbound flights on P628, L759 and M770 by allocating FL310 as a crossing level and free up FL 300 for the westbound flights.

3.52 This would alleviate the westbound bunching issue and obviate the need to orbit flights to achieve the required longitudinal separation. The chart is reproduced as **Appendix I**.

Bunching issues

3.53 IATA informed the meeting that the bunching issue was expected to be partially addressed by the proposal to de-conflict the crossing flights using a special flight level allocation scheme. However there was still a need for the system to come up with a solution which did not result in the other extreme of slot allocations based on the inclusion of intermediate waypoints, because of the unacceptable loss of slots which will result from that application. IATA suggested that the system should be designed to perform an initial slot allocation, examine if the SLOT allocation results in bunching along particular routes, then calculate subsequent slot allocation which would eliminate bunching on the route.

Lost Slots Issue

3.54 IATA informed the meeting that under the existing BOBCAT configuration, cancelled slots were not reassigned by the system, and had resulted in many wasted slots and which effectively denied participating airlines the opportunity to “re-bid” on the unused slot allocations caused by these cancellations.

3.55 One solution would be for the system to issue a first cut set of slots, allow a negotiation period of time (approximately one hour) and then re-issue slots based on re-negotiated positions. This would at least ensure that slots cancelled within the negotiation period would be re-assigned to reduce the delays to other aircraft in the same queue.

ATC roles and responsibilities

3.56 According to IATA, the problems which had arisen during the trials appeared to indicate that some of the ANSPs were not fully conversant with their respective roles within the ATFM loop. In this regard, a proper training programme had to be effected in order to allow full understanding required to process the flights according to the ATFM solutions.

Discussions arising out of the IATA Working Paper

3.57 The Chairman thanked IATA for the details provided within the Working Paper and invited the meeting to fully consider the matters presented by IATA through the Working Paper and to discuss the proposed improvements to the ATFM system as suggested by IATA.

Bunching of Traffic – causes and solutions

3.58 In response, India reminded the meeting that bunching was a global problem which required global solutions. India expressed concern that the bunching that was currently being experienced in the Kuala Lumpur and Singapore FIRs, was also likely to occur in India, especially with regard to Delhi departures, as a result of expected traffic growth. As an example, when ATFM/TF 1 convened in early 2005, there were only 4 nightly departures from Delhi during the four hour BOBCAT period. According to India, these departures were now averaging 10 for the same four hour period, with further increases expected. While noting that India and Pakistan Airports were currently being allocated FL280 by BOBCAT on a priority basis, the expected growth in traffic departing Delhi was likely to lead to a situation where Delhi departures would exceed the BOBCAT slot allocations based on FL280 during the four hour peak period. In this regard, it would be necessary to develop additional capacity enhancements as a matter of urgency.

3.59 The meeting considered that the application of 50NM longitudinal separation (based on RNP10), would ease the bunching. In this regard the meeting was reminded that RNP10 was introduced as part of the EMARSSH route restructure on 28 November 2002. However the 50NM Longitudinal Separation required “Direct Controller/Pilot Communications” (DCPC), which in Oceanic airspace effectively meant Datalink communications (CPDLC). As CPDLC services were not yet fully implemented throughout the Bay of Bengal, it was unlikely that 50NM longitudinal separation could be achieved in the short term.

Introduction of Entry Gate (IGREX, TAVUN and others)

3.60 The meeting recognized that under the existing FLAS arrangements for the Bay of Bengal, FL300 was reserved for crossing flights and that accordingly, departures out of Kuala Lumpur and Singapore were restricted to FL280 and FL320, with FL340 and higher, typically unacceptable due to aircraft operating limitations.

3.61 Within the existing BOBCAT configuration, slots were only allocated for entry into the Kabul FIR. Under these current arrangements, aircraft were departing Kuala Lumpur and Singapore, with allocated slots for the Kabul FIR as calculated by BOBCAT. However the BOBCAT system was not programmed to sort traffic in the initial phase of the cruise and with a limitation of just two available Flight Levels (FL280 and FL320), there was a regular occurrence of bunching in the vicinity of Peninsula Malaysia.

3.62 The meeting noted that one possible solution to the existing bunching problem within the Kuala Lumpur FIR would be to configure BOBCAT to include required entry gates at IGREX and TAVUN.

3.63 It was suggested that the spacing for the entry gate at IGREX be configured to a spacing of 7 minutes plus a 5 minute buffer. This was intended to ease bunching of the traffic in the vicinity of IGREX. Under this arrangement, BOBCAT would still allocate the 10 minute spacing plus 5 minute buffer for entry into the Kabul FIR. The introduction of the spacing at IGREX (7 + 5) would provide the Kuala Lumpur ACC with the flexibility to apply tactical air traffic control to further refine the flow of traffic across the Bay of Bengal.

3.64 However Singapore informed the meeting that an additional entry gate would significantly increase ground delay for westbound flights operating out of Changi Airport. This would contradict one of the objectives in the development of an ATFM system, which was to reduce ground and enroute delay.

3.65 Discussion in relation to these matters continued in a side meeting of affected States, summary details of which has been included at paragraphs 6.9 to 6.20 of this report. In essence, the implementation of entry gates was deferred and would only be implemented as a last resort and under specified and restrictive operating parameters.

Re-routes whilst airborne

3.66 IATA informed the meeting that re-routes whilst airborne caused a significant workload issue for the crew involved. As an example, the possibility of depressurization (on a re-route) would require the crew to re-plan for the contingency, especially in regard to higher terrain underlying the alternate routing. In addition, the crew would most likely be required to re-file an ATS Flight Plan in-flight, especially if a transit through another FIR was required and that FIR was not previously in receipt of the ATS Flight Plan. The crew would also be required to update the NOTAMs for transit of additional airspace/FIRs. In addition to these tasks, there was always the potential for a loss of situational awareness as a result of being suddenly re-routed from one ATS route onto another.

3.67 The meeting agreed that while ATC should always have flexibility in the allocation of vertical levels as a key function of tactical ATC, the re-routing of an aircraft was an entirely different matter and one which should be avoided.

BOBCAT Operations to date

3.68 Singapore informed the meeting that there had been a noticeable increase in workload for ATC since the introduction of BOBCAT, especially in regard to internal and external ATS coordination. There were several instances where aircraft had not met the AWUT due to missing passengers and this had necessitated the use of "Missed AWUT Procedures". There were more issues concerning Pilots who had been allocated their respective AWUT allocations and had then called ATC for an earlier AWUT request. ATC had in turn coordinated with the ATFMU (Bangkok ACC) for an earlier AWUT, only to find that the Pilots had then subsequently called to cancel the early AWUT request. In response, IATA gave an undertaking to review the practice and to provide further advice to the ATFM/TF.

3.69 Thailand (BOBCAT Development Team) informed the meeting that in regard to one of the reported IATA occurrences, an investigation of the BOBCAT records had revealed that an aircraft which was not operating in accordance with a BOBCAT slot allocation, had effectively taken the slot previously allocated to flight which had departed Singapore in accordance with its AWUT. This aircraft, although fully complying with BOBCAT, had been denied access to its allocated BOBCAT slot for transit of the Kabul FIR. It was understood that the non-complying aircraft had been tactically maneuvered into the slot by ATC, without appreciating that in doing so, the non-complying aircraft was taking the slot which had been allocated to the aircraft which had departed Singapore several hours earlier.

3.70 As a result, Thailand urged the State concerned for its assistance in ensuring that the airline concerned complied with the BOBCAT system in accordance with the State AIPs. Further, AEROTHAI offered to provide every assistance to the airline concerned and requested that the airline make contact with the BOBCAT team to receive a full briefing of the BOBCAT operating requirements.

3.71 Both Malaysia and Singapore reported an increase in ATS coordination as a result of the bunching effect currently being experienced in the vicinity of peninsular Malaysia; however both indicated that the operational trial should continue. Malaysia emphasized the need for ATC to be given flexibility in traffic management.

3.72 India informed the meeting that there were a number of airlines that were departing Delhi during the BOBCAT hours of operations without negotiating BOBCAT slot allocations. The meeting agreed that every effort should be made to engage with these operators, but that in the end, the AIP Supplement requirements should apply and those aircraft which had not received a BOBCAT slot allocation should not receive any priority for departure during the peak period.

3.73 In regard to the impact that cancelled slots had on the overall flow of traffic, the meeting agreed that it would be highly desirable to effectively monitor cancelled slots through the BOBCAT system, so that “gaps” created by cancelled slots could be re-allocated to other aircraft.

Airspace Management (Afghanistan, India and Pakistan)

3.74 In considering the future capacity issues for India, the Chairman noted the excellent progress that had been undertaken by India in recent years in regard to improve CNS/ATM facilities and Airspace Management arrangements, including new ATS routes.

3.75 The meeting recognized that additional capacity could be achieved through the harmonization of the “Minimum Enroute Altitude” (MEA) between Pakistan and India on route P628, as well as the extension of a number of ATS routes from India into Pakistan.

3.76 India informed the meeting that under the current airspace management arrangements, the MEA in India is FL300 on route P628, while the MEA in Pakistan is FL310. This meant that full capacity on ATS routes between India and Pakistan could not be achieved, due to the unavailability of FL300 as a useable level within the Pakistan airspace. Accordingly, the meeting recommended that the ICAO Asia and Pacific Regional Office initiate arrangements for Afghanistan, India, Pakistan, ICAO and IATA to meet in a Special Coordination Meeting to consider these capacity enhancements between India and Pakistan and Afghanistan.

3.77 Looking further ahead, the meeting also recognized that the implementation of RVSM across the Kabul FIR would also enhance airspace capacity between India, Pakistan, Afghanistan and those FIRs to the North of the Kabul FIR. Afghanistan advised that planning for RVSM had commenced with likely implementation in 2008.

Consideration of the IATA proposal for unidirectional routes at FL310

3.78 The meeting considered the IATA proposal for the inclusion of a special FLAS for crossing traffic, with restricted operational hours and on unidirectional routes. The IATA proposal was intended to de-conflict the crossing flights on P762 and L301 with westbound flights on P628, L759 and M770 by providing them with FL310 as a crossing level and release FL300 for the westbound flights.

3.79 The meeting noted that this proposal had the support of Malaysia, Singapore and Thailand. However India informed the meeting that although an additional level was required to alleviate the situation and to reduce the bunching of traffic, FL310 would not be made available for this purpose.

Summary of discussions in regard to the IATA Working Paper

3.80 In summarizing the discussions on these matters, the Chairman noted that the introduction of BOBCAT on an operational trial had brought clearly into focus a number of broad issues relating to the provision of ATM in the region, including:

- EMARSSH Route structure;
- RNP10 and 50/50 separation standards;
- Voice and Datalink communications facilities in support of reduced separation standards (e.g. DCPC for 50NM Longitudinal);
- ATS Coordination and Ground/Ground communications; and
- Future traffic growth and airspace capacity.

3.81 The meeting recognized that these issues had been brought to light by the discussions on BOBCAT as they were all related and it was not possible for the ATFM/TF to simply address issues relating to BOBCAT and ATFM in isolation.

Agenda Item 4: Safety and Airspace Monitoring Considerations

4.1 Whilst the meeting was satisfied that the operational phase of the trial had proceeded in accordance with the safety assessment and associated hazard log that had been adopted by the task force, it was noted that airlines had been applying due diligence in the safety of their operations.

4.2 The meeting conducted an in depth review of the traffic bunching incident that had occurred in the Kuala Lumpur FIR on 26th July, as described in paragraphs 3.28 to 3.31 above. The incident had resulted in the need to stretch an aircraft by 9 minutes early in the flight, resulting in the crew conducting an orbit to lose time. During this maneuver, the aircraft actually lost 12 minutes rather than the 9 minutes required.

4.3 The meeting was informed by IATA of the aircraft performance issues to be considered by the crew in manoeuvring a heavy aircraft one hour into a 14 hour flight. Additionally, although the time adjustment required was 9 minutes, the difficulties experienced in conducting the orbit had led the aircraft to lose 12 minutes. As aircraft were fueled in accordance with the flight plan based on the BOBCAT derived slot parameters, the usage of an additional 12 minutes of fuel so early in the flight had a direct impact on the ability of the aircraft to reach destination. In the case being examined, the flight had been very close to having to make an unscheduled technical stop for fuel and this was only avoided by careful fuel management for the remainder of the flight to Europe.

4.4 These concerns were also relevant to the other holding occurrence that had occurred (paragraphs 3.39 to 3.42 refer) and the reroute occurrence described in paragraphs 3.43 to 3.45. IATA also highlighted the problems experienced by airlines in managing an unscheduled reroute. There were many additional matters to be assessed by the crew and dispatchers had to hurriedly produce appropriate fuel and in flight contingency plans for relay to the aircraft. IATA and the airline participants present at the meeting reiterated that rerouting of aircraft was generally not acceptable to airline operators and should only be considered as a last resort. The Regional Office would work with IATA to produce a suitable summary of airline concerns in this respect, for relay to ANSPs affected by the operational trial.

4.5 The meeting agreed that each major occurrence would continue to be investigated in order to ascertain the level of involvement of the ATFM operational trial. Discussions should continue between the Core Team members via teleconferences on an as required basis.

Agenda Item 5: Implementation Management Considerations

5.1 Thailand advised the meeting that, to ensure that as many ANSPs as possible were fully aware of the methodology and requirements of the BOBCAT ATFM system, AEROTHAI carried out visits to various States to assist them in an understanding of the system as well as answer any questions which participants may have.

5.2 The following States were included in this programme:

- a) Two AEROTHAI officers were part of an official ICAO visit to Karachi, Pakistan for 2 days which also included the Chairman of the ATFM Task Force. Present at the meeting were officers from CAA Pakistan Headquarters, ATC's from both the Karachi and Lahore ACCs as well as representation from Pakistan International Airlines. Discussions were held and presentations given on the BOBCAT ATFM system to advise participants of Pakistan's role in this project. Both CAA Pakistan and Pakistan International Airlines were issued usernames and passwords to enter the BOBCAT website;
- b) Two AEROTHAI officers visited Ha Noi and Ho Chi Minh, Viet Nam for 3 days. Discussions were held and presentations given on the BOBCAT ATFM system to advise participants of Viet Nam's role in this project. Participants at these meetings included officers from CAAV, VATM and Viet Nam Airlines. Both VATM Ho Chi Minh and Viet Nam Airlines were given usernames and passwords to enter the BOBCAT website.
- c) During a visit to Airports Authority of India (AAI), the opportunity was taken to visit their national airline, Air India, to familiarize the airline on the BOBCAT ATFM project. Air India was thankful for the presentation however they advised AEROTHAI that at the moment, they did not have scheduled operations through the Kabul FIR during the operational period.
- d) During a visit to Singapore to attend a Special Coordination Meeting on ATFM, the 3 AEROTHAI officers took the opportunity to accept an invitation to visit Singapore Airlines Dispatch Office for familiarization purpose as well as discussions with their dispatchers in the use of the BOBCAT system which could be of benefit to the airline in their slot requests.

5.3 To further enhance the effectiveness of airline input into the BOBCAT system, lengthy phone discussions had taken place with the following airlines: KLM, British Airways, Qantas, Air France, Cathay Pacific, Thai Airways and Viet Nam Airlines.

5.4 In addition, through the "Contact Us" page on the BOBCAT website, numerous answers have been supplied to both ANSPs and Airlines. This is an extremely useful tool to gain access to the BOBCAT Development Team and receive prompt answers to questions asked. Many of these useful questions have now been added to the "Frequently Asked Questions" page on the BOBCAT website for use by other ANSPs or airline operators.

Special Coordination Meeting between Core Team Members of the Air Traffic Flow Management Task Force

5.5 The meeting was informed that during the teleconference of Core Team members held on 4 July 2006 for the Go/No Go Decision on the operational phase of the trial, some issues were raised with regard to bunching of traffic and the slot allocations generated by BOBCAT System. As such, a Special Coordination Meeting was held from 17 July to 19 July 2006 in Singapore, to address the issues raised during the teleconference. The meeting was attended by representatives from Malaysia, Thailand, Singapore and IATA; a copy of the summary of discussion has been included as **Appendix J**.

5.6 The following matters were discussed during the Special Coordination Meeting;

Review of Ghosting Period Data

5.7 Malaysia presented the SCM meeting with their observations on the scenarios where bunching of traffic on the parallel routes had occurred along L759 and P628. The ghosting period data had shown that frequently, there were three westbound flights operating on the same route within a 5-minutes period and there were only two viable flight levels available for the heavily-laden westbound flights departing from Kuala Lumpur and Singapore to operate on the parallel routes.

5.8 Malaysia had studied the proposal by Thailand during the teleconference on 4 July 2006 to adjust the AWUT to flights departing from Malaysia and Singapore to achieve the minimum longitudinal spacing required to transit through the Bay of Bengal. Malaysia informed the meeting that the application of revising AWUT would not provide the minimum longitudinal separation. Furthermore, there would be an increase in workload for Kuala Lumpur ACC as they had to manually transfer data from the Slot Allocation Results onto a different spreadsheet to monitor the traffic flows in order to highlight the bunching. There would be the increase in coordination workload required to revise the AWUTs. Other concerns raised by Malaysia on adjusting the AWUTs are;

- a) Departures from Singapore would be affected;
- b) The possibility of allegations of non-transparency by airline operators who have accepted the original slot request results but would have to incur further delay as a result of the revised AWUT;
- c) Flights allocated a revised AWUT might not be able to make up the lost time and would miss the entry gate time at Kabul;
- d) Revised AWUT will work if all the aircraft depart at the specified AWUT. However, the system allows for a Flow buffer of five minutes. This effectively negates the application of the revised AWUT unless the respective ACCs can come up with a mechanism to monitor departure times and compare against the AWUT time to make revisions to subsequent departures. This would definitely increase all ACCs' workload.

5.9 Malaysia proposed to the SCM that in order to meet the BOBCAT objective of optimizing the capacity and better flow of traffic through Kabul FIR entry waypoints, an additional viable flight level to be allocated for the traffic operating on the parallel routes would alleviate this situation. However, this does not guarantee a permanent solution as traffic would increase. In the long term, other solutions would be required.

5.10 Thailand informed the SCM that they would continue to study the possibility of providing an additional viable flight level on the parallel routes. Thailand added that the exchange of FL320 with FL300 would not solve the bunching issue. The adjustment of AWUT could be one of the options to resolve the bunching issue.

5.11 During the SCM, Singapore commented that the real-time adjustment of the AWUT would also impact subsequent departing traffic slots. In addition, coordination workload would increase and there would possibly be human error in the coordination process such as missed coordination, miscommunications and would create confusion on the ground between the controllers and the pilots. Singapore requested Thailand to review the traffic on the crossing routes and analyse the impact to the parallel routes traffic flow.

5.12 IATA was of the same view with Singapore and commented that adjustment of the AWUT would not be feasible as it would depend on how quickly an ANSP could project the occurrence of bunching. IATA added that the availability of the additional viable flight level might not alleviate bunching permanently due to the projected traffic growth in the region. As such, for long term solution, one option would be to consider the usage of odd flight levels to be assigned to the westbound traffic during the nightly peak period.

5.13 Thailand presented the SCM with the data detailing all the traffic operating on the parallel and crossing routes. The data showed that most of the crossing traffic were assigned FL340 and above which accounted for approximately 75% of crossing traffic.

5.14 Thailand suggested that the parallel routes could be assigned FL280 and FL300. Bangkok ACC would inform Kuala Lumpur ACC whenever there are flights operating at FL320 on the crossing routes and departures from airports east of Bangkok. In turn, Kuala Lumpur ACC would inform Bangkok ACC on the requirement to use the three viable flight levels, ie. FL280, FL300 and FL320. Bangkok ACC would delay their departures to ensure FL320 would be made available for use by the westbound traffic on the parallel routes or ensure that the westbound traffic departing from Bangkok could operate at FL340 or above.

5.15 The SCM noted the Chennai ACC, Yangon ACC and Kolkata ACC would play an important role in ensuring that the proposal from Thailand could be successfully implemented. However, it would not totally alleviate the bunching issue raised by Malaysia as the overflights over Bangkok and operating on the crossing route could not accept FL340 due to operational requirements.

5.16 The SCM acknowledged that the use of odd flight levels for westbound flights would be a good option to relieve the impact of the bunching issue. However, India and Myanmar would have to agree on the usage of such levels in their respective FIRs. The meeting agreed that the assignment of odd flight levels for the westbound flights operating on the crossing routes in the Bay of Bengal should be raised at the Post-Implementation Review (PIR) Meeting to be held from 31 July to 3 August 2006 in Bangkok.

Review of BOBCAT System Parameters

5.17 Singapore highlighted to the SCM their observations regarding the slot allocation process from the data collected during the ghosting period and sought clarifications on the following issues.

- a) Possible notification process by BOBCAT when slots are available through the cancellation of slots by operators, to reduce delay. Currently, operators would have to monitor the BOBCAT slot allocation page for updates on cancellation of slots by other operators.

- b) Priority Selection Process of the BOBCAT System and the option of using the concept of reducing Total System Delay

5.18 The SCM noted that based on the ghosting period data, BOBCAT has so far delivered what it promised in terms of level allocation as agreed by the Task Force. The priority selection process should be reviewed at the PIR Meeting when Thailand presents the meeting with the data generated based on reducing Total System Delay.

Review of Checklist Prior to Implementation of Operational Trial

5.19 The SCM reviewed the checklist prior to the implementation of the operational trial that was agreed at the Go/No Go Decision Meeting from 14 to 16 June 2006. The checklist captured the readiness of Malaysia, Singapore, Thailand, Airline Operators and BOBCAT.

Go/No Go Decision

5.20 Malaysia informed the meeting, subject to having mitigating procedures in place to resolve the bunching issues, which they have raised several time before, they could agree to commence the operational trial. However, Malaysia reserved the right to seek suspension of the operational trial if the procedures were not effective.

5.21 Singapore advised the SCM that the bunching issue would not occur in Singapore FIR and noted the readiness of the BOBCAT system to commence the operational trial. As such, Singapore is agreeable to commence the operational trial but noted Malaysia's concern on the bunching of westbound traffic and the lack of additional viable flight levels on the parallel routes for westbound flights during the peak period. Singapore further noted that should there be an impact on their operations due to the bunching of traffic experienced by Malaysia or an increase in the ground delay situation, Singapore would also reserve the right to suspend the operational trial.

5.22 Thailand advised the SCM that although bunching had occurred on some occasions, the situation could be tactically managed and confirmed their readiness for the operational trial.

5.23 IATA commented that measurement of delay could not be determined during ghosting period and noted that the effective review of delay status could only be achieved during operational trials. IATA also highlighted the need for ANSPs' to be fully capable in managing traffic tactically in order to ensure the success of the operational trial.

5.24 The Singapore SCM meeting agreed to conduct another teleconference between the Core Team members on 19 July 2006 at 0400 UTC to decide on the commencement date of the operational trial.

Agenda Item 6: Future Direction and Arrangements

Background Information

6.1 The meeting recalled that in considering the available options for the conduct of an ATFM Operational Trial in accordance with Phase One of ATFM across the Bay of Bengal and South Asia, the ATFM/TF/2 meeting (Delhi, India 28 June- 1 July 2005) had noted Thailand's readiness to proceed to an operational trial and requested Thailand to continue to develop BOBCAT to the stage of an operational trial in close cooperation with concerned States and IATA.

6.2 Subsequently, in relation to Thailand's continued development of BOBCAT the SCM ATFM/TF PMT (Singapore, 10 – 11 August 2005) recognized that it was not feasible for the task force to meet to address each and every question and difficulty that would arise during the development process. The meeting was therefore of the opinion that Thailand should use initiative and judgment in developing BOBCAT and to subsequently demonstrate the capabilities of BOBCAT via paper trials. Accordingly, the meeting requested Thailand to continue with the development of BOBCAT on this basis, noting that the outcomes of the operational trial would also be formally assessed by the task force.

6.3 During ATFM/TF/4 (Bangkok, Thailand, 7-11 November 2005), as part of their "Basic User Requirement Statement", IATA stated:

The westbound traffic flow across the Bay of Bengal to Europe is a difficult traffic flow for both air traffic control and airlines during the peak traffic periods. The reason being, there is no air traffic management programme in place that looks at the total flow with a game plan to ensure that all traffic will fit through the known bottlenecks of the system. Air traffic controllers clear flights from airports such as Singapore, Kuala Lumpur and Bangkok that join onto competing parallel tracks from a single-track perspective only. They have no idea how they will fit in the big picture as traffic converges through India, Pakistan and Afghanistan. A successful evening event from their point of view is few ground delays. For the airlines and ATC from "down the line" departing airports, such as Delhi and Islamabad, the midnight rush is an exercise of frustration as most, if not all, of the slots are already taken by departures from Singapore, Kuala Lumpur and Bangkok¹".

The problem is that these uncoordinated departures do not always fit. Consequently, airlines continue to be surprised en route with expensive re-routes to circumnavigate around Afghanistan – mainly because they don't fit into the restrictive flow into Afghanistan. Usually such reroutes result in technical stops to take on additional fuel, meaning that besides the considerable extra expense of an unplanned landing, passengers will miss connections to their final destinations¹.

6.4 In conducting a review of the Terms of Reference, ATFM/TF/4 reconfirmed that in order to meet the objectives described in the TOR, the ATFM/TF would follow a phased implementation programme in accordance with the following:

Phase One: Flights planning to transit the Kabul FIR

Phase Two: Other international flights crossing the Bay of Bengal and/or South and South East Asia areas

Phase Three: Future planning for increased traffic within the Bay of Bengal and South and South East Asia areas

6.5 The ATFM/TF/4 meeting also recognized that any ATFM tool, including BOBCAT, was not an ATC separation tool. In considering the development of rules and procedures for the operational trial, the ATFM/TF/4 meeting agreed that the work of the ATFM/TF should focus very clearly on addressing the Phase One implementation issues only and that consideration of Phase 2 & 3 issues would be dealt with by the task force in due course. Accordingly, the meeting stressed the need

¹ Quote from IATA Working Paper to APANPIRG/15 (Agenda Item 2) titled "The Need to Manage the Traffic Flows across the Bay of Bengal to Europe"

to develop ATFM rules and procedures that simply and clearly enabled the Phase One implementation only.

6.6 ATFM/TF/5 (with BBACG/17, Bangkok, 16-20 January 2006) noted that It was clearly evident to the meeting that success in this venture would require the continued good cooperation and assistance from all of the States and International Organizations involved. The Secretariat highlighted the need for all participants to work together in attempting to identify workable and robust solutions to the problems.

6.7 The ATFM/TF/5 meeting also recognized that the flow management solution adopted must be a regional solution. Respective States had local issues in terms of the management of aerodrome traffic in some States, in comparison to exclusively enroute issues in other States. It was evident that individual circumstances of States and respective airlines would not always be fully met by the project, particularly in the first stages of the operational trial. However, adoption of a regional solution was in the best interests of the efficiency of civil aviation operations.

Continuation of the ATFM Operational Trial

6.8 The meeting recognized that a decision was necessary in terms of whether or not to continue the operational trial and the arrangements that were necessary to further support the operational trial. In making a decision to continue the operational trial, the meeting noted and considered the following:

- a) ICAO provisions requiring States to provide ATFM as an integral part of ATM, including Global Planning Initiative 6 – Air Traffic Flow Management of the Global Air Navigation Plan (Doc 9750) and the inclusion of ATFM on the APANPIRG Key Priorities list for regional implementation. The ATFM/TF had recognized, in accordance with GPI-6, that the adoption of a regional solution was in the best interests of the efficiency of civil aviation operations;
- b) The need for effective ATFM in the Bay of Bengal had been highlighted for some years, including extensive discussion during the EMARSSH Post Implementation Review in March 2003. The BOBCAT was created because of the regional traffic bunching problems – too many aircraft on the same airway at the same time. The purpose of BOBCAT was to make extra information available to airlines to assist flight planning, enabling informed choice of route and flight level.
- c) The Bay of Bengal Cooperative ATFM Advisory System (BOBCAT) was performing as designed using the parameters established by the ATFM/TF for initial operation. Based on the data now available from the operational trial, it was evident to the ATFM/TF that fine tuning of some BOBCAT parameters would be necessary and that this could be achieved by way of overnight software update under the permissions and arrangements specified by the Core Team of the ATFM/TF from time to time. Opportunity would be taken to concurrently include any additional enhancements prepared by the BOBCAT Development Team as a result of feedback from ANSPs and airspace users.
- d) In doing what it was designed to do, BOBCAT was bringing a sharp focus to the shortcomings in Bay of Bengal ATM operations, particularly in terms of the need to optimize traffic management arrangements in the eastern Bay of

Bengal associated with the allocation of flight levels and management of crossing tracks . It was evident to the ATFM/TF that these problems had existed for some years and were completely separate to the BOBCAT operation.

- e) That the focus provided by BOBCAT and the work of the ATFM/TF had provided valuable input to these problems and that States involved should take advantage of the impetus that had been created and work closely together in the immediate future in order to reach a robust and sustainable solution to this long standing problem.
- f) IATA had been very consistent over a number of years in requesting that the flow management issues over the Bay of Bengal be addressed at the earliest opportunity. The inability of States to progress these matters had placed a significant, unfair and ongoing cost burden on airspace users that could not be sustained;
- g) The proposal from IATA that the ATFM operational trial be suspended whilst all the problems were fixed did not take account that, in terms of the major problem of an extra flight level being made available for use by Kuala Lumpur ACC, States had been attempting to address the problem for many years. Accordingly, suspension of the ATFM operational trial could potentially be for years whilst States continued to attempt to address this problem;
- h) The meeting recognized that IATA had legitimate concerns in relation to the penalties incurred by airlines in supporting the continuation of the trial and appreciated IATA's willingness to continue with the operational trials, also noting IATA's proviso that new operational arrangements between the Bay of Bengal States to address crossing traffic and bunching of traffic on the same route issues were implemented. The meeting also recognized that should these measures fail to address the issues raised, the orderly suspension of the operational trials would have to be seriously considered.
- i) That, in considering the IATA proposal to suspend the trial whilst all problems were addressed, the ATFM/TF recognized that AEROTHAI had already made a significant investment in time, staff and infrastructure and could not reasonably be expected to retain the ATFMU on operational readiness pending possible positive outcomes of discussions between States in relation to problems that had existed for years. The ATFM/TF recognized its responsibility to make accurate information available to AEROTHAI to enable appropriate business decisions to be made.
- j) The Regional Office considered that an indeterminate suspension of the trial would lead participants to lose confidence in the trial. The high workload of the task force and the need to involve so many parties from right across the Asia region was a significant burden on the limited resources of the States and organizations involved. Suspension of the trial could lead to these limited resources being redirected to other matters and, in the context of the Regional Office, there were a number of high priority safety matters that needed to be urgently addressed that would reduce ability to assist the ATFM/TF.

- k) The Sixteenth meeting of the ATM/AIS/SAR Sub Group of APANPIRG in June 2006 had been informed that the increasing regional ATM work programme and lack of financial resources continued to over-stretch the Regional Office ATM Section's capability to support all the ATM activities required in the region. The ATM/AIS/SAR/SG/16 had prepared a draft conclusion for consideration by APANPIRG in August 2006, requesting the ATM staffing problem be addressed. However, during the coming year it was highly likely that the ATM Section would not be able to organize and attend all the ATM forums that were required to be supported by ICAO and in the context of the ATFM/TF very few meetings could be held
- l) The ATFM/TF acknowledged the difficulties in respect of the sheer numbers of people involved in the daily interaction with BOBCAT. As well as administrative staff generally in many affected States and organizations, there were many air traffic controllers in more than 15 separate ACCs and Control Towers in 6 or 7 primarily involved States, as well as pilots and dispatchers from up to 25 airlines, leading to estimates of more than a thousand operational staff involved. The ATFM/TF recognized that a training/experience opportunity would occur on each and every day that these officers interacted with BOBCAT and the ATFMU. The ATFM/TF also recognized that if the operational trial was suspended, the training/experience opportunities would be lost and significant inertia would have to be overcome in order to recommence the trial.
- m) As a result of other work commitments resulting from new priorities at Airservices Australia, the independent Chairman of the ATFM/TF provided by Australia would retire at the end of this meeting after chairing the task force since inception. This was a set back for the ATFM/TF as the experience with the task force would be lost and the independence of the Chairman had been invaluable in solving competing issues between neighbouring States. Although the retirement of the Chairman had been advertised widely for some time and the Regional Office had attempted to solicit nominations to be endorsed during this meeting, there had been no response from affected States. The complex nature of the matters involved in suspending and restarting the operational trial would need capable handling and, in the absence of a Chairman, the Regional Office would have to absorb the additional workload at a time when Regional Office resources were diminishing.
- n) Suspension of the ATFM operational trial would lead to the loss of real time operational data. This would limit the ability to accurately identify and remediate areas of operational concern;
- o) The Afghanistan ANSP representative had provided clear information as to the positive effects experienced as a result of the BOBCAT metered flow into Kabul, including measurable safety benefits, and had also advised that although the target number of flights adopted by the ATFM/TF for management by BOBCAT was 55, Afghanistan expected up to 70 flights during the period managed by BOBCAT in the near term. Additionally, airspace capacity increases in Kabul FIR were unlikely until the implementation of RVSM, scheduled in 2008. Afghanistan strongly encouraged the Task Force to continue with the operational use of BOBCAT

- p) Although Pakistan was not present at the meeting, statistics were being reliably provided by Pakistan via email and they had anecdotally indicated that they had experienced measurable improvements as a result of the BOBCAT metered flow of traffic.
- q) India, in reporting some operational complexities including anticipated future traffic bunching at FL280 on departure Delhi, had not experienced significant change or impact as a result of the operational trial. However India stated that tactical solutions by Enroute ACCs such as speed restrictions/level changes/rerouting are unavoidable in some cases for safety considerations;
- r) Malaysia, beyond the traffic bunching difficulties discussed at length in this report, indicated a continued preparedness to participate in the operational trial on the proviso that the bunching problems be addressed by the ATFM/TF. In addition, Malaysia reported that the initial stages of the operational trial had shown an improvement in delay statistics, with less delays being recorded at KLIA;
- s) Singapore, although stating strongly that the use of additional sequenced entry fixes soon after departure was not preferred, agreed to continue with the operational trial on the basis that a solution to the flight level problem for Kuala Lumpur ACC was agreed between affected States.
- t) IFALPA informed the meeting of feedback received through one major airline that indicated that the commencement of the operational phase of the trial had been transparent to pilots from this airline;
- u) That, in general terms, the time accuracy of flights crossing the Kabul entry fixes was within 2 or 3 minutes of the allocated BOBCAT fix time. This was testament to the high performance of flight crews involved and was anticipated to allow the reduction of the flow buffer time from 5 minutes to 2 minutes in due course;
- v) That in the 11 days since the commencement of the operational phase of the trial, in excess of 360 aircraft had been allocated BOBCAT based slots, as well as a number of flights that were allocated and then subsequently cancelled as a result of having re-filed outside the BOBCAT area of jurisdiction to take advantage of better wind profiles to the south. Although a number of minor issues had been identified for correction, major issues arising to date had only been experienced in the earlier days of the trial and were confined to a situation where 5 aircraft were processed at FL260 (linked to the new FLAS arrangements that were immediately reversed as a result of this occurrence), one 9 minute orbit soon after departure WSSS and one holding of 5 minutes east of India.
- w) Traffic growth forecasts for the region were predicting significant growth generally and growth in the order of 20% annually for India and China. This was evidenced in the reporting from India in which, when the ATFM/TF commenced consideration of BOBCAT 18 months ago, there were 4 departures from Delhi that had to be managed by BOBCAT. The operational phase of the trial had showed that 10 flights from Delhi needed to be

managed by BOBCAT and this traffic growth was expected to be sustained in the medium term.

Operational arrangements for the Continuation of the Trial

6.9 The discussions during the meeting led the ATFM/TF to conclude that the problems of traffic bunching on the eastern side of the Bay of Bengal that had occurred were due to the limited availability of suitable flight levels for aircraft departing from WSSS, WMKK and VTBD that entered the westbound parallel route structure, further complicated by the sterilized use of one flight level for crossing tracks.

6.10 This problem was not related to the performance of BOBCAT, however the application of BOBCAT metering had highlighted inefficiencies in the current arrangements that could lead to traffic bunching and the need for tactical intervention at the expense of efficiency. Additional complexity resulted from the intersection of a number of FIR boundaries in this vicinity.

6.11 Although recognizing that the issues were extremely complex, involving multiple States and FIRs, and therefore extremely demanding to solve, the Secretariat briefed the meeting in respect of ICAO's expectations in relation to the efficient management of international airspace. It was evident that airspace inefficiencies in this area had placed an unfair burden on operators that could not be sustained. The Secretariat noted that all flight levels should be considered as a shared resource, managed by an arbiter if necessary. Particular flight levels or other international airspace resources should not be considered as 'owned' by an individual ACC. If States insisted in identifying an "owner" for international airspace, the Secretariat reminded the meeting that, in this context, ICAO should be considered as the "owner" of international airspace.

6.12 The Secretariat recognized that much study into these problems had been undertaken this year by affected States and that as a result, States would never be better informed as to the difficulties or in a better position to solve these issues. The Secretariat considered that an inability to reach a solution in respect to making an additional flight level reliably available to departures would mean that the ATFM/TF had no option but to implement entry gates shortly after departure from WSSS, WMKK and VTBD. Accordingly, the Secretariat urged the affected States to take full advantage of the impetus that had been created and work closely together in the near term in order to reach a robust and sustainable solution to this long standing problem.

6.13 The affected States present at the meeting, namely India, Indonesia, Malaysia, Singapore and Thailand entered a side meeting to further discuss these matters, with the objective of identifying effective solutions to overcome the traffic bunching problem within the FIRs on the eastern side of Bay of Bengal area during the ATFM activity period. In this context, the following particular matters were discussed:

- a) Use of 'assigned' FL310 for westbound traffic, and,
- b) Introduction of BOB Entry Gates, TAVUN on L759 and IGREX on P628 into BOBCAT system.

Use of 'assigned' FL310 for Westbound traffic

6.14 The side meeting discussed the scenarios of how FL290 or FL310 could be used effectively for westbound traffic during the period of ATFM. India highlighted their difficulties with this proposed procedure, particularly in respect to operational safety issues in Indian airspace i.e. HF communication environment, radar coverage limitation within Chennai FIR etc. From India's perspective, the use of FL 290 or FL310 for westbound flights would not be possible.

Increased usage of coordinated arrangements

6.15 As the use of FL290/FL310 was not available, in looking for an alternative solution the side meeting agreed that if enhanced coordination arrangements amongst States concerned could be established, the use of existing flight levels within the area would be more flexible and would ease traffic bunching problems. The meeting agreed on a coordination concept and proposed a draft Revised Coordination Procedure (**Appendix K** refers) between Bangkok, Chennai, Kolkata, Kuala Lumpur and Yangon ACCs. States involved would continue discussions to finalize the draft procedures for implementation as soon as possible.

6.16 In general terms, Thailand would set up a coordination unit within the Bangkok ACC, active for the appropriate 4 to 5 hours per night, for the specific purpose of conducting coordination between all affected ACCs. The objective of the coordination would be to ensure that ALL available flight level capacity on both parallel and crossing routes was fully utilized by reaching coordinated agreement on a real time, flight by flight basis with affected ACCs.

6.17 In reaching this agreement the meeting noted that Myanmar and Sri Lanka, who were also affected by the proposed procedures, were not present at the meeting and although swift agreement from these States was anticipated this would need to be received before implementation of the new procedures.

6.18 In this respect, the Regional Office would assist in coordinating the new arrangements with Myanmar and Sri Lanka as soon as possible, however the meeting recognized that official correspondence could take time for a State to process. In order to facilitate the earliest implementation of the new arrangements the meeting encouraged ANSP representatives from the States present at the meeting to conduct coordination directly with their counterparts in Myanmar and Sri Lanka as soon as possible.

6.19 The meeting agreed that the increased usage of coordination arrangements for traffic handling in the eastern Bay of Bengal area should be implemented without delay.

Introduction of Entry Gates, TAVUN on L759 and IGREX on P628

6.20 The meeting discussed the effect of the introduction of BOB entry gates at TAVUN and IGREX in order to solve bunching problem in Bangkok and Kuala Lumpur FIRs. Although the introduction of entry gates would solve the bunching problem, it was likely to increase flight delays. Singapore expressed particular concern as these entry gates might increase delay at Singapore airport. Consequently, the meeting agreed that introduction of the above entry gates would only be considered if the agreed revised coordination procedures (as described above) were unsuccessful. In this event, the spacing parameters to be applied should be carefully considered so as not to cause departing flights from Singapore to suffer significantly increased ground delay.

Extension of Trial Dates

6.21 The meeting agreed that the trial should be extended until further notice. In this respect the meeting noted that AIS requirements related to the issuing of NOTAMs required that a specified end date be inserted into each NOTAM. Accordingly, the meeting agreed to adopt AIRAC date 21 December 2006 as the end date to be specified in NOTAMs and prepared a model NOTAM text accordingly (**Appendix L** refers). Noting that existing trial NOTAMS expired on 11 August 2006, States were requested to issue the new NOTAMS extending the trial as soon as possible.

6.22 In extending the trial, the meeting recognized that circumstances could still arise under which the operational trial may have to be suspended for a period of time. In ensuring that preparations were in place for this circumstance, the meeting reviewed the trial suspension provisions contained at paragraphs 6.11 and 6.12 of the Bay of Bengal and South Asia ATFM Handbook, agreeing that they were still suitable.

6.23 The Secretariat reminded the meeting that the ATFM/TF/8 meeting now scheduled in November would provide the earliest opportunity to conduct a comprehensive review of the performance of the ATFM operational trial and the BOBCAT system. All participants were encouraged to make early preparations for this meeting.

Work Programme

6.24 The meeting agreed to the following work programme in order to ensure the efficient continuation of the ATFM operational trial.

Date	Activity	Responsible	Remarks
7 August 2006	Issue NOTAM to continue operational trial	All States including India, Malaysia, Pakistan, Singapore, Thailand	All the States that had issued AIP Supplement
ASAP	Establish coordination unit in Bangkok ACC to support coordination between all affected States during night time busy period	Thailand	
ASAP	Study inconsistency between bases of airways in the Yangon and Chennai FIRs with a view to harmonization	India, Myanmar, Thailand to assist	Base of airways in Yangon FIR is charted (Jeppesen) as FL280, base in Chennai FIR charted as FL260
ASAP	Study proposal for formulation of 'BOBCAT Scrutiny Group' as described in Agenda Item 7 of ATFM/TF/7 report	All	Oversight group comprising appropriate representation would be beneficial in ensuring integrity of BOBCAT operations.
ASAP	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.	Regional Office & IATA	
ASAP	Special Coordination Meeting India, Pakistan, Afghanistan, ICAO, IATA	Regional Office	Meeting to pursue lowering of MEA in Pakistan for ATS route P628 from FL320 to FL300 to harmonize with India

Date	Activity	Responsible	Remarks
ASAP	Provide details of aircraft processed at FL260 on 24/25 July to India to enable investigation	ATFMU & India	
Prior to ATFM/TF/8 (November 2006)	Nominate Chairman for ATFM/TF	All	
ASAP	Transmit Letter to Australia thanking for provision of Chairman	Regional Office	
Ongoing	Submit trial related data sheets to ATFMU for onwards distribution	States – India, Malaysia, Pakistan, Singapore, Thailand.	
Ongoing	Obtain trial related data from airlines, submit to ATFMU for onwards distribution.	IATA Singapore Office	
ASAP	Review trial related data with a view to incrementally reducing flow buffer time from 5 minutes	All	
21 – 24 November 2006	ATFM/TF/8 – Four day Trial Review Meeting	ATFM Task Force	Comprehensive review of outcomes of ATFM operational trial

Agenda Item 7: Any other business

Proposed establishment of a BOBCAT Scrutiny Group (BSG)

7.1 The Chairman presented the meeting with a Working Paper which outlined a proposal to establish a “BOBCAT Scrutiny Group” (BSG) to provide regional oversight of the provision of Air Traffic Flow Management within the Bay of Bengal and South Asia. The focus of the BSG would be on aspects concerning safety, performance, efficiency and commercial operations of BOBCAT, in accordance with an agreed set of Terms of Reference.

7.2 The attention of the meeting was drawn to the recent meeting of the ATM/AIS/SAR/SG/16 meeting (26 – 30 June 2006), in regard to the establishment by the FAA of the “30-30 Scrutiny Group”. According to the ATM/AIS/SAR/SG Working Paper (WP/20) presented during the meeting, “the FAA had formed a group of experts to evaluate performance of the various components of the system supporting the reduced separation minima.”

7.3 Similarly, the 16th meeting of the ATM/AIS/SAR Sub Group formed a Draft Conclusion (16/7) to the effect that “a Scrutiny Group be established to identify and address problems in safety, efficiency and harmonization of WPAC/SCS RVSM operations in accordance with the Terms of Reference endorsed by APANPIRG”.

7.4 In proposing the establishment of a BOBCAT Scrutiny Group, it was envisaged that the primary functions of the BSG would include:

- Oversight of ATFM operations across the Bay of Bengal and South Asia, including compliance with ATFM Slot allocations, including regular evaluation of ATFM system performance;
- Industry liaison in regard to ATFM service provision, including the BOBCAT Development Team, ATFMU and Stakeholders;
- Collaboration with the BOBCAT Development Team, ATFMU, ANSPs and Industry Stakeholders to maintain and enhance aviation safety – specifically in regard to ATFM;
- Resolution of complaints in an impartial, timely and effective way;
- Establishment of an appropriate funding arrangements for the commercial operation of the BOBCAT system;
- Liaison with the BOBCAT Development Team and ATFM Stakeholders for BOBCAT configuration changes, proposed software upgrades and proposed amendments to ATFM Operating Procedures;
- Planning for future growth to ensure that the ATFM system can accommodate the demand.

7.5 The Chairman also informed the meeting that the proposed BSG be established under the existing Bay of Bengal ATS Coordination Group (BBACG) and would report to the BBACG and APANPIRG on an annual basis.

7.6 Further, the BSG would be expected to communicate and consult with Stakeholders; to exercise good judgement, as well as being flexible and responsive to Stakeholder requirements. The key attributes of the BSG would include:

- Independence
- Impartiality
- Accessibility
- Timeliness
- Integrity
- Professionalism

7.7 An initial set of administrative guidelines for the BSG was presented for consideration by the meeting and a copy is shown at **Appendix M**.

Review of the Global Plan GPI 6

7.8 The meeting was informed that the Second Amendment to the *Global Air Navigation Plan* (“Global Plan”, Doc 9750) was now expected to be finalised late in 2006. The Global Plan describes a strategy aimed at achieving near and medium term ATM benefits on the basis of available and foreseen aircraft capabilities and ATM infrastructure. It contains guidance on ATM improvements necessary to support a uniform transition to the ATM system envisioned in the global ATM operational concept (Doc 9854).

7.9 The operational concept presents the ICAO vision of an integrated, harmonized and globally interoperable ATM system. A global ATM system can be described as a worldwide system that, on a global basis, achieves interoperability and seamlessness across regions for all users during all phases of flight; meets agreed levels of safety; provides for optimum economic operations; is environmentally sustainable; and meets national security requirements.

7.10 The Global Plan focuses on the operational and technical improvements that will bring near and medium term benefits to aircraft operators. Long term initiatives, necessary to guide the evolution to a global ATM system as envisioned in the operational concept, will be added to the Global Plan as they are developed and agreed to. Planning will be focused on a set of “Global Plan Initiatives” (“GPIs”). GPIs are options for ATM improvements that when implemented, result in direct performance enhancements.

7.11 The existing twenty three Global Plan Initiatives (GPIs) contained in the Global Plan were developed as a means to ensure global harmonization, interoperability and seamlessness of the global air navigation system. The Global Plan recognizes that air traffic flow management supports ATC in meeting its main objectives of preventing collisions between aircraft, expediting and maintaining an orderly flow of air traffic, as well as of achieving the most efficient utilization of available airspace and airport capacity.

7.12 Global Plan guidance in respect of ATFM - recognizing that the implementation of demand/capacity measures, commonly known as air traffic flow management (ATFM), implemented on a regional basis where needed, will enhance airspace capacity and improve operating efficiency - has been captured in GPI 6. A copy of GPI 6 is included as **Appendix N**.

Consolidation of Medan ACC to Jakarta ACC – Indonesia

7.13 Indonesia updated the meeting that as a result of the consolidation to two FIRs in Indonesia and the associated consolidation of regional ACCs to the two primary ACCS at Makassar and Jakarta, it was necessary to consolidate the responsibility for the provision of air traffic services within Medan East Control Area and Medan West Control Area from the Medan ACC to Jakarta ACC.

7.14 Accordingly, Medan East Control Area and Medan West Control Area would be consolidated to Jakarta and renamed as Medan East Upper Control Area and Medan West Upper Control Area. The provision of Medan East Upper Control Area and Medan West Upper Control Area Services will be implemented in two phases, as follows:

Phase I:

Establishing Medan East Upper Control Area:

- (1) Shadow Operation: 3 August 2006, 0000 UTC – 16 August 2006, 2359 UTC
- (2) Trial Operation: 17 August 2006, 0000 UTC – 30 August 2006, 2359 UTC
- (3) Full Operation: 31 August 2006, 0000 UTC onwards

Responsible authority changes from Medan ACC to Jakarta ACC, final details are:

Controlling Unit	: Jakarta ACC
Call sign	: “Jakarta Control”
Frequency	: Primary 132.3 MHz and Secondary 133.2 MHz
AFTN Address	: WIIIZQZX
Operating Hours	: H - 24

Phase II:

Establishing Medan West Upper Control Area:

- (1) Shadow Operation: 15 February 2007, 0000 UTC – 28 February 2007, 2359 UTC
- (2) Trial Operation: 1 March 2007, 0000 UTC – 14 March 2007, 2359 UTC
- (3) Full Operation: 15 March 2007, 0000 UTC onwards

Responsible authority changes from Medan ACC to Jakarta ACC, final details are:

Controlling Unit	: Jakarta ACC
Call sign	: "Jakarta Control"
Frequency	: 128.3 MHz
AFTN Address	: WIIIZQZX
Operating Hours	: H – 24

7.15 Medan ACC facilities would still be available if required as a back up system for Jakarta, as well as Bali ACC if required for Makassar (Ujung Pandang FIR).

Agenda Item 8: Date and venue for the next meeting

8.1 In considering arrangements for the next meeting, the Secretariat drew attention to the difficulties in scheduling additional meetings into the Regional Office calendar. The ATM section work schedule for the remainder of 2006 was already fully booked and it would not be possible for the Regional Office to sustain the frequency of meetings of the ATFM/TF that had been achieved so far, comprising approximately 14 meetings over an 18 month period.

8.2 In this context, the first available meeting slot for the Regional Office was in the week 20-24 November 2006 and attempts would be made to schedule a four day meeting of the ATFM/TF commencing Tuesday 21 November 2006.

8.3 In noting that this meeting opportunity was some four months away, the meeting acknowledged that work in relation to the ATFM operational trial could still proceed via correspondence between core team members and by way of bi-lateral or multilateral meetings between States. All members of the task force were encouraged to continue work actively in this manner.

Closing of the Meeting

Chairman's closing remarks

9.1 In closing the ATFM/TF/7 meeting, Mr. Ron Rigney, Chairman of the ATFM/TF thanked all participants and their Administrations for their excellent support and worthwhile contributions, as well as to the Asia/Pacific Regional Office for the arrangements and support provided which had greatly contributed to the success of the meeting.

9.2 Mr. Rigney expressed the view that the planning and introduction of BOBCAT as an ATFM system for the Bay of Bengal and South Asia was a significant undertaking which had drawn heavily on the combined goodwill, cooperation and resources of the States and Organizations concerned. Mr. Rigney made special reference to the members of the ATFM Core Team for their personal contributions to the work of the Task Force and thanked the members of the Core Team for their special efforts.

9.3 Mr. Rigney confirmed that this was his last meeting of the ATFM/TF and that he would be retiring as Chairman at the conclusion of the meeting. He informed the meeting that Airservices Australia had recently undergone an organizational restructure, which would require a number of changes to individual roles and responsibilities within the organization. In closing, Mr. Rigney expressed his deep appreciation to Mr. Andrew Tiede for his outstanding support, commitment, professionalism and friendship during the period that they had worked together on the ATFM/TF. Mr. Rigney expressed his best wishes to the ATFM/TF members and every success for their future work in the ongoing development of the ATFM system for the Bay of Bengal.

Secretariat Closing Remarks

9.4 The Secretary to the meeting Mr. Tiede, in recognizing the difficulties being experienced by Afghanistan, thanked Afghanistan for providing a delegate to this meeting. The feedback from the Manager of the Kabul ACC had been invaluable to the conduct of the meeting, both in validating the actual Kabul entry times and levels for traffic metered by BOBCAT and in terms of the general update of the situation in Afghanistan. The meeting passed best wishes from the ICAO Asia/Pacific Regional Office and the States and international organizations represented at the Task Force meeting to the government of Afghanistan.

9.5 On behalf of the States and international organizations that comprised the ATFM/TF, Mr Tiede thanked Australia and Airservices Australia in particular for making Mr Ron Rigney continuously available in the role of Chairman of the Task Force. The Regional Office recognized the significant direct and indirect expenses incurred by Airservices Australia in being fully involved in the Bay of Bengal ATFM Operational Trial, an activity that was evidently on the periphery of the area of responsibility of Australia.

9.6 In this context, as Australia was not operationally involved Mr Rigney had been able to bring substantial independence to the role of Chairman. This had proved important in melding together the differing requirements of the 6 or 7 primary States involved in the ATFM operational trial whilst also adequately integrating the needs of IATA and the approximately 25 airlines operating in the trial airspace. The work of the Task Force had been complex and extremely demanding to date and the guidance and leadership provided by Mr Rigney had been instrumental in enabling the many disparate members of the Task Force to work together in commencing the ATFM operational trial.

9.7 During the conduct of the Task Force activities Mr. Rigney continued a significant involvement throughout, using his notable technical expertise in providing advice and assistance to States and international organizations both formally during plenary sessions and informally during the scheduled meeting breaks. He brought a wisdom and sense of humor to his leadership of the Task Force that was invaluable in keeping the work programme moving forward.

9.8 Delegates from India, Malaysia, Singapore, Thailand and IATA wished to formally record their sincere appreciation for the efforts of Mr. Rigney in guiding the Task Force thus far. The meeting requested that the Regional Office convey to Australia the appreciation of the ATFM/TF for the leadership role played by Mr Rigney over the last 18 months, supported by Airservices Australia, in actively facilitating the work of the Task Force.

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LIST OF WORKING AND INFORMATION PAPERS and FLIMSY

WORKING PAPERS

NUMBER	AGENDA	TITLE	PRESENTED BY
WP/1	1	Provisional Agenda	Secretariat
WP/2	6	Proposed Establishment of the “BOBCAT Scrutiny Group”	ATFM/TF Chairman
WP/3	3	Review of the ATFM Operational Trials – 26 July 2006	IATA
WP/4	3	Air Traffic Flow Management within the Bay of Bengal and South Asia Implementation in Kuala Lumpur FIR	Malaysia
WP/5	5	Special Coordination Meeting between Core Team Members of the Air Traffic Flow Management Task Force from 17 to 19 July 2006 in Singapore	Singapore
WP/6	3	Observations by Singapore on the Operational Trial	Singapore
WP/7	2	Analysis of Live Data in Operational Trial, 24-27 July 2006	Thailand
WP/8	2	BOBCAT System Development and Improvements since ATFM/TF/6	Thailand
WP/9	3	Feedback on BOBCAT Operation trial and ATC issues – Indian perspective	India

INFORMATION PAPERS

NUMBER	AGENDA	TITLE	PRESENTED BY
IP/1	-	List of Working Papers (WPs) and Information Papers (IPs)	Secretariat
IP/2	6	Global Plan Initiative 6 – Air Traffic Flow Management	Secretariat

FLIMSY

NUMBER	AGENDA	TITLE	PRESENTED BY
No. 1	-	Background Information	Secretariat
No. 2	-	Checklist – Operational Trial	Secretariat
N0.3		Extract from ATM/AIS/SAR/SG/16 Report	Secretariat
No.4	3	BOBCAT system development and improvements since the commencement of BOBCAT operational trials	Thailand

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Pakistan Data

#	Call Sign	WP	Type	FL	ATO	ATO Diff
1	SIA346	ASLUM	B744	310	21:56	
2	BAW12	ASLUM	B744	350	20:28	
3	KLM838	ASLUM	B744	350	20:38	0:10
4	SIA334	ASLUM	B744	350	21:27	0:49
5	BAW16	ASLUM	B744	350	21:41	0:14
6	MAS14	ASLUM	B747	350	21:51	0:10
7	AUA002	ASLUM	B772	350	22:22	0:31
8	KLM872D	PAVLO	MD11	280	20:30	
9	KLM872	PAVLO	MD11	310	20:40	0:10
10	THA920	PAVLO	B744	310	21:36	0:56
11	CPA293	PAVLO	B744	310	22:18	0:42
12	RBA033	PAVLO	B763	350	20:28	
13	THA930	PAVLO	B744	350	21:28	1:00
14	SAS972	PAVLO	A321	350	22:02	0:34
15	THA970	PAVLO	A346	350	22:18	0:16
16	THA910	PAVLO	B744	350	22:30	0:12
17	THA940	PAVLO	A345	390	22:20	
38	AFR147	ROSIE	--	--	--	
39	ACA879	ROSIE	--	--	--	
18	DLH761	ROSIE	B744	310	22:12	
19	CAL065	ROSIE	B744	--	--	
23	KLM878	ROSIE	B744	350	20:25	
20	MAS20	ROSIE	B772	350	20:42	0:17
21	SIA322	ROSIE	B744	350	21:00	0:18
22	DLH783	ROSIE	B744	350	21:18	0:18
24	HVN533	ROSIE	B772	350	21:30	0:12
25	HVN545	ROSIE	B772	350	21:43	0:13
26	MAS2	ROSIE	B747	350	21:55	0:12
27	SIA026	ROSIE	B744	350	22:05	0:10
28	MAS16	ROSIE	B747	350	22:16	0:11
30	SIA352	ROSIE	B777	350	22:55	0:39
29	CLX733	ROSIE	B744	350	23:51	0:56
31	AAL293	SITAX	B772	280	20:18	
32	AFL536	SITAX	IL96	310	22:19	2:01
33	THA960	SITAX	B744	310	22:40	0:21
34	AFL542	SITAX	B763	350	20:22	
35	FIN098	SITAX	MD11	350	21:45	1:23
36	THA950	SITAX	B744	350	22:45	1:00
37	AEW152	SITAX	B736	350	23:52	1:07

Kabul Data

C/S	Dep	Dest	WP	FL (K)	Entry	Exit	En Diff	Ex Diff
SIA346	WSSS	LSZH	ASLUM	310	21:56	22:29		
BAW12	WSSS	EGLL	ASLUM	350	20:29	21:12		
KLM838	WSSS	EHAM	ASLUM	350	20:39	21:22	0:10	0:10
SIA334	WSSS	LFPG	ASLUM	350	21:25	22:10	0:46	0:48
BAW16	WSSS	EGLL	ASLUM	350	21:41	22:24	0:16	0:14
MAS14	WMKK	LIRF	ASLUM	350	21:50	22:34	0:09	0:10
AUA2	WMKK	LOWW	ASLUM	350	22:24	23:07	0:34	0:33
KLM872D	VIDP	EHAM	PAVLO	280	20:30	21:09		
KLM872	VIDP	EHAM	PAVLO	310	20:42	21:20	0:12	0:11
THA920	VTBD	EDDF	PAVLO	310	21:38	22:15	0:56	0:55
CPA293	VHHH	LIRF	PAVLO	310	22:20	22:57	0:42	0:42
RBA33	VTBD	EDDF	PAVLO	350	20:28	21:10		
THA930	VTBD	LFPG	PAVLO	350	21:28	22:07	1:00	0:57
SAS972	VTBD	EKCH	PAVLO	350	22:02	22:43	0:34	0:36
THA970	VTBD	LSZH	PAVLO	350	22:18	22:59	0:16	0:16
THA910	VTBD	EGLL	PAVLO	350	22:30	23:10	0:12	0:11
THA940	VTBD	LIMC	PAVLO	390	22:19	23:01		
AFR147	VIDP	LFPG	ROSIE	310	20:58	21:43		
ACA879	VIDP	LSZH	ROSIE	310	21:18	22:03	0:20	0:20
DLH761	VIDP	EDDF	ROSIE	310	22:12	22:56	0:54	0:53
CAL065	VTBD	EHAM	ROSIE	--	--	--		
KLM878	VTBD	EHAM	ROSIE	350	20:25	21:09		
MAS20	WMKK	LFPG	ROSIE	350	20:42	21:27	0:17	0:18
SIA322	WSSS	EGLL	ROSIE	350	20:59	21:43	0:17	0:16
DLH783	VTBD	EDDF	ROSIE	350	21:17	22:02	0:18	0:19
HVN533	VVTS	LFPG	ROSIE	350	21:30	22:15	0:13	0:13
HVN545	VVNB	EDDF	ROSIE	350	21:43	22:27	0:13	0:12
MAS2	WMKK	EGLL	ROSIE	350	21:55	22:40	0:12	0:13
SIA026	WSSS	EDDF	ROSIE	350	22:05	22:50	0:10	0:10
MAS16	WMKK	EHAM	ROSIE	350	22:16	23:00	0:11	0:10
SIA352	WSSS	EKCH	ROSIE	350	22:54	23:40	0:38	0:40
CLX733	VTBD	UBBB	ROSIE	350	23:53	0:36	0:59	0:56
AAL293	VIDP	KORD	SITAX	310	20:18	20:52		
AFL536	VIDP	UJEE	SITAX	310	22:18	22:56	2:00	2:04
THA960	VTBD	ESSA	SITAX	310	22:40	23:10	0:22	0:14
AFL542	VVNB	UJEE	SITAX	350	20:22	20:52		
FIN098	VTBD	EFHK	SITAX	350	21:55	22:21	1:33	1:29
THA950	VTBD	EKCH	SITAX	350	22:48	23:19	0:53	0:58
AEW152	VIDP	UKBB	SITAX	350	23:55	0:29	1:07	1:10

BOBCAT Data

#	Call Sign	WP	Type	FL (B)	ETO	ETO Diff
2	BAW12	ASLUM	B744	310	20:34	
6	MAS14	ASLUM	B747	310	22:00	1:26
3	KLM838	ASLUM	B744	350	20:40	
4	SIA334	ASLUM	B744	350	21:28	0:48
5	BAW16	ASLUM	B744	350	21:41	0:13
1	SIA346	ASLUM	B744	350	21:56	0:15
7	AUA002	ASLUM	B772	350	22:11	0:15
8	KLM872D	PAVLO	MD11	280	20:19	
9	KLM872	PAVLO	MD11	310	20:47	0:28
10	THA920	PAVLO	B744	310	21:33	0:46
16	THA910	PAVLO	B744	310	22:28	0:55
12	RBA033	PAVLO	B763	350	20:28	
13	THA930	PAVLO	B744	350	21:23	0:55
11	CPA293	PAVLO	B744	350	21:43	0:20
14	SAS972	PAVLO	A321	350	22:04	0:21
15	THA970	PAVLO	A346	350	22:19	0:15
17	THA940	PAVLO	A345	390	22:19	
25	HVN545	ROSIE	B772	280	21:14	
27	SIA026	ROSIE	B744	310	22:08	0:54
28	MAS16	ROSIE	B747	310	22:28	0:20
19	CAL065	ROSIE	B744	310	23:51	1:23
23	KLM878	ROSIE	B744	350	20:26	
20	MAS20	ROSIE	B772	350	20:41	0:15
21	SIA322	ROSIE	B744	350	20:59	0:18
22	DLH783	ROSIE	B744	350	21:16	0:17
24	HVN533	ROSIE	B772	350	21:31	0:15
26	MAS2	ROSIE	B747	350	21:52	0:21
18	DLH761	ROSIE	B744	350	22:18	0:26
30	SIA352	ROSIE	B777	350	22:54	0:36
29	CLX733	ROSIE	B744	--	--	
38	AFR147	ROSIE	--	--	--	
39	ACA879	ROSIE	--	--	--	
36	THA950	SITAX	B744	310	22:37	
35	FIN098	SITAX	MD11	350	21:52	
33	THA960	SITAX	B744	350	22:37	0:45
31	AAL293	SITAX	B772	--	--	
32	AFL536	SITAX	IL96	--	--	
34	AFL542	SITAX	B763	--	--	
37	AEW152	SITAX	B736	--	--	

%
#FL Change 11 34.38%
Total 32 100%

ATFM/TF/7
Appendix D to the Report

Pakistan Data

S. #	C/S	WP	Type	FL (P)	ATO (P)	ATO Diff
1						
2						
3						
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25						

Kabul Data

S. #	C/S	Dep	Dest	WP	FL (K)	Entry (K)	Exit (K)	En Diff	Ex Diff
1	SIA346	WSSS	LSZH	ASLUM	310	21:50	22:41		
2	QFA1	VTBD	EGLL	ASLUM	310	23:32	0:15	1:42	1:34
3	SIA322	WSSS	EGLL	ASLUM	350	21:10	21:55		
4	MAS2	WMKK	EGLL	ASLUM	350	21:20	22:05	0:10	0:10
5	SIA334	WSSS	LFPG	ASLUM	350	21:30	22:15	0:10	0:10
6	SIA324	WSSS	EHAM	ASLUM	350	21:44	22:28	0:14	0:13
7	SIA328	WSSS	EGCC	ASLUM	350	21:54	22:44	0:10	0:16
8	THA944	VTBD	LIRF	PAVLO	310	21:52	22:33		
9	THA920	VTBD	EDDF	PAVLO	350	21:25	22:02		
10	THA930	VTBD	LFPG	PAVLO	350	21:38	22:17	0:13	0:15
11	CPA293	VHHH	LIRF	PAVLO	350	21:48	22:27	0:10	0:10
12	THA970	VTBD	LSZH	PAVLO	350	22:09	22:51	0:21	0:24
13	THA910	VTBD	EGLL	PAVLO	350	22:45	23:25	0:36	0:34
14	MAS16	WMKK	EHAM	ROSIE	310	21:23	22:08		
15	SIA026	WSSS	EDDF	ROSIE	310	21:49	22:30	0:26	0:22
16	CLX793	VHHH	UBBB	ROSIE	350	20:59	21:45		
17	HVN535	VVNB	LFPG	ROSIE	350	21:24	22:11	0:25	0:26
18	MAS6	WMKK	EDDF	ROSIE	350	21:43	22:30	0:19	0:19
19	MAS10	WMKK	LSZH	ROSIE	350	22:10	22:57	0:27	0:27
20	CAL065			ROSIE	--	--			
21	AAL293	VIDP	KORD	SITAX	310	20:06	20:41		
22	FIN098	VTBD	EFHK	SITAX	350	22:00	22:32	1:54	1:51
23	THA960	VTBD	ESSA	SITAX	350	22:33	23:09	0:33	0:37
24	THA950	VTBD	EKCH	SITAX	350	22:55	23:31	0:22	0:22
25	HVN525	VVNB	UDD	SITAX	390	22:20	22:56		

BOBCAT Data

S. #	Callsign	WP	AC	FL (B)	ETO (B)	ETO Diff
3	SIA322	ASLUM	B744	310	21:14	
5	SIA334	ASLUM	B744	310	21:30	0:16
7	SIA328	ASLUM	B772	310	21:51	0:21
2	QFA1	ASLUM	B744	310	23:22	1:31
18	MAS2	ASLUM	B744	350	21:25	
6	SIA324	ASLUM	B772	350	21:43	0:18
1	SIA346	ASLUM	B744	350	21:58	0:15
11	CPA293	PAVLO	B744	280	21:47	
12	THA970	PAVLO	A346	310	22:03	
9	THA920	PAVLO	B744	350	21:21	
10	THA930	PAVLO	B744	350	21:36	0:15
8	THA944	PAVLO	B743	350	21:51	0:15
13	THA910	PAVLO	B744	350	22:42	0:51
4	MAS16	ROSIE	B744	310	21:20	
15	SIA026	ROSIE	B744	310	21:40	0:20
20	CAL065	ROSIE	B744	310	23:53	2:13
17	HVN535	ROSIE	B777	350	21:09	
19	MAS006	ROSIE	B772	350	21:39	0:30
14	MAS10	ROSIE	B772	350	22:09	0:30
16	CLX793	ROSIE		--	--	
22	FIN098	SITAX	MD11	310	21:52	
23	THA960	SITAX	B744	350	22:30	
24	THA950	SITAX	B744	350	22:51	0:21
25	HVN525	SITAX		390	--	
21	AAL293	SITAX		--	--	

	#	%
#FL Change	10	45.45%
Total	22	100%

ATFM/TF/7
Appendix E to the Report

Pakistan Data

S. #	C/S	WP	Type	FL (P)	ATO (P)	ATO Diff
1	MAS2	ASLUM	B744	310	--	
2	SIA346	ASLUM	B744	310	21:49	
3	SIA322	ASLUM	B744	350	--	
4	SIA334	ASLUM	B744	350	21:32	
5	SIA324	ASLUM	B772	350	21:50	0:18
6	SIA026	ASLUM	B744	350	22:02	0:12
7	SAS972	PAVLO	A340	280	22:11	0:09
8	KLM878	PAVLO	B744	310	20:33	
9	KLM872	PAVLO	MD11	310	20:57	0:24
10	THA930	PAVLO	B744	310	21:44	0:47
11	BAW142	PAVLO	B772	310	21:54	0:10
12	THA946	PAVLO	B773	310	22:12	0:18
13	CPA037	PAVLO	B744F	310	22:29	0:17
14	THA920	PAVLO	B744	350	21:19	
15	CPA293	PAVLO	B744	350	21:44	0:25
16	THA970	PAVLO	A346	350	22:12	0:28
17	THA910	PAVLO	B744	350	22:46	0:34
18	MAS16	ROSIE	B744	310	21:41	
19	THA942	ROSIE	B744	350	21:32	
20	HVN533	ROSIE		350	--	
21	HVN543	ROSIE		350	--	
22	SIA352	ROSIE	B772	350	22:57	
23	CAL065	ROSIE	B744	350	23:55	0:58
24	AAL293	SITAX	B-772	310	20:55	
25	FIN098	SITAX	MD11	310	21:59	1:04
26	AFL536	SITAX	IL96	310	22:53	0:54
27	UZB554	SITAX	B-752	350	20:36	
28	THA960	SITAX	B744	350	22:39	2:03
29	THA950	SITAX	B744	350	22:53	0:14
30	UZB464	SITAX	B-752	390	20:40	
31	UZB424	SITAX	B-752	390	21:43	1:03

Kabul Data

S. #	C/S	Dep	Dest	WP	FL (K)	Entry (K)	Exit (K)	En Diff	Ex Diff
1	MAS2	WMKK	EGLL	ASLUM	310	21:18	22:03		
2	SIA346	WSSS	LSZH	ASLUM	310	21:44	22:32	0:26	0:29
3	SIA322	WSSS	EGLL	ASLUM	350	21:14	22:00		
4	SIA334	WSSS	LFPG	ASLUM	350	21:32	22:16	0:18	0:16
5	SIA324	WSSS	EHAM	ASLUM	350	21:51	22:35	0:19	0:19
6	SIA026	WSSS	EDDF	ASLUM	350	22:03	22:40	0:12	0:05
7	SAS972	VTBD	EKCH	PAVLO	280	22:14	22:54	0:11	0:14
8	KLM878	VTBD	EHAM	PAVLO	310	20:35	21:12		
9	KLM872	VIDP	EHAM	PAVLO	310	21:00	21:38	0:25	0:26
10	THA930	VTBD	LFPG	PAVLO	310	21:44	22:24	0:44	0:46
11	BAW142	VIDP	EGLL	PAVLO	310	21:54	22:34	0:10	0:10
12	THA946	VTBD	LGAV	PAVLO	310	22:11	22:53	0:17	0:19
13	CPA037	VIDP	EGLL	PAVLO	310	22:29	23:08	0:18	0:15
14	THA920	VTBD	EDDF	PAVLO	350	21:18	21:59		
15	CPA293	VHHH	LIRF	PAVLO	350	21:45	22:26	0:27	0:27
16	THA970	VTBD	LSZH	PAVLO	350	22:13	22:54	0:28	0:28
17	THA910	VTBD	EGLL	PAVLO	350	22:46	23:28	0:33	0:34
18	MAS16	WMKK	EHAM	ROSIE	310	21:41	22:27		
19	THA942	VTBD	LIRF	ROSIE	350	21:33	22:18		
20	HVN533	VVTS	LFPG	ROSIE	350	21:44	22:30	0:11	0:12
21	HVN543	VVTS	EDDF	ROSIE	350	21:55	22:40	0:11	0:10
22	SIA352	WSSS	EKCH	ROSIE	350	22:57	23:43	1:02	1:03
23	CAL065	VTBD	EHAM	ROSIE	350	23:55	0:40	0:58	0:57
24	AAL293	VIDP	KORD	SITAX	310	20:55	21:31		
25	FIN098	VTBD	EFHK	SITAX	310	21:59	22:35	1:04	1:04
26	AFL536	VIDP	UJEE	SITAX	310	22:53	23:30	0:54	0:55
27	UZB554	WMKK	UTTT	SITAX	350	20:37	21:14		
28	THA960	VTBD	ESSA	SITAX	350	22:39	23:14	2:02	2:00
29	THA950	VTBD	EKCH	SITAX	350	22:52	23:27	0:13	0:13
30	UZB464	OPLA	UTTT	SITAX	390	20:40	21:21		
31	UZB424	VIDP	UTTT	SITAX	390	21:44	22:22	1:04	1:01

BOBCAT Data

S. #	Callsign	WP	AC	FL (B)	ETO (B)	ETO Diff
1	MAS2	ASLUM	B744	310	21:14	
2	SIA346	ASLUM	B744	310	21:46	0:32
3	SIA322	ASLUM	B744	350	21:11	
4	SIA334	ASLUM	B744	350	21:31	0:20
6	SIA026	ASLUM	B744	350	21:46	0:15
7	SAS972	PAVLO	A340	280	22:00	0:14
11	BAW142	PAVLO	B772	280	22:17	0:17
8	KLM878	PAVLO	B744	310	20:29	
9	KLM872	PAVLO	MD11	310	20:44	0:15
10	THA930	PAVLO	B744	310	21:37	0:53
12	THA946	PAVLO	B773	310	22:10	0:33
13	CPA037	PAVLO	B744F	310	22:25	0:15
14	THA920	PAVLO	B744	350	21:16	
15	CPA293	PAVLO	B744	350	21:47	0:31
16	THA970	PAVLO	A346	350	22:09	0:22
17	THA910	PAVLO	B744	350	22:44	0:35
19	THA942	ROSIE	B744	310	21:30	
5	SIA324	ROSIE	B772	310	21:45	0:15
23	CAL065	ROSIE	B744	310	23:53	2:08
18	MAS16	ROSIE	B744	350	21:35	
22	SIA352	ROSIE	B772	350	22:58	1:23
20	HVN533	ROSIE		350	--	
21	HVN543	ROSIE		350	--	
29	THA950	SITAX	B744	310	22:42	
24	AAL293	SITAX		310	--	
26	AFL536	SITAX		310	--	
30	UZB464	SITAX	B-752	350	20:35	
25	FIN098	SITAX	MD11	350	21:56	1:21
28	THA960	SITAX	B744	350	22:33	0:37
27	UZB554	SITAX	B-752	390	20:36	
31	UZB424	SITAX	B-752	390	21:14	0:38

	#	%
#FL Change	4	14.81%
Total	27	100%

ATFM/TF/7
Appendix F to the Report

Pakistan Data

S. #	C/S	WP	Type	FL (P)	ATO (P)	ATO Diff
1	KLM838	ASLUM	B744	350	20:43	
2	SIA322	ASLUM	B744	350	21:09	0:26
3	SIA346	ASLUM	B744	350	21:47	0:38
4	SIA026	ASLUM	B744	350	22:09	0:22
5	MAS02	ASLUM	B744	350	22:21	0:12
6	KLM878	PAVLO	B744	310	20:36	
7	KLM872	PAVLO	MD11	280	20:43	
8	RBA33	PAVLO	B763	310	20:48	
9	THA930	PAVLO	B744	310	21:33	0:45
10	THA970	PAVLO	A346	310	22:26	0:53
11	THA920	PAVLO	B744	350	21:13	
12	DLH783	PAVLO	B744	350	21:25	0:12
13	THA944	PAVLO	B743	350	22:09	0:44
14	CPA293	PAVLO	B744	350	22:19	0:10
15	THA940	PAVLO	A340	350	22:29	0:10
16	THA910	PAVLO	B744	350	22:42	0:13
17	HVN535	ROSIE	B777	280	21:57	
18	HVN545	ROSIE	B-772	310	21:48	
19	SIA328	ROSIE	B777	350	21:44	
20	SIA334	ROSIE	B744	350	21:55	0:11
21	QFA1	ROSIE	B744	350	22:18	0:23
22	DLH761	ROSIE	B744	350	22:41	0:23
23	SIA340	ROSIE	B777	350	22:53	0:12
24	CAL065	ROSIE	B744	350	23:53	1:00
25	UZB448	SITAX	B-752	280	22:03	
26	AAL293	SITAX	B-772	310	20:29	
27	SAS972	SITAX	A340	310	22:03	1:34
28	FIN098	SITAX	MD11	310	22:14	0:11
29	THA950	SITAX	B744	310	--	
30	THA960	SITAX	B744	350	22:48	
31	UZB422	SITAX	A-310	390	23:29	0:41

Kabul Data

S. #	C/S	Type	Dep	Dest	WP	FL (K)	Entry (K)	Exit (K)	En Diff	Ex Diff
1	KLM838	B744	WSSS	EHAM	ASLUM	350	20:43	21:28		
2	SIA322	B744	WSSS	EGLL	ASLUM	350	21:08	21:53	0:25	0:25
3	SIA346	B744	WSSS	LSZH	ASLUM	350	21:44	22:29	0:36	0:36
4	SIA026	B744	WSSS	EDDF	ASLUM	350	22:08	22:52	0:24	0:23
5	MAS2	B744	WMKK	EGLL	ASLUM	350	22:26	23:10	0:18	0:18
6	KLM872	MD11	VIDP	EHAM	PAVLO	280	20:43	21:30		
7	KLM878	B744	VTBD	EHAM	PAVLO	310	20:37	21:17		
8	RBA33	B763	VTBD	EDDF	PAVLO	310	20:47	21:31	0:10	0:14
9	THA930	B744	VTBD	LFPG	PAVLO	310	21:36	22:17	0:49	0:46
10	THA970	A346	VTBD	LSZH	PAVLO	310	22:28	23:09	0:52	0:52
11	THA920	B744	VTBD	EDDF	PAVLO	350	21:14	21:55		
12	DLH783	B744	VTBD	EDDF	PAVLO	350	21:26	22:08	0:12	0:13
13	THA944	B743	VTBD	LIRF	PAVLO	350	22:10	22:51	0:44	0:43
14	CPA293	B744	VHHH	LIRF	PAVLO	350	22:19	23:00	0:09	0:09
15	THA940	A346	VTBD	LIMC	PAVLO	350	22:30	23:13	0:11	0:13
16	THA910	B744	VTBD	EGLL	PAVLO	350	22:40	23:24	0:10	0:11
17	HVN535	B772	VVNB	LFPG	ROSIE	280	21:49	22:36		
18	HVN545	B772	VVNB	EDDF	ROSIE	310	21:49	22:36		
19	SIA328	B772	WSSS	EGCC	ROSIE	350	21:46	22:32		
20	SIA334	B744	WSSS	LFPG	ROSIE	350	21:55	22:42	0:09	0:10
21	QFA1	B744	VTBD	EGLL	ROSIE	350	22:20	23:05	0:25	0:23
22	DLH761	B744	VIDP	EDDF	ROSIE	350	22:42	23:27	0:22	0:22
23	SIA340	B772	WSSS	LIRF	ROSIE	350	22:56	23:44	0:14	0:17
24	CAL065	B744	VTBD	EHAM	ROSIE	350	23:52	0:40	0:56	0:56
25	UZB448	B752	VIAR	UTTT	SITAX	280	22:03	22:42		
26	AAL293	B772	VIDP	KORD	SITAX	310	20:30	21:04		
27	SAS972	A343	VTBD	EKCH	SITAX	310	22:04	22:39	1:34	1:35
28	FIN098	MD11	VTBD	EFHK	SITAX	310	22:15	22:48	0:11	0:09
29	THA950	B744	VTBD		SITAX	310	--	--		
30	THA960	B744	VTBD	ESSA	SITAX	350	22:49	23:24		
31	UZB422	A310	VIDP	UTTT	SITAX	390	23:33	0:12	0:44	0:48

BOBCAT Data

S. #	Callsign	WP	AC	FL (B)	ETO (B)	ETO Diff
1	KLM838	ASLUM	B744	350	20:43	
2	SIA322	ASLUM	B744	350	21:10	0:27
3	SIA346	ASLUM	B744	350	21:40	0:30
5	MAS02	ASLUM	B744	350	22:30	0:50
6	KLM872	PAVLO	MD11	280	20:40	
7	RBA33	PAVLO	B763	310	20:46	
12	DLH783	PAVLO	B744	310	21:21	0:35
14	CPA293	PAVLO	B744	310	22:11	0:50
15	THA940	PAVLO	A340	310	22:26	0:15
10	KLM878	PAVLO	B744	350	20:37	
11	THA920	PAVLO	B744	350	21:10	0:33
8	THA930	PAVLO	B744	350	21:28	0:18
13	THA944	PAVLO	B743	350	22:03	0:35
9	THA970	PAVLO	A346	350	22:23	0:20
16	THA910	PAVLO	B744	350	22:39	0:16
4	SIA026	ROSIE	B744	280	22:03	
20	SIA334	ROSIE	B744	310	21:53	
22	DLH761	ROSIE	B744	310	22:38	0:45
24	CAL065	ROSIE	B744	310	23:54	1:16
18	HVN545	ROSIE		310	--	
17	HVN535	ROSIE	B777	350	21:13	
19	SIA328	ROSIE	B777	350	21:43	0:30
21	QFA1	ROSIE	B744	350	22:13	0:30
23	SIA340	ROSIE	B777	350	22:54	0:41
27	SAS972	SITAX	A340	310	22:01	
29	THA950	SITAX	B744	310	22:48	0:47
26	AAL293	SITAX		310	--	
28	FIN098	SITAX	MD11	350	22:11	
30	THA960	SITAX	B744	350	22:47	0:36
25	UZB448	SITAX	B-752	390	22:59	0:12
31	UZB422	SITAX	A-310	390	23:26	0:27

	#	%
#FL Change	11	37.93%
Total	29	100%

DELHI DEPARTURES

	Ghosting period		Operational Trial	
	3/7/2006	4/7/2006	24/7/06	25/7/06
Total No of Dep	9	9	9	9
No. of participants BOBCAT	2	3	4	0
Routing				
PAVLO/SITAX	5	5	3	2
ROSIE	4	4	6	7

OVERFLIGHTS

	3/7/2006	4/7/2006	24/7/06	25/7/06
Total No.of flights	35	36	34	25
No. of participants BOBCAT	25	30	34	20
Routing				
PAVLO	11 (1925-2219)	11 (2028-2246)	11 (2028-2228)	7
SITAX	3 (2209-2229)	3 (2207-2228)	3 (2152-2242)	3
ROSIE	12 (1943-2350)	14 (2107-2345)	11 (2026-2351)	8
ASLUM	9 (2038-2245)	8 (2040-2148)	9 (2040-2148)	7

Distribution of traffic amongst VIDP,VTBD,WMKK&WSSS

Date	VIDP	VTBD	WMKK	WSSS
24/7/06	9	15	5	10
25/7/06	9	12	4	6

Malaysia informed the meeting that on 26 July 2006, there was a bunching of traffic occurrence in Kuala Lumpur FIR. The flight affected was SIA026 which undertook an orbit in order to meet longitudinal time separation at IGREX (WMFC/VOMF) FIR boundary. The tables below provide details of the occurrence.

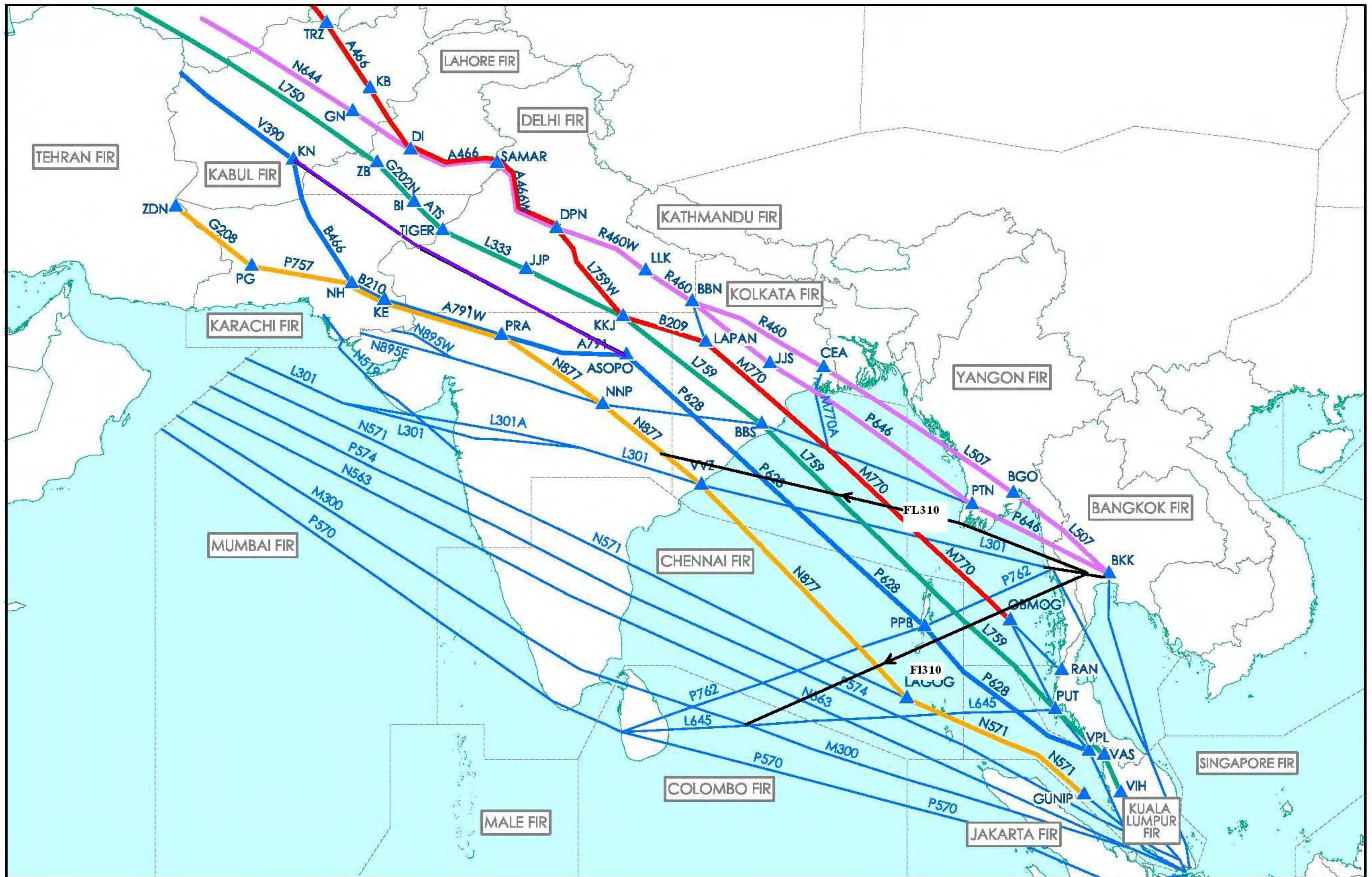
2.6.1 **Bunching of Traffic on P628 between SIA324, SIA346 and SIA026 - 26 July 2006**

Estimate for IGREX (WMFC/VOMF FIR) given by Pilot – TABLE 1								
Callsign	Type	Routes	DEP/DEST	AWUT	ATD	ETO IGREX	Mach	FL
SIA324	B772	P628 RK to ROSIE	WSSS/EHAM	1608	1609	1752	0.83	320
SIA346	B744	P628 RK to ASLUM	WSSS/LSZH	1614	1613	1754	-	280
SIA026	B744	P628 RK to ASLUM	WSSS/EDDF	1614	1616	1756	0.86	260

- SIA324 estimate IGREX at 1752 cruising M0.83
- SIA026 was advised to cross IGREX at 1805 M0.84 (10 plus 3 minutes, Mach No difference 0.01)
- Pilot unable to meet the restriction at IGREX @ 1805 and was suggested to orbit in KL FIR in order to lose time (9 minutes), which the pilot accepted. Aircraft actually lost 12 minutes.
- Approval request for FL300 was made with Chennai ACC for SIA346 and it was not approved.
- Checked with Bangkok ACC of using FL300 for SIA346, however contacted incorrect sector. In any event as FL300 was not available from Chennai, Bangkok ACC would not have been able to approve FL300.

Estimate for IGREX (WMFC/VOMF FIR) Required by ATC – TABLE 2								
Callsign	Type	Routes	DEP/DEST	AWUT	ATD	ETO IGREX	Mach	FL
SIA324	B772	P628 RK to ROSIE	WSSS/EHAM	1608	1609	1752	0.83	320
SIA346	B744	P628 RK to ASLUM	WSSS/LSZH	1614	1613	1754	-	280
SIA026	B744	P628 RK to ASLUM	WSSS/EDDF	1614	1616	1805	0.84	320

Actual Time Over IGREX (WMFC/VOMF FIR) - TABLE 3								
Callsign	Type	Routes	DEP/DEST	AWUT	ATD	ATO IGREX	Mach	FL
SIA324	B772	P628 RK to ROSIE	WSSS/EHAM	1608	1609	1751	0.83	320
SIA346	B744	P628 RK to ASLUM	WSSS/LSZH	1614	1613	1752	-	280
SIA026	B744	P628 RK to ASLUM	WSSS/EDDF	1614	1616	1807	0.85	320



Special Coordination Meeting of the Bay of Bengal Air Traffic Flow Management Task Force

(Singapore, 17 to 19 July 2006)

SUMMARY OF DISCUSSIONS

1 Background to Meeting

1.1 At the tele-conference held on 4 July 2006 at 0600UTC for the Go/No Go Decision on the operational trial, some issues were raised with regard to bunching of traffic and the slot allocations generated by BOBCAT System. As such, a Special Coordination Meeting was held from 17 July to 19 July 2006 in Singapore, to address the issues raised during the tele-conference.

2 Participants

2.1 Mr Kuah Kong Beng, from Civil Aviation Authority of Singapore, acted as the Moderator for the meeting. The meeting was attended by representatives from Malaysia, Singapore, Thailand and IATA. A list of participants is shown at Appendix A.

3 Discussion

Review of Ghosting Period Data

3.1 Malaysia presented the meeting with their observations on the scenarios where bunching of traffic on the parallel routes had occurred along L759 and P628. The ghosting period data had shown that frequently, there were three westbound flights operating on the same route within a five-minutes period (see Appendix B). The possible scenarios for the bunching of traffic were as follows;

- a) Different EETs between B744s, B763s and B777s;
- b) Traffic on L759 branching off at KKJ to SAMAR/DI; and
- c) Flights allocated FL280 at Kabul FIR.

However, there were only two viable flight levels available for the heavily-laden westbound flights departing from Malaysia and Singapore to operate on the parallel routes.

3.2 Malaysia had studied the proposal by Thailand during the tele-conference on 4 July 2006 to adjust the AWUT to flights departing from Malaysia and Singapore to achieve the minimum longitudinal spacing required to transit through the Bay of Bengal. Malaysia informed the meeting that the application of revising AWUT would not provide the minimum longitudinal separation. Furthermore, there would be an increase in workload for Kuala Lumpur ACC as they had to manually transfer data from the Slot Allocation Results onto a different spreadsheet to monitor the traffic flows and highlight the bunching. There would be the increase in coordination workload required to revise the AWUTs. Other concerns raised by Malaysia on adjusting the AWUTs are;

- a) Departures out of Singapore would be affected;
- b) The possibility of allegations of non-transparency by airline operators who have accepted the original slot request results but would have to incur further delay as a result of the revised AWUT;
- c) Flights allocated a revised AWUT might not be able to make up the lost time and would miss the entry gate time at Kabul;
- d) Revised AWUT will work if all the aircraft depart at the specified AWUT. However, the system allows for a Flow buffer of five minutes. This effectively negates the application of the revised AWUT unless the respective ACCs can come up with a mechanism to monitor departure times and compare against the AWUT time to make revisions to subsequent departures. This would definitely increase all ACCs' workload.

3.3 Malaysia proposed that in order to meet the BOBCAT objective of optimizing the capacity and better flow of traffic through Kabul FIR entry waypoints, an additional viable flight level to be allocated for the traffic operating on the parallel routes would alleviate this situation. However, this does not guarantee a permanent solution as traffic would increase. In the long term, other solutions would be required.

3.4 Thailand informed the meeting that a NOTAM had been issued to allow international flights to operate on the domestic route W17 from HTY to RAN, which would make ATS Route M770 as a viable option for operators. This would encourage operators to spread out their westbound flights transiting through the Bay of Bengal.

3.5 Thailand informed the meeting that they would continue to study the possibility of providing an additional viable flight level on the parallel routes. Thailand added that the exchange of FL320 with FL300 would not solve the bunching issue. The adjustment of AWUT could be one of the options to resolve the bunching issue.

3.6 Singapore commented that the adjustment of the AWUT would also impact subsequent departing traffic slots. In addition, coordination workload would increase and there would be human error in the coordination process such as missed coordination or miscommunications. Moreover adjusting the AWUT on real-time would create confusion on the ground between the controllers and the pilots with the provision of the buffer time adding to the confusion. Singapore requested Thailand to review the traffic on the crossing routes and analyse the impact to the parallel routes traffic flow.

3.7 IATA commented that adjustment of the AWUT would not be feasible as it would depend on how fast an ANSP could project the occurrence of bunching. The adjustment of the AWUT would also lead to inefficiency, increase in coordination workload and planning. IATA added that the availability of the additional viable flight level might not alleviate bunching permanently due to the projected traffic growth in the region. As such, for long term solution, one option would be to consider the usage of odd flight levels to be assigned to the westbound traffic during the nightly peak period. IATA agreed that the crossing traffic data should also be reviewed to ascertain the impact to the parallel routes traffic flow.

3.8 Thailand presented the meeting with the data detailing all the traffic operating on the parallel and crossing routes (see Appendix C). The data showed that most of the crossing traffic were assigned FL340 and above. Thailand reported that from the data, at least 75% of crossing traffic were able to accept FL340 and above.

3.9 Thailand suggested that the parallel routes could be assigned FL280 and FL300. Bangkok ACC would inform Kuala Lumpur ACC whenever there are flights operating at FL320 on the crossing routes and departing from airports east of Bangkok. In turn, Kuala Lumpur ACC would inform Bangkok ACC on the requirement to use the three viable flight levels, ie. FL280, FL300 and FL320. Bangkok ACC would delay their departures to ensure FL320 would be made available for use by the westbound traffic on the parallel routes or ensure that the westbound traffic departing from Bangkok could operate at FL340 or above.

3.10 The meeting noted the Chennai ACC, Yangon ACC and Kolkata ACC would play an important role in ensuring that the proposal from Thailand could be successfully implemented. However, it would not totally alleviate the bunching issue raised by Malaysia as the overflight over Bangkok and operating on the crossing route could not accept FL340 due to operational requirements.

3.11 The meeting acknowledged the use of odd flight levels for westbound flights would be a good option to relieve the impact of the bunching issue. However, India and Myanmar would have to agree on the usage of such levels in their respective FIRs. The meeting agreed that the assignment of odd flight levels for the westbound flights operating on the crossing routes in the Bay of Bengal should be raised at the Post-Implementation Review (PIR) Meeting to be held from 31 July to 3 August 2006 in Bangkok.

Review of BOBCAT System Parameters

3.12 Singapore highlighted some observations regarding the slot allocation process from the data collected during the ghosting period and seek clarifications. The observations were:

- a) When an allocated slot was cancelled by the operator, the subsequent flights affected by the original slot request were not automatically updated to their original slots times to reduce the delay incurred by the original slot request;
- b) Some flights were slotted behind another flight when their estimates at the entry gates were earlier than the flight slotted ahead;
- c) Singapore departures generally had the most delays among the three major airports (see Appendix D). Singapore had not taken the data from 2 July to 5 July 2006 into consideration as some operators were familiarising and testing the system;
- d) Comparing the current data and BOBCAT data, Singapore departures were able to take off earlier under current arrangement as compared to their assigned AWUT by BOBCAT.

3.13 SIA presented the meeting with their data comparing the current arrangement and BOBCAT allocation. Generally, it showed an increase in delay for their flights with slot allocations.

3.14 IATA commented that there were similarities between SIA and Singapore observations which also reflected the delays experienced by other operators from Singapore. IATA also commented that there should be some way to notify operators that there were available slots with lesser delay after an aircraft cancelled their slots.

3.15 IATA requested that Malaysia formalised the direct route VPG – GIVAL to facilitate westbound departures during the peak hours noting that the current practice would be direct track clearance by ATC.

3.16 Thailand agreed with IATA's comment on the notification of cancelled slot but advised that it would be difficult for ATFMU to continuously monitor the available slots. Even if ATFMU were able to do so and relay the information to the operators, it might not reach the operators in good time. Therefore, operators should view the available slots in the BOBCAT system.

3.17 Thailand presented the meeting with the priority selection process in the BOBCAT System as follows:

1 st priority	-	Level Priority
2 nd priority	-	Route
3 rd priority	-	Level Profile
4 th priority	-	Time
5 th priority	-	Random Draw

Based on the priority selection process above, Thailand informed the meeting that flights slotted behind another flight when their estimates at the entry gates are earlier than the flight slotted ahead, would be due to the flight being allocated his second choice option.

3.18 IATA noted that the system was not designed to look into reducing Total System Delay which is practised by Eurocontrol. IATA also highlighted to the meeting about a study group which focused their study on the impact of delays to airline operators both on the ground and in the air. Thailand was requested to prepare and present another set of data, based on reducing Total System Delay and using the ghosting period data, at the PIR Meeting.

3.19 Thailand informed the meeting that they would require about a week to modify the system and generate the data. Thailand agreed that it would be possible to present it at the PIR Meeting. However, airline operators might complain that their 1st choice application is not given to them with priority.

3.20 IATA advised that if the comparison could be presented at the PIR Meeting, the Task Force Members and airline operators would be able to decide which system would be more beneficial.

3.21 Thailand informed the meeting that Singapore departures usually have only one option with a large MAD. This could be one of the factors that contributed to the higher delays compared to Bangkok and Kuala Lumpur. Thailand also reported that the data collected during the ghosting period, showed that on average the AWUTs for their departures are better than the current ATDs.

3.22 IATA commented that airline operators would actually file their optimum cruising levels since the delay now would be an informed delay.

3.23 The meeting noted that based on the ghosting period data, BOBCAT has so far delivered what it promised in terms of level allocation as agreed by the Task Force. The priority selection process would be reviewed at the PIR Meeting when Thailand presents the meeting with the data generated based on reducing Total System Delay.

Review of Template Prior to Implementation of Operational Trial

3.24 The meeting reviewed the template prior to the implementation of the operational trial that was agreed at the Go/No Go Decision Meeting from 14 to 16 June 2006. The template captured the readiness of Malaysia, Singapore, Thailand, Airline Operators and BOBCAT. (See Appendix E)

4 Go/No Go Decision

4.1 Malaysia informed the meeting, subject to having mitigating procedures in place to resolve the bunching issues, which they have raised several time before, they could agree to commence the operational trial. However, Malaysia reserved the right to suspend the operational trial if the procedures are not effective.

4.2 Thailand advised the meeting that although bunching had occurred on some occasions, it could be tactically managed and is ready for the operational trial.

4.3 Singapore advised the meeting that the bunching of westbound flights transiting through the Bay of Bengal would not occur in Singapore FIR. Singapore noted the readiness of the BOBCAT system to commence the operational trial. As such, Singapore is agreeable to commence the operational trial but noted Malaysia's concern on the bunching of westbound traffic and the lack of additional viable flight levels on the parallel routes for westbound flights during the peak period. Should there be an impact on Singapore operations due to the bunching of traffic experienced by Malaysia or an increase in the ground delay situation, Singapore also reserved the right to suspend the operational trial.

4.4 IATA commented that measurement of delay could not be determined during ghosting period. The effective review of improvement or worsening of delay could only be done during operational trial. IATA highlighted the need for ANSPs' readiness in managing traffic tactically in order to ensure the success of the operational trial.

4.5 The meeting agreed to a tele-conferencing between the Core Team members on 19 July 2006 at 0400 UTC to decide on the commencement of the operational trial.

**SPECIAL COORDINATION MEETING OF THE BAY OF BENGAL
AIR TRAFFIC FLOW MANAGEMENT TASK FORCE**

Appendix A

LIST OF PARTICIPANTS

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**SPECIAL COORDINATION MEETING OF THE BAY OF BENGAL
AIR TRAFFIC FLOW MANAGEMENT TASK FORCE**

Appendix A

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**SPECIAL COORDINATION MEETING OF THE BAY OF BENGAL
AIR TRAFFIC FLOW MANAGEMENT TASK FORCE**

Appendix A

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**SPECIAL COORDINATION MEETING OF THE BAY OF BENGAL
AIR TRAFFIC FLOW MANAGEMENT TASK FORCE**

Appendix B

TRAFFIC BUNCHING SCENARIOS ON 759 and P628

Using data from the Slot Allocation Result, the following scenarios were observed. For each of the scenario, we have included the possible action to be taken by Lumpur ACC to revise the AWUT in order to achieve the required longitudinal separation at VPL.

(Note1: The term AWUT used in the explanation includes the 5 minutes flow buffer and any revised of AWUT shown in the table will be indicated in bold and italic)

*(Note2: EET from WMKK to VPL=35 minutes
EET from WSSS to VPL=55 minutes)*

SCENARIO 1 – Bunching of Traffic along L759 (29 June 06)

C/S	TYPE	AWUT	VPL	CL	RAWUT	RVPL	CL	ETO 4	FL4	EET
SIA 322	B744	1540	1635	320	1540/45	1635/40	320	2113	280	0533
MAS 10	B772	1600	1635	280	1600/05	1635/40	280	2116	350	0516
MAS 6	B772	1605	1640	260	1610	1645	280	2118	310	0513
SIA 334	B744	1600	1655	320	1600/05	1655/1700	320	2133	280	0533

Action: Notify MAS 6 of the revised AWUT when the aircraft calls Clearance Delivery.
(Note: MAS6 to depart behind MAS10)

Observation: SIA322 and SIA334 were allocated FL280 at Kabul FIR

SCENARIO 2 – Bunching of Traffic along L759 (29 June 06)

C/S	TYPE	AWUT	VPL	CL	RAWUT	RVPL	CL	ETO 4	FL4	EET
SIA 334	B744	1600	1655	320	1600/05	1655/1700	320	2133	280	0533
MAS 16	B744	1621	1656	280	1621/26	1656/1701	280	2131	350	0510
SIA324	B744	1605	1700	260	1610	1705	320	2148	310	0543

Action: Notify WSSS ACC to revise the AWUT of SIA324.
(Note: SIA324 to depart behind SIA334)

Observation: The EETs for ETO4 for SIA334 and SIA324 differ by 10 minutes even though both are of the same aircraft type.

SIA334 were allocated FL280 at Kabul FIR

SCENARIO 3 – Bunching of Traffic along L759 (30 June 06)

C/S	TYPE	AWUT	VPL	CL	RAWUT	RVPL	CL	ETO 4	FL4	EET
QFA9	B744	1515	1610	320	1515/20	1610/15	320	2040	350	0525
MAS20	B744	1539	1614	280	1539/44	1614/19	280	2055	350	0516
QFA5	B744	1520	1615	260	1525	1620	320	2045	310	0525

Action: Notify WSSS ACC to revise the AWUT of QFA 5.
(Note: QFA5 to depart behind QFA9)

**SPECIAL COORDINATION MEETING OF THE BAY OF BENGAL
AIR TRAFFIC FLOW MANAGEMENT TASK FORCE**

Appendix B

SCENARIO 4 – Bunching of Traffic along P628 (1 JULY 06)

C/S	TYPE	AWUT	VPL	CL	RAWUT	RVPL	CL	ETO 4	FL4	EET
MAS14	B744	1614	1649	320	1614/19	1649/54	320	2132	310	0518
AUA8	B763	1555	1650	280	1555/1600	1650/55	280	2154	350	0559
BAW16	B744	1558	1653	260	1604	1659	320	2138	350	0540

Action: Notify WSSS ACC to revise the AWUT of BAW16.
(Note: BAW16 to depart behind MAS14)

Observation: Vast difference in EET between two aircraft at Kabul FIR entry waypoints (i.e AUA8 and BAW16)

SCENARIO 5– Bunching of Traffic along L759 (1 JULY 06)

C/S	TYPE	AWUT	VPL	CL	RAWUT	RVPL	CL	ETO 4	FL4	EET
QFA31	B744	1619	1714	320	1619/24	1714/19	320	2144	310	0525
SIA328	B777	1619	1714	280	1630	1725	280	2201	350	0542
SIA346	B744	1620	1715	260	1620/25	1715/20	280	2146	350	0526

Action: Notify WSSS ACC to revise the AWUT of SIA328 to depart behind SIA346 even though the original AWUT is ahead of SIA346. This is because SIA328 is a B777 while SIA346 is a B744.

Question: Will SIA328 accept this, as this will push him out of the AWUT window? This will be aggravated if SIA346 departs at 1625 and still remain within the AWUT time.

Note 1: SIA328 being slower will depart behind SIA346 – Vast different in their EETs

SCENARIO 6– Bunching of Traffic along L759 (9 JULY 06)

C/S	TYPE	AWUT	VPL	CL	RAWUT	RVPL	CL	ETO 4	FL4	EET
QFA5	B744	1550	1645	320	1550/55	1645/50	320	2110	350	0520
MAS6	B772	1610	1645	280	1610/15	1645/50	280	2120	310	0510
BAW16	B744	1555	1650	260	1600	1655	320	2136 (PAVLO)	350	0541

Action: Even though BAW16 will branch out to DI after KKJ, Lumpur ACC will still have to revise the AWUT for BAW16 to achieve the longitudinal separation at VPL.
(Note: BAW16 to depart behind QFA5)

**SPECIAL COORDINATION MEETING OF THE BAY OF BENGAL
AIR TRAFFIC FLOW MANAGEMENT TASK FORCE**

Appendix C

**ANALYSIS OF FLIGHTS ON CROSSING ROUTES OVER BAY OF BENGAL
M770 AGAINST CROSSING ROUTES**

C/S	Type	DEP	DEST	ETD	ATD	FPL/FL	CL/FL	BOB Rt	LALIT	(LM)	PPB	SADUS	MABUR	URKOK
15 Jul 06									P762/M770	P762/L759	P762/P628	L301/M770	L301/L759	L301/P628
UAE333	A332	RPLL	OMDB	10:45	11:08	380	380	L301				14:38	14:56	15:19
ALK423	A332	VTBD	VCBI	14:00	14:05	400	400	P762	14:52	15:05	15:16			
CPA703	B773	VTBD	VCBI	14:30	14:36	360	300	P762	15:19	15:31	15:41			
THA325	A306	VTBD	VOBG	14:15	14:39	300	280	P762	15:25	15:37	15:47			
SIA026	B744	WSSS	EDDF	15:50	16:14	300		M770	18:08			18:35		
UAE335	B773	RPLL	OMDB	15:55	16:18	340	300	L301				18:39	18:33	18:26
SVA855	B744	RPLL	OERK	14:45	15:26	360	360	L301				18:45	19:02	19:23
CPA749	A343	VHHH	FAJS	15:45	16:25	320	300	P762	19:10	19:22	19:32			
MAS20	B772	WMKK		15:10	15:30	280		L759		17:10			17:49	
KLM810	B744	WMKK		15:10	15:42	300		L759		17:12			17:48	
QFA9	B744	WSSS	EGLL	14:55	15:29	320		L759		17:19			17:55	
AFR257	B773	WSSS	LFPG	15:00	15:40	300		L759		17:33			18:09	
MAS6	B772	WMKK		15:50	16:06	280		L759		17:42			18:19	
MAS10	B772	WMKK		15:45	16:22	280		L759		18:02			18:41	
MAS16	B744	WMKK		15:55	16:35	280		L759		18:11			18:48	
SIA334	B744	WSSS	LFPG	15:40	16:36	300		L759		18:26			19:02	
QFA5	B744	WSSS	EDDF	16:05	16:50	320		L759		18:40			19:16	
BAW12	B744	WSSS	EGLL	14:40	15:13	280		P628			17:05			17:56
KLM838	B744	WSSS	EHAM	14:55	15:26	300		P628			17:18			18:09
DLH779	B744	WSSS	EDDF	15:05	15:37	300		P628			17:29			18:20
SIA322	B744	WSSS	EGLL	15:20	15:52	300		P628			17:44			18:35
MAS2	B744	WMKK		15:40	16:10	280		P628			17:45			18:39
BAW16	B744	WSSS	EGLL	15:25	16:01	280		P628			17:53			18:44
MAS14	B744	WMKK		15:59	16:25	280		P628			18:00			18:54
SIA346	B744	WSSS	LSZH	15:45	16:19	300		P628			18:11			19:02
AUA2	B772	WMKK		16:35	16:43	340		P628			18:21			19:13
SIA324	B772	WSSS	EHAM	15:45	16:33	300		P628			18:29			19:20
SIA328	B772	WSSS	EGCC	15:50	16:48	300		P628			18:44			19:35

**SPECIAL COORDINATION MEETING OF THE BAY OF BENGAL
AIR TRAFFIC FLOW MANAGEMENT TASK FORCE**

Appendix C

**ANALYSIS OF FLIGHTS ON CROSSING ROUTES OVER BAY OF BENGAL
L759 AGAINST CROSSING ROUTES**

C/S	Type	DEP	DEST	ETD	ATD	FPL/FL	CL/FL	BOB Rt	LALIT	(LM)	PPB	SADUS	MABUR	URKOK
15 Jul 06									P762/M770	P762/L759	P762/P628	L301/M770	L301/L759	L301/P628
SIA026	B744	WSSS	EDDF	15:50	16:14	300		M770	17:04			16:23		
UAE333	A332	RPLL	OMDB	10:45	11:08	380	380	L301				14:38	14:56	15:19
ALK423	A332	VTBD	VCBI	14:00	14:05	400	400	P762	14:52	15:05	15:16			
CPA703	B773	VTBD	VCBI	14:30	14:36	360	300	P762	15:19	15:31	15:41			
THA325	A306	VTBD	VOBG	14:15	14:39	300	280	P762	15:25	15:37	15:47			
MAS20	B772	WMKK		15:10	15:30	280		L759		17:10			17:49	
KLM810	B744	WMKK		15:10	15:42	300		L759		17:12			17:48	
QFA9	B744	WSSS	EGLL	14:55	15:29	320		L759		17:19			17:55	
AFR257	B773	WSSS	LFPG	15:00	15:40	300		L759		17:33			18:09	
MAS6	B772	WMKK		15:50	16:06	280		L759		17:42			18:19	
UAE335	B773	RPLL	OMDB	15:55	16:18	340	300	L301				18:39	18:33	18:26
MAS10	B772	WMKK		15:45	16:22	280		L759		18:02			18:41	
MAS16	B744	WMKK		15:55	16:35	280		L759		18:11			18:48	
SIA334	B744	WSSS	LFPG	15:40	16:36	300		L759		18:26			19:02	
SVA855	B744	RPLL	OERK	14:45	15:26	360	360	L301				18:45	19:02	19:23
QFA5	B744	WSSS	EDDF	16:05	16:50	320		L759		18:40			19:16	
BAW12	B744	WSSS	EGLL	14:40	15:13	280		P628			17:05			17:56
KLM838	B744	WSSS	EHAM	14:55	15:26	300		P628			17:18			18:09
DLH779	B744	WSSS	EDDF	15:05	15:37	300		P628			17:29			18:20
SIA322	B744	WSSS	EGLL	15:20	15:52	300		P628			17:44			18:35
MAS2	B744	WMKK		15:40	16:10	280		P628			17:45			18:39
BAW16	B744	WSSS	EGLL	15:25	16:01	280		P628			17:53			18:44
MAS14	B744	WMKK		15:59	16:25	280		P628			18:00			18:54
SIA346	B744	WSSS	LSZH	15:45	16:19	300		P628			18:11			19:02
AUA2	B772	WMKK		16:35	16:43	340		P628			18:21			19:13
SIA324	B772	WSSS	EHAM	15:45	16:33	300		P628			18:29			19:20
SIA328	B772	WSSS	EGCC	15:50	16:48	300		P628			18:44			19:35
CPA749	A343	VHHH	FAJS	15:45	16:25	320	300	P762	19:10	19:22	19:32			

**SPECIAL COORDINATION MEETING OF THE BAY OF BENGAL
AIR TRAFFIC FLOW MANAGEMENT TASK FORCE**

Appendix C

**ANALYSIS OF FLIGHTS ON CROSSING ROUTES OVER BAY OF BENGAL
P628 AGAINST CROSSING ROUTES**

C/S	Type	DEP	DEST	ETD	ATD	FPL/FL	CL/FL	BOB Rt	LALIT	(LM)	PPB	SADUS	MABUR	URKOK
15 Jul 06									P762/M770	P762/L759	P762/P628	L301/M770	L301/L759	L301/P628
SIA026	B744	WSSS	EDDF	15:50	16:14	300		M770	17:04			16:23		
MAS20	B772	WMKK		15:10	15:30	280		L759		17:10			17:49	
KLM810	B744	WMKK		15:10	15:42	300		L759		17:12			17:48	
QFA9	B744	WSSS	EGLL	14:55	15:29	320		L759		17:19			17:55	
MAS6	B772	WMKK		15:50	16:06	280		L759		17:42			18:19	
MAS10	B772	WMKK		15:45	16:22	280		L759		18:02			18:41	
MAS16	B744	WMKK		15:55	16:35	280		L759		18:11			18:48	
SIA334	B744	WSSS	LFPG	15:40	16:36	300		L759		18:26			19:02	
QFA5	B744	WSSS	EDDF	16:05	16:50	320		L759		18:40			19:16	
AFR257	B773	WSSS	LFPG	15:00	15:40	300		L759		17:33			18:09	
ALK423	A332	VTBD	VCBI	14:00	14:05	400	400	P762	14:52	15:05	15:16			
CPA703	B773	VTBD	VCBI	14:30	14:36	360	300	P762	15:19	15:31	15:41			
THA325	A306	VTBD	VOBG	14:15	14:39	300	280	P762	15:25	15:37	15:47			
UAE333	A332	RPLL	OMDB	10:45	11:08	380	380	L301				14:38	14:56	15:19
BAW12	B744	WSSS	EGLL	14:40	15:13	280		P628			17:05			17:56
KLM838	B744	WSSS	EHAM	14:55	15:26	300		P628			17:18			18:09
DLH779	B744	WSSS	EDDF	15:05	15:37	300		P628			17:29			18:20
UAE335	B773	RPLL	OMDB	15:55	16:18	340	300	L301				18:39	18:33	18:26
SIA322	B744	WSSS	EGLL	15:20	15:52	300		P628			17:44			18:35
MAS2	B744	WMKK		15:40	16:10	280		P628			17:45			18:39
BAW16	B744	WSSS	EGLL	15:25	16:01	280		P628			17:53			18:44
MAS14	B744	WMKK		15:59	16:25	280		P628			18:00			18:54
SIA346	B744	WSSS	LSZH	15:45	16:19	300		P628			18:11			19:02
AUA2	B772	WMKK		16:35	16:43	340		P628			18:21			19:13
SIA324	B772	WSSS	EHAM	15:45	16:33	300		P628			18:29			19:20
SVA855	B744	RPLL	OERK	14:45	15:26	360	360	L301				18:45	19:02	19:23
SIA328	B772	WSSS	EGCC	15:50	16:48	300		P628			18:44			19:35
CPA749	A343	VHHH	FAJS	15:45	16:25	320	300	P762	19:10	19:22	19:32			

**SPECIAL COORDINATION MEETING OF THE BAY OF BENGAL
AIR TRAFFIC FLOW MANAGEMENT TASK FORCE**

Appendix D

ANALYSIS OF BOBCAT RESULTS

Date 29 Jun 06

Flights With Slot Allocation 41

	Callsign	A/C	DEP	DES	ETD	AWUT	DLA	WPT ¹	LVL ¹	EET ¹	R ETO	A ETO ¹	SP	WPT ²	EET ²	EET FM DI	ETO ²
16	RBA033	B763	VTBD	EDDF	15:50	16:10	0	DI	310	04:12	20:22	20:22		PAVLO	04:25	00:13	20:35
1	BAW12	B744	WSSS	EGLL	14:40	15:07	7	DI	310	05:31	20:31	20:38	00:16	PAVLO	05:43	00:12	20:50
25	THA930	B744	VTBD	LFPG	17:05	17:20	0	DI	310	03:57	21:17	21:17		PAVLO	04:09	00:12	21:29
27	THA944	B743	VTBD	LIRF	17:20	17:35	0	DI	310	03:58	21:33	21:33		PAVLO	04:10	00:12	21:45
29	BAW10	B744	VTBD	EGLL	17:20	17:49	7	DI	310	03:59	21:41	21:48	00:15	PAVLO	04:11	00:12	22:00
32	QFA1	B744	VTBD	EGLL	17:45	18:01	1	DI	310	03:57	21:57	21:58	00:10	SITAX	04:07	00:10	22:08
40	BAW142	B744	VIDP	EGLL	20:40	21:22	19	DI	310	01:01	22:04	22:23	00:25	PAVLO	01:14	00:13	22:36
34	THA950	B744	VTBD	EKCH	18:20	18:35	0	DI	310	03:59	22:34	22:34		SITAX	04:09	00:10	22:44
21	KLM878	B744	VTBD	EHAM	16:10	16:25	0	DI	350	03:53	20:18	20:18		SITAX	04:03	00:10	20:28
24	THA920	B744	VTBD	EDDF	16:45	17:05	0	DI	350	03:58	21:03	21:03		PAVLO	04:10	00:12	21:15
26	DLH783	B744	VTBD	EDDF	16:55	17:22	9	DI	350	03:56	21:09	21:18	00:15	PAVLO	04:08	00:12	21:30
28	FIN098	MD11	VTBD	EFHK	17:20	17:40	0	DI	350	04:02	21:42	21:42		SITAX	04:13	00:11	21:53
22	CPA293	B744	VHHH	LIRF	16:05	16:35	10	DI	350	05:17	21:42	21:52	00:10	PAVLO	05:29	00:12	22:04
30	SAS972	A340	VTBD	EKCH	17:20	17:54	14	DI	350	04:08	21:48	22:02	00:10	SITAX	04:18	00:10	22:12
8	CAL061	A340	RCTP	EDDF	15:10	15:38	13	DI	350	06:34	21:59	22:12	00:10	PAVLO	06:47	00:13	22:25
33	THA910	B744	VTBD	EGLL	18:10	18:25	0	DI	350	03:58	22:23	22:23		SITAX	04:08	00:10	22:33
35	THA960	B744	VTBD	ESSA	18:10	18:40	15	DI	350	03:58	22:23	22:38	00:15	SITAX	04:09	00:11	22:49
31	THA940	A346	VTBD	LIMC	17:40	17:55	0	DI	390	04:11	22:06	22:06		PAVLO	04:23	00:12	22:18
9	SIA322	B744	WSSS	EGLL	15:20	15:40	0	ROSIE	280	05:33	21:13	21:13					
13	SIA334	B744	WSSS	LFPG	15:40	16:00	0	ROSIE	280	05:33	21:33	21:33					
18	SIA026	B744	WSSS	EDDF	15:55	16:15	0	ROSIE	280	05:33	21:48	21:48					
3	QFA5	B744	WSSS	EDDF	15:00	15:20	0	ROSIE	310	05:26	20:46	20:46					
14	MAS6	B772	WMKK	EDDF	15:50	16:05	0	ROSIE	310	05:13	21:18	21:18					
15	SIA324	B744	WSSS	EHAM	15:45	16:05	0	ROSIE	310	05:43	21:48	21:48					
19	SIA328	B777	WSSS	EGCC	16:00	16:20	0	ROSIE	310	05:43	22:03	22:03					
37	CAL065	B744	VTBD	EHAM	19:35	19:52	0	ROSIE	310	04:03	23:55	23:55					
4	MAS20	B772	WMKK	LFPG	15:10	15:25	0	ROSIE	350	05:16	20:41	20:41					
6	QFA9	B744	WSSS	EGLL	14:55	15:30	15	ROSIE	350	05:26	20:41	20:56	00:15				
12	MAS10	B772	WMKK	LSZH	15:45	16:00	0	ROSIE	350	05:16	21:16	21:16					
20	MAS16	B744	WMKK	EHAM	15:55	16:21	11	ROSIE	350	05:10	21:20	21:31	00:15				
23	QFA31	B744	WSSS	EGLL	15:59	16:35	16	ROSIE	350	05:26	21:45	22:01	00:30				

**SPECIAL COORDINATION MEETING OF THE BAY OF BENGAL
AIR TRAFFIC FLOW MANAGEMENT TASK FORCE**

Appendix D

ANALYSIS OF BOBCAT RESULTS

Date 01 Jul 06

Flights With Slot Allocation 49

	Callsign	A/C	DEP	DES	ETD	AWUT	DLA	WPT ¹	LVL	EET ¹	R ETO	A ETO	SP	WPT ²	EET ²	EET FM DI	ETO ²
2	KLM838	B744	WSSS	EHAM	14:55	15:15	0	ASLUM	310	05:34	20:49	20:49					
10	MAS2	B744	WMKK	EGLL	15:40	15:55	0	ASLUM	310	05:18	21:13	21:13					
15	MAS14	B744	WMKK	LIRF	15:59	16:14	0	ASLUM	310	05:18	21:32	21:32					
11	AUA8	B763	WSSS	LOWW	15:35	15:55	0	ASLUM	310	05:59	21:54	21:54					
21	SIA324	B777	WSSS	EHAM	15:45	16:23	18	ASLUM	310	05:46	21:51	22:09	00:15				
47	AUA34	B763	VIDP	LOWW	20:20	20:58	23	ASLUM	310	01:26	22:01	22:24	00:15				
48	AFR135	A343	VABB	LFPG	20:45	21:01	0	ASLUM	310	01:55	22:56	22:56					
4	KLM810	B744	WMKK	EHAM	15:10	15:25	0	ASLUM	350	05:13	20:38	20:38					
1	BAW12	B744	WSSS	EGLL	14:40	15:08	8	ASLUM	350	05:45	20:45	20:53	00:15				
7	DLH779	B744	WSSS	EDDF	15:05	15:33	8	ASLUM	350	05:35	21:00	21:08	00:15				
12	BAW16	B744	WSSS	EGLL	15:25	15:58	12	ASLUM	350	05:40	21:26	21:38	00:30				
17	SIA334	B744	WSSS	LFPG	15:40	16:17	17	ASLUM	350	05:36	21:36	21:53	00:15				
24	SIA026	B744	WSSS	EDDF	15:50	16:32	22	ASLUM	350	05:36	21:46	22:08	00:15				
28	AUA2	B772	WMKK	LOWW	16:35	16:59	9	ASLUM	350	05:24	22:14	22:23	00:15				
29	AFR257	B773	WSSS	LFPG	16:41	17:01	0	ASLUM	350	05:38	22:39	22:39					
23	KLM878	B744	VTBD	EHAM	16:10	16:25	0	DI	350	03:52	20:17	20:17		SITAX	04:02	00:10	20:27
22	AFR169	343	VTBD	LFPG	16:10	16:25	0	DI	350	04:08	20:33	20:33		PAVLO	04:20	00:12	20:45
26	SWR183	A343	VTBD	LSZH	16:30	16:45	0	DI	350	04:12	20:57	20:57		PAVLO	04:25	00:13	21:10
31	THA920	B744	VTBD	EDDF	16:45	17:18	13	DI	350	03:55	21:00	21:13	00:16	PAVLO	04:07	00:12	21:25
33	THA944	B743	VTBD	LIRF	17:20	17:35	0	DI	350	03:55	21:30	21:30		PAVLO	04:07	00:12	21:42
36	FIN098	MD11	VTBD	EFHK	17:20	17:42	0	DI	350	03:58	21:40	21:40		SITAX	04:08	00:10	21:50
25	CPA293	B744	VHHH	LIRF	16:05	16:36	11	DI	350	05:14	21:39	21:50	00:10	PAVLO	05:26	00:12	22:02
8	CAL061	A340	RCTP	EDDF	15:10	15:40	15	DI	350	06:30	21:55	22:10	00:20	PAVLO	06:43	00:13	22:23
42	THA950	B744	VTBD	EKCH	18:20	18:35	0	DI	350	03:55	22:30	22:30		SITAX	04:05	00:10	22:40

**SPECIAL COORDINATION MEETING OF THE BAY OF BENGAL
AIR TRAFFIC FLOW MANAGEMENT TASK FORCE**

Appendix D

ANALYSIS OF BOBCAT RESULTS

Date 13 Jul 06

Flights With Slot Allocation 27

	Callsign	A/C	DEP	DES	ETD	AWUT	DLA	WPT ¹	LVL ¹	EET ¹	R ETO	A ETO	SP	WPT ²	EET ²	EET FM DI	ETO ²
2	SIA322	B744	WSSS	EGLL	15:20	15:40	0	ASLUM	350	05:32	21:12	21:12					
4	MAS2	B744	WMKK	EGLL	15:40	16:11	11	ASLUM	350	05:16	21:16	21:27	00:15				
7	MAS14	B744	WMKK	LIRF	15:59	16:23	4	ASLUM	350	05:19	21:38	21:42	00:15				
9	SIA346	B744	WSSS	LSZH	15:45	16:24	19	ASLUM	350	05:33	21:38	21:57	00:15				
12	SIA324	B777	WSSS	EHAM	15:45	16:35	30	ASLUM	350	05:37	21:42	22:12	00:15				
13	SIA026	B744	WSSS	EDDF	15:50	16:54	44	ASLUM	350	05:33	21:43	22:27	00:15				
24	KLM872	MD11	VIDP	EHAM	19:20	19:35	0	DI	310	00:56	20:31	20:31		SITAX	01:06	00:10	20:41
17	THA920	B744	VTBD	EDDF	16:45	17:20	0	DI	310	03:56	21:16	21:16		SITAX	04:06	00:10	21:26
19	SAS972	A340	VTBD	EKCH	17:20	17:35	0	DI	310	04:07	21:42	21:42		SITAX	04:17	00:10	21:52
26	BAW142	B772	VIDP	EGLL	20:40	21:03	0	DI	310	01:01	22:04	22:04		PAVLO	01:14	00:13	22:17
22	THA970	A346	VTBD	LSZH	17:55	18:10	0	DI	310	04:09	22:19	22:19		PAVLO	04:22	00:13	22:32
23	THA950	B744	VTBD	EKCH	18:20	18:35	0	DI	310	04:00	22:35	22:35		SITAX	04:12	00:12	22:47
10	AFR169	A343	VTBD	LFPG	16:10	16:25	0	DI	350	04:11	20:36	20:36		PAVLO	04:24	00:13	20:49
14	KLM878	B744	VTBD	EHAM	16:40	16:55	0	DI	350	03:54	20:49	20:49		SITAX	04:04	00:10	20:59
15	DLH783	B744	VTBD	EDDF	16:55	17:18	5	DI	350	03:57	21:10	21:15	00:26	SITAX	04:07	00:10	21:25
18	THA930	B744	VTBD	LFPG	17:05	17:35	15	DI	350	03:55	21:15	21:30	00:15	SITAX	04:05	00:10	21:40
11	CPA293	B744	VHHH	LIRF	16:05	16:29	4	DI	350	05:11	21:36	21:40	00:10	PAVLO	05:22	00:11	21:51
20	FIN098	MD11	VTBD	EFHK	17:20	17:51	9	DI	350	03:59	21:41	21:50	00:10	SITAX	04:10	00:11	22:01
21	QFA1	744	VTBD	EGLL	17:45	18:10	10	DI	350	03:56	21:56	22:06	00:16	SITAX	04:06	00:10	22:16
27	DLH761	B744	VIDP	EDDF	20:55	21:24	11	DI	350	00:57	22:10	22:21	00:15	SITAX	01:07	00:10	22:31
25	AUA34	763	VIDP	LOWW	20:20	20:35	0	ROSIE	280	01:09	21:44	21:44					
6	MAS16	B744	WMKK	EHAM	15:55	16:15	0	ROSIE	310	05:08	21:23	21:23					
8	MAS6	B772	WMKK	EDDF	15:50	16:24	14	ROSIE	310	05:14	21:24	21:38	00:15				
1	MAS20	B777	WMKK	LFPG	15:10	15:30	0	ROSIE	350	05:14	20:44	20:44					
3	MAS10	B777	WMKK	LSZH	15:45	16:05	0	ROSIE	350	05:15	21:20	21:20					
5	SIA334	B744	WSSS	LFPG	15:40	16:12	12	ROSIE	350	05:23	21:23	21:35	00:15				
16	SIA340	B777	WSSS	LIRF	17:00	17:20	0	ROSIE	350	05:33	22:53	22:53					

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CHECKLIST - OPERATIONAL TRIAL

Sn	Requirements	Yes	No	Action By	Remarks
1.0	ATFM System Readiness			BOBCAT	
1.1	Did the system perform satisfactorily during the ghosting period?	Yes			
1.2	Did the communications /interface links work according to expectations?	Yes			
1.3	Did the ATFMU staff experience any difficulty in applying the Standard Operating procedures?		No		
1.4	Did the system experience a down time during the ghosting period?		No		10 minutes due to human error. No operational impact
1.5	Are the system/ATFMU contingency plans in place?	Yes			
1.6	Did the results of the ghosting period indicate system readiness? (No problems encountered with slot allocations and interface with users)	Yes			
1.7	Did the system work as designed?	Yes			

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2.0	Readiness of airlines			AIRLINES	
2.1	Did the airlines find the published information and instructions adequate?	Yes			
2.2	Did the airlines have difficulty in using the system effectively?		No		Some dispatchers found it time consuming
2.3	Do the airlines despatch and flight planning personnel need further training?		No		Viet Nam Airlines and Aeroflot yet to participate
2.4	Are they familiar with the procedures for obtaining slots in case of missing their wheels up time?	Yes			Standard phraseologies for ATC and pilots to be considered
3.0	Readiness of ANSPs (Departure aerodromes)			ANSPs	
3.1	Did the ANSPs at Departure aerodromes have difficulty in using the system effectively?		No		
3.2	Did they find the standard operating procedures adequate?				Need to be tested
3.3	Do they require further training on ATFM system and procedures to be proficient?		No		Malaysia, Singapore Thailand ready
3.4	Are there established procedures for obtaining slots in the case of aircraft unable to depart on the allocated WUT?	Yes			

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3.5	Are they familiar with the contingency procedures pertaining to system failure, route closures, weather & other natural phenomena affecting normal operations?	Yes			
3.6	Has the AIP Supplement been issued? If not, how have they kept the departing airlines from their airports informed?	Yes			Trigger NOTAM to be issued
3.7	Were there problems with interface with the ATFMU and slot allocations?		No		
4.0	Readiness of ANSPs (Enroute)			ANSPs	
4.1	Are enroute ANSPs able to provide effective tactical control of traffic operating under ATFM slot allocations?	Yes			Thailand OK Malaysia – can manage tactically provided there is no bunching on the route concerned.
4.2	Is Kabul ACC familiar with the ATFM process and requirements?	Yes			Have username and password for BOBCAT and have logged on.
5.0	Contingency procedures for ANSPs and Airlines			AIRLINES ANSPs	
5.1	Have they been published?	Yes			
5.2	Are ANSPs familiar with the procedures	Yes			
6.0	AIP Supplements/Notams			ANSPs	
6.1	Have all the States sending departures into the AFTM area issued the AIP Supplements. If not, what are the steps taken to mitigate this.	Yes			Malaysia, Singapore and Thailand issued

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7.0	Benchmarking by ANSP (Individual Airports)			ANSP	
7.1	Did the ghosting data show a reduction in the number of flights delayed, in comparison with the actual flow?				Unable to compare the data during the ghosting period. Better analysis can be obtained during the operational trial
7.2	Were the lengths of the delays less?				Compare BOBCAT Ghosting data with actual traffic data
7.3	Were there workload issues? How are they addressed?				
8.0	Benchmarking by airlines (Individual Airlines)			AIRLINES	
8.1	Was there more on time departures?				
8.2	Were the lengths of delays reduced?				
8.3	Are the enroute re-routes reduced or eliminated?				
8.4	Are the delays more predictable? (Is there forewarning of delays, are delays better managed?)				

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9.0	Overall Assessment Slot allocation			Task Force BOBCAT AIRLINES ANSPs	
9.1	Were slots distributed equitably?	Yes			Rationale of slots based on slot request data submitted plus priorities inbuilt in the system. India/Pakistan-priority for 280. Other airports- priority for 310 and above.
9.2	Were some airlines penalised more than others?				See 9.1
9.3	Were some airports penalised more than others?				See 9.1
10.0	Flight planned levels (Overall Assessment)			Task Force BOBCAT AIRLINES ANSPs	
10.1	Were more flights getting flight planned levels based on BOBCAT solutions, in comparison with actual traffic flows?				Unable to compare the data during the ghosting period. Better analysis can be obtained during the operational trial
11.0	Assessment by the Task Force			Task Force	
11.1	Did at least 85% of flights thru Kabul Airspace participate in the ghosting period?	Yes			At least 90%

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11.2	Is the Task Force satisfied that the statistics indicate the likely improvement in delays, and flight level allocations, after scrutinising the one week data collected?				Better analysis can be obtained after the operational trial
11.3	Is the Task Force satisfied that any remedial action required can be executed in time for a successful operational trial				

-----End -----

Suggested ATFM/TF Targets for consideration

1. ANSPs for departure aerodromes report encountering no major problems during the trial.
2. ANSPs for enroute segments report no major problems during the trial in providing tactical control and coordination with ATFMU and other ACCs
3. 95% of all flights thru Kabul from all departure aerodromes are subject to ATFM procedures
4. All relevant States have published the appropriate AIPs
5. The Task Force is satisfied that the statistics collected during the operational trial show improved delay situation, delays are more predictable, FL availability, and alleviation of reroutes.

DRAFT

Special Co-ordination arrangements between KUALA LUMPUR, BANGKOK, CHENNAI, KOLKATA and YANGON ACCs for westbound traffic flow on crossing routes during the ATFM operational trial period (1500-1930 UTC)

1. Objective

- 1.1 In order to facilitate flexible use of available Flight Levels on ATS routes P762 and L301, with respect to traffic on P628, L759 and M770 during the peak westbound traffic period between 1500-1930 UTC, the following co-ordination procedures have been agreed to by ACCs concerned and shall be implemented with effect from 1500UTC on 15 August 2006
- 1.2 Kuala Lumpur, Bangkok, Yangon, Chennai and Kolkata ACCs have agreed to be involved in this coordination procedure.
- 1.3 The Bangkok ACC been designated to operate a special coordination unit (SCU) which would be active from 1500 to 1930 each night to harmonize specific coordination between all affected ACCs. The objective of this coordination is to ensure that all available flight level capacity on both parallel and crossing routes are fully utilized. This coordinated agreement looks at real time on a flight-by-flight basis.
- 1.4 The Flight Level Allocation Scheme (FLAS) during the above period will be as follows:

P762 and L301

- a) F300 will be the NO-PDC level;
- b) F360 will be available with prior co-ordination

P628, L759 and M770

F280, 320 and 340 will be the NO-PDC levels;

Note : The lower limit of route P628/G792 beyond ASOPO is F320 and hence aircraft unable to climb at or above FL 320 in Indian FIR shall flight plan via other routes.

2. Agreed Coordination Procedures

- 2.1 The Bangkok ACC been designated to operate a special coordination unit (SCU) which would be active from 1500 to 1930 each night to harmonize specific coordination between all affected ACCs. when there is a likelihood of a request by an ACC for an aircraft to proceed on either the parallel or crossing routes at a level not in conformity with Para. 1.4 above.
- 2.2 The position where these ATS routes crossing each other are as follows:

L301

Crossing M770 at SADUS
Crossing L759 at MABUR
Crossing P628 at URKOK

P762

Crossing M770 at LALAT/LALIT
Crossing L759 at LULDA/MIPAK
Crossing P628 at PPB (Port Blair)

- 2.3 Bangkok ACC will coordinate the FL and ETOs with other ACCs at the crossing waypoints SADUS, MABUR, LALAT/LALIT and LULDA/MIPAK.
- 2.4 Chennai ACC will coordinate the FL and ETOs with ACCs involved at the crossing waypoints URKOK and PPB (Port Blair)
- 2.5 Kuala Lumpur ACC shall pass the following information to Bangkok ACC with respect to flights operating on P628 westbound:
 - a) EST/IGREX
 - b) FPL to be addressed to VTBBZRZX
- 2.6 Bangkok ACC shall calculate ETOs with 20 minutes spacing at crossing points where the same flight level will be used for both crossing/parallel aircraft.
- 2.7 Bangkok ACC shall advise Kolkata ACC the estimate at SADUS and MABUR in regard to traffic on L301 as advanced information when there are flights utilizing the same flight level on the M770 and/or L759.
- 2.8 Bangkok ACC shall advise EST/LULDA to Chennai ACC for traffic on P762 as advanced information.
- 2.9 Time restrictions/requirements may be required to achieve correct spacing between aircraft over the crossing points.
- 2.10 Yangon ACC shall continue to pass EST/CHG messages to Kolkata and Chennai ACCs in accordance with present co-ordination procedures as well as provide the following coordination actions;
 - a) Yangon ACC shall continue to provide traffic information with adjacent ACCs making use of this information received from Bangkok ACC on the traffic flow as indicated in para 2.2 above and,
 - b) Coordinate with Bangkok and ACC concerned before effecting any change to the FL given by Bangkok ACC as well as any last minute level change due unavoidable circumstances, shall be coordinated with the accepting ACC concerned. Bangkok ACC will also be informed in these cases.
- 2.11 In cases where the accepting ACC, if unable to accommodate the requested change, Yangon ACC will be advised to release the aircraft at a specified level at the TCP.

3. Chennai/Kolkata ACCs

- 3.1 Despite the receipt of advanced information on the anticipated traffic, if NO EST message is received from YANGON ACC within the stipulated period of time as per the coordination procedures, Chennai/Kolkata ACC shall verify the EST from Yangon ACC.

4. Flexible Use of FL other than assigned FLAS

- 4.1 Kuala Lumpur ACC and Bangkok ACC shall coordinate the use of additional FL other than FLAS to resolve traffic situations when required.
- 4.2 Kuala Lumpur ACC shall notify Bangkok ACC when the use of FL300 occurs due to bunching of traffic on P628.
- 4.3 Notwithstanding the above, the conditions/restrictions, if any, imposed, by the accepting ACCs due to traffic reasons, shall always be complied with by the transferring ACC.
- 4.4 It is intended that these coordination procedures shall be incorporated in present Letters of Agreements between ACCs concerned.
- 4.5 There is no change in the co-ordination procedures in respect of eastbound traffic on these routes.

5. Point of Contacts

- a. BANGKOK ACC
 - i. Tel: +662 285 9111
 - ii. AFTN ADDRESS: VTBBZRZX
- b. CHENNAI ACC
 - i. Tel:
 - ii. AFTN ADDRESS: VOMM ZQZX, VOMMZRX
- c. KOLKATA ACC
 - i. Tel:
 - ii. AFTN ADDRESS: VECCZQZX, VECCZRZX
- d. KUALA LUMPUR
 - i. Tel: 603-78473573
 - ii. AFTN ADDRESS: WMFCZQZX
- e. YANGON ACC
 - i. Tel:
 - ii. AFTN ADDRESS:

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ICAO Bay of Bengal ATS Coordination Group – ATFM Task Force

MODEL NOTAM – CONTINUE BAY OF BENGAL ATFM OPERATIONAL TRIAL

NOTAM – Continue Operational Trial

E) NOTAM (name of State/authority) ATFM OPERATIONAL TRIAL OVER BAY OF BENGAL, SOUTH ASIA AND PAKISTAN THROUGH KABUL FIR IN ACCORDANCE WITH AIP SUPPLEMENT (reference number) EXTENDED UNTIL 06/12/211200.

AFFECTED FLIGHTS DEPARTING WITHOUT AN ALLOCATED SLOT WILL BE ACCOMMODATED ONLY AFTER FLIGHTS WITH SLOTS HAVE BEEN PROCESSED AND SHOULD EXPECT DELAYS FOR REQUESTED ROUTES AND LEVELS.

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ADMINISTRATIVE GUIDELINES FOR THE ESTABLISHMENT AND CONTINUATION OF THE “BOBCAT SCRUTINY GROUP” (BSG)

Draft Version V1.0 (31 July 2006)

1. Overview

The BOBCAT Scrutiny Group (BSG) would be established under the BBACG and would provide regional oversight of the provision of Air Traffic Flow Management within the Bay of Bengal and South Asia.

The BSG would possess an ability to deliver and measure results without compromise and would exercise good judgement to maintain a positive working relationship with all Stakeholders.

Effective communication and consultation is an essential requirement of the BSG which must be flexible and responsive to Stakeholder requirements.

2. Administration

Membership

- The BBACG may appoint up to 7 people to be members of the BSG
- The BBACG would invite IATA to nominate 3 members of the 7 person BSG
 - It would be expected that these IATA nominees would be representative of the airlines that regularly operate within the BOBCAT system
- The BBACG would invite the ANSPs within the region to nominate 3 members of the BSG
- The ICAO Regional Office would nominate a single member to make up the total of 7 members of the BSG

Alternate Members

- The BBACG may appoint alternate members to the BSG
- Alternate members may attend meetings of the BSG but must not vote unless the member to whom he or she is alternate is absent

Duration of appointment

- The duration of an appointment would be for no longer than (?) years
 - Members may be reappointed for a further period of (?) years
- (Where possible, a system of rotation should be put in place to have a rotation of members every 12 to 18 months, so that the experience of one part of the BSG is retained for the benefit of new members joining the BSG).

Chair of the BSG

- The BBACG will appoint 1 of the members to be Chair of the BSG
- If there is an alternate member to the Chair – the alternate member presides; or
- If there is no alternate member to the Chair, or there is such an alternate member but he or she is absent – the members of the BSG present at the meeting may appoint one of themselves to act as Chair for the meeting

Procedures for the BSG

- The BSG will determine the procedures for meetings, including:
 - Convening meetings;
 - Minutes and Reporting to BBACG; and
 - Who may be invited to attend meetings
- The BSG will be required to meet on at least (x) occasions per year, with at least one meeting required to be held immediately prior to the regular meetings of the BBACG
- A Quorum will consist of four members (assuming a membership of 7), which may include an alternate member, if the member to whom he or she is alternate is absent.
- Each member has 1 vote, and, in the event of an equality of votes, the Chair also has a casting vote
- Matters before a meeting are to be determined by a simple majority of votes of the members present and voting.

Attendance by BOBCAT Development Team Representative and others

- The BOBCAT Development Team (AEROTHAI) would be invited to send a representative to all meetings of the BSG
- The BSG may extend invitations to other persons and representatives to attend the meetings as Observers

3. Responsibilities of the BSG

The BSG Responsibilities are not limited to the following, but should include:

- The oversight and administration of the ATFM system throughout the Bay of Bengal in collaboration with the Stakeholders and BOBCAT Development Team;
- Investigation of complaints and adverse reports filed through an appropriate reporting mechanism, to correct processes and procedures to prevent recurrence of problems of the kind that gave rise to one or more complaints
- Where necessary and appropriate, make recommendations to the BOBCAT Development Team in regard to software enhancements and amendments to operating procedures
- Approval of new releases of BOBCAT software and/or hardware changes – “Configuration Planning and Control”
- Endorsing changes to BOBCAT interfaces that may affect the functionality and performance between the ATFMU, ANSPs and Airline Dispatchers
- The ongoing review and regular assessment of compliance with BOBCAT operating procedures;
- Oversight of financial arrangements for BOBCAT services within the Bay of Bengal and South Asia, including the development of a long term funding strategy in consultation with AEROTHAI and the ATFM Stakeholders, with emphasis on efficient and effective fiscal management

4. Terms of Reference

The Terms of Reference to be developed by a Working Group of the ATFM/TF for consideration by the BBACG.

– END –

(GPI-6) AIR TRAFFIC FLOW MANAGEMENT

Scope: The implementation of strategic, tactical and pre-tactical measures aimed at organizing and handling traffic flows in such a way that the totality of the traffic handled at any given time or in any given airspace or aerodrome is compatible with the capacity of the ATM system.

Related ATM objectives: Centralized ATFM; Inter-regional cooperative ATFM; Establishment of ATFM databases; Application of ATFM strategic planning; Application of pre-tactical ATFM planning; Application of tactical ATFM planning

Description of strategy

1.35 The implementation of demand/capacity measures, commonly known as air traffic flow management (ATFM), implemented on a regional basis where needed, will enhance airspace capacity and improve operating efficiency.

1.36 In the event that traffic demand regularly exceeds capacity, resulting in continuing and frequent traffic delays, or when it becomes apparent that forecast traffic demand will exceed the available capacity, the appropriate ATM units, in consultation with aircraft operators, should consider implementing steps aimed at improving the use of the existing system capacity, and developing plans to increase capacity to meet the actual or forecast demand. Any such planning to increase capacity should be undertaken in a structured and collaborative manner.

1.37 States and regions should evolve to a collaborative based approach to capacity management. The ATM Operational Concept envisages a more strategic approach to ATM overall, and through collaborative decision-making, a reduction in the reliance on tactical flow management. It is inevitable that tactical flow intervention will continue to be required; however closer coordination between airspace users and ATM service providers can reduce the need for routine tactical intervention which is often disruptive to aircraft operations.